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Developing and Implementing a Community Oriented Assessment in Tanzania

Nancy Street Dunbar

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Developing and Implementing a Community Oriented Assessment in Tanzania

Nancy Street Dunbar

B.A. Amherst College, 1991

A Thesis
submitted in Partial Fulfillment of the
Requirements of the Degree of
Master of Public Health
at the University of Connecticut
2000
Developing and Implementing a Community Oriented Assessment in Tanzania

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2000
Acknowledgements

First, I would like to acknowledge my husband, Matt, and my family and friends who made everything about this incredible experience more meaningful. The time spent in Buguruka continues to be an important part of our lives today and it has opened our eyes and hearts to a whole other area of the world. Ann and Betsy Street helped get us organized as we packed and prepared for the trip, Del and Nancy Dunbar provided much needed help with organizing hundreds of photographs once we returned to the States, and Katey and Jamie Scrimgeour provided assistance throughout the entire experience! Katey logged more hours than she cares to remember doing data entry for me on EpilInfo!

I would also like to thank Father Justinian for allowing us to accompany him back to his home and having confidence in us to accomplish this task. His energy, vision and faith are unbelievable.

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I consider myself very fortunate to have worked with Professor Judy Lewis on this project. She deserves tremendous thanks and appreciation for making this opportunity possible. She has been a source of experience and positive energy from the initial stages of preparation through the final stages of this thesis. Thank you, Judy, for sharing your love for international health work with me.

Finally, I would like to thank Drs. Holger Hansen and Steve Schensul for being my readers and helping me better articulate this experience in order to give something back to the people of Buguruka.
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approval Page</td>
<td>ii</td>
</tr>
<tr>
<td>Acknowledgements</td>
<td>iii</td>
</tr>
<tr>
<td>Index of Tables</td>
<td>ix</td>
</tr>
<tr>
<td>Index of Figures</td>
<td>x</td>
</tr>
</tbody>
</table>

## Forward

Alisia’s Story 1

## Introduction

Introduction 3

## Chapter 1: Overview to Sub-Saharan Africa

Overview of Sub-Saharan Africa 4

- Economic Conditions 5
- Political Situation 8
- Population Growth 8

General Health Status of SSA
- HIV 10
- Malaria 11
- Other Important Diseases 12

Education and Literacy 14

Nutritional Status 15

Medical Services 17

Lack of Good Data 18
## Chapter 2: The Situation in Tanzania

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>20</td>
</tr>
<tr>
<td>Politics and the Economy</td>
<td>20</td>
</tr>
<tr>
<td>Demographic Structure</td>
<td>21</td>
</tr>
<tr>
<td>Education</td>
<td>22</td>
</tr>
<tr>
<td>Health Status</td>
<td>23</td>
</tr>
</tbody>
</table>

## Chapter 3: The Non-Governmental Organization - BOCED

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOCED</td>
<td>25</td>
</tr>
</tbody>
</table>

## Chapter 4: Community Oriented Development

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to Community Oriented Development</td>
<td>27</td>
</tr>
</tbody>
</table>

## Chapter 5: Methodology of the Assessment

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methodology</td>
<td>28</td>
</tr>
<tr>
<td>Background Information Collection</td>
<td>28</td>
</tr>
<tr>
<td>National Level Perspective</td>
<td>29</td>
</tr>
<tr>
<td>Regional and District Level Perspective</td>
<td>32</td>
</tr>
<tr>
<td>Assessment Tool and Photo Census</td>
<td>38</td>
</tr>
<tr>
<td>Assessment Tool</td>
<td>39</td>
</tr>
<tr>
<td>Photo Census</td>
<td>39</td>
</tr>
<tr>
<td>Data Collection</td>
<td>41</td>
</tr>
<tr>
<td>Interviewing Team</td>
<td>41</td>
</tr>
<tr>
<td>Training the Team</td>
<td>41</td>
</tr>
<tr>
<td>Pilot Study</td>
<td>42</td>
</tr>
<tr>
<td>Daily Process</td>
<td>42</td>
</tr>
<tr>
<td>Interviewing Techniques</td>
<td>43</td>
</tr>
<tr>
<td>Data Entry &amp; Analysis</td>
<td>45</td>
</tr>
</tbody>
</table>
Chapter 6: Results of the Assessment

Results

General Demographics
- Population
- Household Composition
- Religion

Education & Literacy
- Literacy
- Education

Economic Status
- Occupations
- Annual Household and Per Capita Income

General Health Status
- Morbidity & Mortality Data
- Common Diseases
  - Malaria
  - HIV
  - Malnutrition
- Other Common Causes of Morbidity & Mortality
- Immunization Status
- Maternal Child Health
- Medical Services Utilization
  - "Western" Systems
  - Traditional Systems

Effect of Age, Gender and Income on Health Status
- Age & Illness
- Gender & Illness
- Income & Illness

Orphanhood in Buguruka
- Orphanhood & Age
- Orphans & Household Structure
- Economic Situation of Families Supporting Orphans
- Orphans & Education
- Orphanhood & Health Status
- The Significance of Which Parent is Lost
# Chapter 7: Discussion and Conclusions

## Introduction

- Critique of Process
  - Background Information Collection
  - The Team
  - Materials
  - Pilot of the Survey Tool
  - Daily Process Management
  - Quality Control
  - Data Organization
  - Involvement of Key Community Members
  - Duration of Project
  - Photo Census
  - Data Entry

## Critique of Content
- Neglected Content
- Problematic Content

## Implications of the Initial Assessment for BOCED
- Information Sharing
- Education
- Social Development
  - Orphans
  - Women's Empowerment
  - Handling Future Requests for Assistance
- Health
  - BOCED Clinic
  - Maternal Child Health Services
  - Malaria Control
  - HIV Prevention
  - Other Health Care Improvement Opportunities
  - Fund Raising

## Implications for other Assessment Projects

## Conclusions
<table>
<thead>
<tr>
<th>Bibliography and Appendices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bibliography</td>
</tr>
<tr>
<td>Appendix A: How this Project Came to Be</td>
</tr>
<tr>
<td>Appendix B: Map of Tanzania</td>
</tr>
<tr>
<td>Appendix C: Assessment Tool and Answer Key</td>
</tr>
<tr>
<td>Appendix D: Maternal Child Health Card (MCH Card)</td>
</tr>
<tr>
<td>Appendix E: Pictures of the Community Assessment &amp; Photo Census</td>
</tr>
<tr>
<td>Appendix F: Pictures of People reporting Malnutrition</td>
</tr>
<tr>
<td>Appendix G: Pictures of BOCED Health Clinic</td>
</tr>
<tr>
<td>Appendix H: General Pictures of Buguruka</td>
</tr>
</tbody>
</table>
List of Tables

Table 1.1: Demographics & Health Status Indicators for Sub-Saharan Africa 10
Table 2.1 Demographic characteristics of Tanzania 21
Table 2.2: Tanzanian Population Age Structure 22
Table 4.1: Kagera Region Per Capita Income and Exchange Rate 33
Table 6.1: 1999 Basic Demographics of Buguruka 47
Table 6.2: Age Distribution 48
Table 6.3: Highest Level of Education Attained (aged 15 and older) 52
Table 6.4: Reasons School-Aged Children Are Not Attending School 52
Table 6.5: Annual Per Capital Income 54
Table 6.6: Common Causes of Morbidity in Buguruka – Current, Last Month & Last Year 57
Table 6.7: Common Causes of Morbidity, Kagera Region & Bukoba Rural District 58
Table 6.8: Mortality in Buguruka in the Last 10 years – Adult, Child & Total 59
Table 6.9: Reported Cases of Current Malnutrition 65
Table 6.10: Current Health Care Utilization by Source 72
Table 6.11: Most Commonly Reported Reasons for last Local Healer Visit 72
Table 6.12: Effect of Age on Illness 73
Table 6.13: Effect of Income on Illness 75
Table 6.14 Orphanhood by Age in Buguruka 76
Table 6.15 Orphans & Family Structure 77
Table 6.16 Impact of Orphans on Income 79
Table 6.17 Education Levels of Orphans & Non-Orphans – Ages 6 to 19 yrs 79
Table 6.18  Education Levels of Orphans & Non-Orphans – Ages 15 to 19 yrs  80

Table 6.19  Effect of Orphanhood on Illness  81

Table 6.20: The Overall Impact of Losing a Parent(s) and the Differences Depending Upon Who is Lost  82

Table 7.1: Number of Interviews per Interviewer  87

**List of Figures**

Figure 6.1: Age Distribution  48

Figure 6.2: Increasing Illness with Increasing Age  74

Figure 7.1: Content Areas Neglected in the Assessment Tool  98

Figure 7.2: Questions/Response Options that Complicated the Analysis  102
Forward: Alisia’s Story

Alisia Samuel is 3 years old and lives with her mother and three older siblings in Buguruka village in Kagera Region of Tanzania. She is a beautiful girl, very affable, with a protuberant abdomen, presumably due to tape worms, malnutrition, or hypersplenism from chronic malaria. Her home is about 30 kilometers from the nearest hospital, although there is a small, private, local dispensary within 5 kilometers and a maternal-child health worker visits the village monthly. Like most villages in sub-Saharan Africa, Buguruka has neither a piped water supply nor electricity. About 66% of the population in Tanzania has access to safe water. Alisia’s village lies on the shores of Lake Victoria which, although beautiful, is contaminated with schistosomiasis, industrial pollutants, and sewage.

Much of Alisia’s day is spent with her mother gathering water, preparing food, and tending to the small banana and coffee crops they own. Alicia’s mother, who has a fourth grade education, earned 13,000 tsh (18 US dollars) last year selling her coffee and bananas. This is less than the regional average of 50,000 tsh (62 US dollars) and the Tanzanian national average of $210 US dollars (UNICEF, 1999, Kagera Planning Commission, 1998). Like many children in the village, Alisia may start primary school in the village by the time she is 9 or 10 years old. Because the fee is 6,000 tsh per year, she may not be able to complete all of primary school and is unlikely to proceed into secondary school. She will likely become sexually active in her teens, putting her at risk of HIV infection. Potentially she will have five or six pregnancies. Her four or five surviving children will be at great risk of being underweight and suffering from stunting
or wasting. Their life expectancy will be about 45 years. (UNICEF, 1999; World Bank, 1999, Kagera Region Profile, 1998). Alicia’s story and possible future is the reality for millions of people in sub-Saharan Africa today.
I. Introduction

This paper will discuss the process of completing a baseline assessment in the process of community oriented development in a rural Tanzanian village called Buguruka. This community is located within one of the poorest regions in one of the poorest countries in the world. It is an area facing all the same problems that so much of sub-Saharan Africa is facing – unfathomable poverty, little economic opportunity, and major health problems including HIV, malaria and malnutrition.

An overview of sub-Saharan Africa, highlighting Tanzania, will provide the reader with a context for the project in terms of social, economic and health factors. This information is important for the purposes of understanding how Buguruka compares to other areas within Tanzania and how its problems relate to those found in sub-Saharan Africa overall. A newly created NGO called BOCED provided the connection to Buguruka and contributed directly to the assessment process in important ways.

Because the focus of this thesis is the process of developing and implementing a community oriented assessment, the process will be described extensively. This is followed by a presentation of the methods utilized to develop and implement the assessment are described followed by a section detailing the findings. Most important to readers interested in adapting this process to other communities, is the last section which provides a detailed critique of the development and implementation process used in this particular project.
Chapter 1: Overview of Sub-Saharan Africa

The World Bank refers to sub-Saharan Africa as the most important development challenge of the 21st century. To survive into adulthood today, a child in this region must withstand succumbing to acute respiratory illnesses, diarrheal diseases, measles, and malaria. The best predictor of a child’s health is his or her level of poverty. According to the World Bank’s estimates of sub-Saharan Africa, 46% of the population lives on less than $1 per day and 75% live on less than $2 per day (World Bank, 1999). Once a child reaches reproductive age, the main threats to meeting the average life expectancy of 50 years are infection with HIV and multidrug resistant tuberculosis.

The population of sub-Saharan Africa (SSA) has doubled since 1960. At the same time economies have declined dramatically and inflation has soared. As a region, SSA is increasingly dependent upon foreign aid and the level of external debt has grown exponentially. Those people most at risk live in rural areas, in large households, which are often headed by women. These most vulnerable groups are also most likely to live in countries where the GDP growth rate is less than 5%, a minimum growth rate according to the World Bank. In aggregate, SSA has low economic growth, the highest rate of population increase, a high burden of dependents to workers, high illiteracy levels and more disease and illness than any other region of the world. In the last decade, HIV/AIDS has further complicated the situation and, in many ways, has eroded many of the developmental gains achieved in the last 30 years. This region continues to struggle relative to the main indicators of social progress: how long people live, how much knowledge they acquire, and how much access they have to resources necessary for a better life.
Economic Conditions

It is in this socioeconomic and health context that so many international organizations like the United Nations, the World Bank, UNICEF, the Peace Corps and hundreds of non-governmental organizations (NGOs) have been working to help improve the living conditions and future promise of sub-Saharan Africa. There have been some successes. The mid-1990s was a time of steady growth in Africa, fostering economic revival in many countries. Economic growth was 4.9% in 1995 and 4.6% in 1996 but slipped to 3.6% in 1998 and 3.1% in 1999 (World Bank, 2000). In 1998, thirteen countries had a GDP growth rate of 5% or more, and at least 29 countries had positive GDP growth signifying that national income grew faster than population (Kibirige, 1997). The inflation rate, however, has been problematic in many countries with the majority having inflation rates above 10% - in seven countries, it was up to 40% or higher since 1980 (Kibirige, 1997).

Agriculture continues to be the most important industry in SSA and has been showing small increases in growth rates after years of stagnation. It accounts for 35% of the region’s GNP, 40% of exports, and 70% of employment across the region (World Bank, 2000). After decades of stagnation in the agricultural sector, growth has been renewed in the last several years with growth rates up to 4% in 1998.

Colonialism has had a dramatic and long term effect on the infrastructure of SSA because development was primarily focused on facilitating production and transportation of goods for exportation. Roads, railways and industries were designed solely for exploitation instead of providing a rational foundation for further development. In addition, there was minimal social development - only enough education and healthcare
services to keep the labor force functional (Kibirige, 1997). Post-colonial African nations continue to face an enormous uphill struggle to rebuild their infrastructure to achieve sustainable growth and provide adequate social services for their people.

Many of these development efforts have been financed through international sources – including sizable international loans. External debts have more than doubled for most African countries since 1980 with debt service consuming up to 20% of the value of exports. According to a 1994 UNICEF report, “each year repayments of capital and interest totaling over $30 billion fall due. Only about one-third of this is paid. The rest simply added to the total owed, a total which almost tripled in the 1980s” (Kibirige, 1997).

In 1997, the World Bank instituted the Heavily Indebted Poor Countries (HIPC) debt initiative to ease the burden of unsustainable debt worldwide. This HIPC initiative is targeting the poorest member countries, like Tanzania, because excessive debt can be a particularly severe obstacle to development.

A continuing problem undermining economic development in many cases is the fact that inequality in the distribution of Africa’s wealth is unacceptably high and remains a central factor in social and political instability (World Bank, 2000). The top 20% of the population earns at least five times more than the bottom 20%. Even in those countries which have been recognized for their economic performance (Kenya, Botswana, Zimbabwe), only a small percentage of people have benefited (Kibirige, 1997).

Corruption, a pervasive problem throughout SSA, is thought to be a primary cause of the income distribution problems. In some countries, the leaders have been known to
own more wealth than the countries they preside over (Kibirige, 2000). Corruption is found at all levels of the social and political structures. Tanzania has been suggested as a country with a particularly widespread problem with corruption (Cockroft, 1998).

Finally, government allocation of resources often works against sustainable development. In many countries, the defense budget takes up an undue proportion of resources because of the constant state of political unrest leaving little for health. Even when money is allocated toward healthcare, initiatives usually focus on tertiary urban hospitals which not uncommonly consume 50% or more of the annual health budget (Kibirige, 1997). Such allocation decisions in countries where about 70% of the poor live in rural areas do little to improve health or social conditions for the majority (World Bank, 2000).

HIV has recently been brought to the level of international politics after the United States declared HIV a threat to national security. Accompanying this declaration was a vow to do more in terms of research and treatment to curtail the uncontrollable epidemic proportion of HIV/AIDS in Africa.

The United Nations Population Fund (UNFPA) reported that no African country is currently spending more than one percent of its budget on HIV/AIDS, although the continent has the highest incidence of the disease in the world. Analysts report that African policy-makers view AIDS expenditures as luxuries only wealthy nations can afford (Africanews, 2000).
Political Situation

In the last 30 years, virtually every country in Africa has faced some form or threat of civil war. Somalia, Congo-Brazzaville, Sierra Leone, Angola, Democratic Republic of Congo, Burundi, Rwanda, Senegal and Sudan have all had recent conflicts. The effects include the displacement of entire populations, the loss of motivation to work or plan, the disruption of transportation and communication systems, the destruction of arable land, thousands of people taken out of economically productive endeavors, death and imprisonment, and declining health status (Kibirige, 1997). Even if the conflicts were not within their own borders, neighboring countries still suffer major and devastating consequences of the political disruption. Tanzania prides itself on being a nation of neutrality in East Africa but has suffered major socioeconomic and health consequences from the influx of refugees throughout the 1990s from Burundi, Rwanda and the Democratic Republic of Congo. In addition, Ugandan rebels have invaded the northwest parts of Tanzania in recent years as marauders disturbing the harmony in that area.

Population Growth

With the modernization that began in the 1950s, there was a predictable decline in mortality rates and an acceleration in population growth. However, modest general health status improvements were not accompanied by improvements in overall socioeconomic conditions in most countries. Normally, with modernization, the socioeconomic benefits of smaller families are recognized and population growth typically declines which then leads to further improvements in standard of living and
health status. Unfortunately, continuing poverty has perpetuated the perceived need for larger families. Thus, both population growth and deteriorating health conditions continue to plague sub-Saharan Africa (Kibirige, 1997). A UNICEF (1994) report noted that “…poverty provides the impetus to rapid population growth, then population growth, in its right, provides new impetus to poverty.” The same relationship exists relative to poor health status.

The socioeconomic situation continues to favor large families all across sub-Saharan Africa from a labor standpoint as well. The majority of people are peasant farmers utilizing basic technology—manual bush clearing, planting, weeding and harvesting. The means of production have improved very little since 1960 with a very few farmers owning tractors. In addition, since most of rural Africa still lacks piped water systems and electricity, people are required to walk long distances to collect water and firewood. Subsequently, children are important sources of labor and the only hope for support in old age. Having many children is seen as the best way to increase the probability that at least one child will succeed and liberate the rest of the family from poverty (Kibirige, 1997). All these factors are intensified in the setting of high infant and child mortality.

“ The only historically proven way of reducing population growth is to improve living standards…it is the hungry, indigent and despondent who have large families. No one is going to practice birth control if he expects five out of six children to die of starvation before age three.” (Kibirige, 1997).
General Health Status of SSA

Given this background of economic fragility and persistent underdevelopment, the statistics regarding the general health status of SSA are not surprising. Common indices of health status include mortality rates, life expectancy, morbidity, nutritional status, and access to health and medical services. Since 1960, the standard indicators for health status have only marginally improved for Africa as a region.

Table 1.1: Demographics and Health Status Indicators for Sub-Saharan Africa

<table>
<thead>
<tr>
<th>Population and Health Indices</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (millions)</td>
<td>612</td>
</tr>
<tr>
<td>Population growth rate</td>
<td>2.6–2.8%</td>
</tr>
<tr>
<td>Life expectancy (yr)</td>
<td>51</td>
</tr>
<tr>
<td>Fertility Rate</td>
<td>6-7</td>
</tr>
<tr>
<td>Crude Birth Rate (per 1000)</td>
<td>&gt;40</td>
</tr>
<tr>
<td>Infant mortality rate (per 1000 live births)</td>
<td>91</td>
</tr>
<tr>
<td>Under 5 mortality rate (per 1000 children)</td>
<td>147</td>
</tr>
<tr>
<td>Rural population (% of total)</td>
<td>68</td>
</tr>
<tr>
<td>Rural population density (per sq km of arable land)</td>
<td>364</td>
</tr>
<tr>
<td>Illiteracy – male (% of people 15 and above)</td>
<td>34</td>
</tr>
<tr>
<td>Illiteracy – female (% of people 15 and above)</td>
<td>50</td>
</tr>
</tbody>
</table>

(World Bank, 2000; Kibirige, 1997)

The average life expectancy at birth is still barely 50 years in many countries in sub-Saharan Africa. The infant mortality rate (IMR) has declined from over 170 in 1950, to 90 in 1990 but is still shockingly high in comparison to an IMR of 9 in the United States (World Bank, 2000). Whereas the mortality rate for children less than five years of age is less than 100 in most regions of the world, in sub-Saharan Africa it is 147, and in some African countries it is over 200. The problems are clearly linked to economics and underdevelopment of proper sanitation, access to safe water, education and literacy, adequate nutrition, and quality medical services including immunization and maternal child health programs.
Historically, these basic standards of public health have not been met in Africa. Less than 50% of the sub-Saharan population has access to a safe water source and proper sanitation. Most people live in substandard, overcrowded housing. Illiteracy among people over the age of 15 years is estimated at between 30 and 50%. Malnutrition is rampant, particularly in children under 5 years of age. There is a dire shortage of medical services, particularly in rural areas (World Bank, 2000; Kibirige, 1997).

**HIV**

The most devastating of the diseases in sub-Saharan Africa is HIV. There are nearly 34 million people in the world infected with HIV/AIDS and nearly two-thirds of these are Africans. Nearly 23 million Africans are estimated to be living with HIV/AIDS and more than 13 million Africans have died. The 21 countries with the highest HIV prevalence in the world are in Africa. In Botswana, Zimbabwe, Namibia and Zambia, between 20 to 26 percent of people are infected (WorldBank, 1999). A child in Zambia or Zimbabwe is more likely to die of AIDS than any other cause (HIV/AIDS in Africa, 1999). Tanzania falls roughly in the middle with adult prevalence rates estimated between 9 to 20 percent (WorldBank, 1999).

**Malaria**

Unfortunately, Africa is also struggling with a very high incidence of malaria. This mosquito-borne infectious disease is estimated to kill 1.5 to 2.7 million people annually with an incidence of 300-500 million cases each year worldwide. Approximately one million deaths of children under five are attributed to malaria alone or
in combination with other diseases (WHO, 1997). Countries in tropical Africa account for over 90% of the total incidence and the great majority of deaths.

*Plasmodium falciparum* is the predominant parasitic species in SSA and is the main cause of severe clinical malaria and mortality. The disease is marked by bouts of fever, shivering, joint pain, headache and anemia. If untreated, it can lead to cerebral malaria where the infected red blood cells obstruct the blood vessels in the brain.

Malaria strikes young children, non-immune adults, and pregnant women. Most malaria deaths occur in young children who live in remote rural areas with poor access to medical services. The infection can rapidly overwhelm a young child causing high fever, convulsions and breathing difficulties. With the onset of cerebral malaria, the child can lapse into coma and die within 24 hours (WHO, 1998).

In areas where malaria is endemic and transmission is high, people are continuously infected and they gradually develop immunity to the disease. Pregnant women are susceptible since the natural defense mechanisms are reduced during pregnancy. Infected pregnant women are more likely to die from the disease, suffer miscarriages, or give birth to premature, low weight babies (WHO, 1999).

Insecticide resistance and antimalarial drug resistance are increasing problems in Africa. In East Africa, chloroquine resistance to *P. falciparium* is common but the drug remains the first line treatment in practically all areas. Quinine is still effective for treatment of severe and complicated malaria in most parts of Africa.

In 1998, collaboration between the WHO, the World Bank, UNICEF and the UNDP was announced to address the increasing world wide epidemic of malaria. The “Rollback Malaria Initiative” (RBM) is a succession of national and international
initiatives designed to heighten the profile of malaria as a development issue. It includes a range of highly cost-effective interventions which, when properly used, can reduce the malaria burden within poor communities. These include:

- Early diagnosis and prompt treatment of malarial illness, with antimalarial drug combinations in some situation;
- The use of insecticide treated materials – including bed-nets – in the home;
- Routine malaria prophylaxis or intermittent treatment during pregnancy;
- Surveillance, prediction of, and rapid response to epidemics;
- Widespread public awareness about malaria, its consequences, and ways in which they can be avoided (WHO, 1999).

Up to now, many of these interventions have not been used to their full potential in most areas. For example, it is estimated that one in four child deaths from malaria could be prevented if children at risk slept under bednets at night to avoid mosquito bites. These pesticide impregnated nets cost about $10 each plus $0.50 to $1.00 per year to retreat. The RBM initiative hopes that the combination of increased collaboration between large international organizations and an increased recognition of the impact of the disease by affected countries will help makes this large new initiative successful.

**Other Important Diseases**

Infectious, parasitic and nutritional diseases are understood to be “diseases of poverty” because their prevalence coincides with areas of concentrated poverty and declines with increasing socioeconomic status. Although incidence and prevalence varies, these diseases are widespread throughout sub-Saharan Africa where over 220 million people live in absolute poverty (Kibirige, 1997).

Other sexually transmitted diseases that are prevalent in Africa are hepatitis, syphilis, chlamydia and gonorrhea. Persistent airborne diseases include influenza,
tuberculosis, pertussis, measles and varicella. Water and fecal borne diseases include typhoid fever, intestinal diseases (gastroenteritis), and diarrheal diseases (dysentery). Polio cases, although showing a decline of 70-90% worldwide, only dropped 4% in Africa. Cholera was first reported in Africa in 1970; but in 1988, 80% of the world’s cholera cases were found in Africa. Among vector borne diseases, malaria is by far the most virulent. Other diseases that account for significant morbidity and mortality in Africa include yellow fever, schistosomiasis, trypanosomiasis (sleeping sickness due to the tse tse fly), and river blindness (onchocerciasis).

Heart disease and cancer, often thought to be “diseases of affluence,” are increasingly prevalent among poor countries. One author suggested that 78% of all cardiovascular disease related deaths occurred in developing countries (Kibirige, 1997). If true, this will have an additional impact on health services and management of chronic disease.

Permanent solutions for reducing the morbidity and mortality from infectious, parasitic and nutritional disease and improving the general health status in sub-Saharan Africa lie predominantly in the classic public health domains which are connected to the overall socioeconomic condition. There has indeed been progress in each of these areas but it has not been continuous, well organized, or sustainable so the current picture leaves much to be desired.

Education and Literacy

Education in both primary and secondary schools in Africa have increased since the 1960s but the situation is still far from ideal. It is indisputable that education has a
positive impact on health and a lack of education is correlated with worse health, especially for uneducated women and their children. Educated parents have better income, living conditions, access to health services and have an increased understanding of health in general. They are in a better position to provide children with proper care, nutrition and quality of education (Kibirige, 1997). Educated women are also more likely to use family planning and have fewer children with better birth spacing which is correlated with improved child health (DHS, 1996).

**Nutritional Status**

In the mid-1980s, it was estimated that at least 30% of the developing world’s population suffered from some form of nutrition-related handicap or disability. Nutritional illnesses account for at least 50% of childhood mortality in sub-Saharan Africa. In most countries, 30% of children under five years of age are malnourished with over 10% suffering from tissue wasting. More than 15% of newborns are underweight. Kwashiorkor, marasmus, beri-beri, scurvy, pellegra, anemia, and physical and mental retardation are not uncommon manifestations of nutritional deficiencies in Africa. Since 1965, the per capita calorie intake has declined. Most people average fewer than 2000 calories per day while the general recommendation is for 2400 calories per day (Kibirige, 1997).

Growth retardation and stunting are common manifestations and major problems of malnutrition. Stunted growth can increase the risks of childbirth and contribute to maternal and fetal mortality. In addition to the direct effects, malnutrition can undermine
the immune system and thus contribute to the etiology or exacerbation of other causes of illness.

In most African countries, at least 20% of children suffer from goiter due to iodine deficiency. In some areas, like Zambia, it is up to 50%. Blindness and other vision problems have a high prevalence and are related to vitamin A deficiency. The distribution of the blindness closely coincides with that of malnutrition worldwide (Kibirige, 1997). Calcium deficiency leads to bone malformation problems like rickets and dental defects. Iron deficiency contributes to the high prevalence of anemia.

Malnutrition, for the most part, in sub-Saharan Africa is the unfortunate result of the combination of lack of education, lack of good variety of foods, and underproduction of food for local consumption. Increasing land degradation and a decline in the productivity per hectare of land is contributing to lower food production. Because prices are so unfavorable for food exports internationally, there has been an increasing need to produce very large quantities to yield a profit. The majority of land is being cultivated for cash crops (coffee, tea, cotton, rubber, and cocoa) leaving only the marginal land for food production for local consumption. Because this land tends to be over-cultivated, soil erosion problems have increased and are estimated to affect over 75% of all arable land in sub-Saharan Africa (Kibirige, 1997).

An unfortunate cycle has emerged of clearing more and more bush and forest areas to create more farmland after each current area becomes over-cultivated and unproductive. Over 5 million hectares of tropical forest are cleared annually in sub-Saharan Africa (Kibirige, 1997). Since 1980, at least 10% of the tropical forest in each
country have been destroyed, often driven by a lack of economic alternatives for the rural poor.

**Medical Services**

It is the norm rather than the exception, that a population of 100,000 people is served by fewer than 10 physicians in sub-Saharan Africa. In fact in 16 countries, the ratio is less than 5 physicians per 100,000 people (Kibirige, 1997). There is a high reliance on low and mid-level practitioners. The majority of countries also lack hospital, hospital beds and nursing care. Since the 1970s in most of sub-Saharan Africa, there have been fewer than 200 beds for each 100,000 people. Often patients sleep on the floor or share a bed with another patient because of bed shortages.

Since 1970, medical services have deteriorated in many countries. There have been few new hospitals constructed, there is an overall lack of drugs and equipment, and there is a shortage of running water and proper sanitation. The increasingly devastating impact of HIV has been overlaid on this fragile medical infrastructure.

Immunization programs have been relatively successful across sub-Saharan Africa but more widespread use of low-cost vaccines have been projected to prevent up to 1.6 million deaths a year among children under the age of five (WHO, 1999). The majority of countries report over 70% of their children are immunized against measles, tuberculosis, diptheria, pertussis, tetanus, and polio (WHO, 1999; Kibirige, 1997). Recently, however, there has been a decline in the immunization rates and a subsequent increase in the incidence of some of these preventable diseases, particularly measles.
which is the most contagious disease known to man. Throughout Africa, fewer than two-thirds of children are immunized against measles (WHO, 1999).

In 1992, less than 50% of all pregnant women were immunized against Tetanus, a major cause of maternal and neonatal infant death. The disease could be eliminated through immunizing women with tetanus toxoid during pregnancy and ensuring they have access to a safe delivery. This is one of the contributing factors leading to the high incidence of maternal mortality in Africa. Other common causes include complications of pregnancy and delivery such as hemorrhage, sepsis, complications of unsafe abortions, hypertensive disorders of pregnancy, and obstructed labor (WHO, 1999). Most countries have maternal mortality rates over 600 per 100,000 pregnancies. In many areas of Africa, the risk is greater than one in 20. By contrast, the risk in North America is one in 4000 (WHO, 1999). Overall, less than 50% of births were professionally attended (World Bank, 2000; Kibirige, 1997). In addition to immunization programs, prenatal care and safe deliveries, a significant proportion of maternal morbidity and mortality could be avoided through effective family planning.

Lack of Good Data

In addition, it is important to note that most of the data from sub-Saharan Africa is generated via extrapolation because of the overall lack of primary data. Because births and deaths are not recorded and the majority of the population is without access to formal health care, even the most basic of health parameters like fertility and mortality rates are suspect. Despite the fact that most countries do have vital statistic registries, they are unreliable and incomplete. Small community studies are often used to obtain information
about population denominators that are then extrapolated to other regions. Richard Cooper wrote an editorial about the absence of data in sub-Saharan Africa and the dangerous allure of a large data-synthesis project such as the Global Burden of Disease (GBD) Study, which has provided summaries of morbidity and mortality world-wide (Lancet, 1998):

“One wonders how the statistics are generated that appear in health reports by national ministries and international agencies such as WHO? Since there are no data, the numbers are guesstimates: representations of reality formed from models, extrapolations, and common sense, constrained largely by the need to avoid conflict with previous estimates. Health statistics in the absence of vital registration become part of a hopeful fantasy in which the basic measures of life are quantifiable in all societies...the idea that the sum of humanity’s misery is now calculated and published is seductive, the GBD study is rapidly being held up as the reference standard...if these data are wrong, the consequences are likely to be the most damaging for the very populations unrepresented in the fact-gathering process.”

The difficulties surrounding data collection in Africa stem from the lack of any health infrastructure. There has been moderate success in gathering data on maternal and infant health but there is little quantitative data about the health of adults in SSA. Hospital utilization is restricted to a minority of the population so hospital based studies are inappropriate for population inference. The majority of health care is marginalized to informal local systems, often involving healers and non-western systems without record keeping or data collection. In addition, investigations of adult health are more difficult given a lower event rate, greater mobility, and more heterogeneity in the symptoms and signs of illness and causes of death (Cooper, 1998).
Chapter 2: The Situation in Tanzania

Tanzania is the largest country in East Africa, covering over 360,000 square miles, roughly twice the size of California (see map in Appendix B). The mainland stretches from north to south for 740 miles, and from east to west for 760 miles. Tanzania lies south of the Equator and borders eight countries: Kenya and Uganda to the north, Rwanda, Burundi, Zaire, and Zambia to the west, and Malawi and Mozambique to the south. The climate is tropical with two rainy and two dry seasons. In general, there is a long dry spell from May to October, followed by a period of rainfall from November to April. Around Lake Victoria in the northwestern part of Tanzania, rainfall is more distributed throughout the year, with the peak between March and May (Bureau of Statistics, 1997).

Political Structure and Economy

Tanzania is a democratic republic struggling to implement a free market economy. In 1961, the nation of Tanganyika gained independence from British colonial rule with Julius Nyerere as the Prime Minister. In 1964, Tanganyika and Zanzibar united to become the United Republic of Tanzania. For over 20 years following the 1967 Arusha Declaration, Tanzania followed a policy of socialism and self-reliance. The transition from socialism to a free market economy in the 1990s has created serious problems in all sectors of society.

Tanzania is one of the poorest countries in the world. Per capita income was reported as $210 in 1998. This is less than half of the per capita income of $480 for sub-
Saharan Africa in 1998 (WorldBank, 1999). The economy is heavily dependent upon agriculture. However, the topography and climate have limited cultivation to only 4% of the land area. The main exports are coffee, cotton and cashew totaling $952 million in 1998. In contrast, imports of machinery, consumer goods, and industrial raw materials totaled $1.46 billion in 1998. The World Bank, the IMF, and other international donor agencies have provided funds to try and offset the external debt (estimated at $8.3 billion in 1998) and rehabilitate the deteriorated economic infrastructure (The CIA World FactBook, 1999).

**Demographic Structure**

The population of Tanzania is estimated at 31 million people (World Bank, 2000). The population age structure is depicted in Table 2.2. Although only the overall figures are displayed below, women represent an increasing proportion of the population as age increases, with a sex ratio of 1.03 at birth, 0.95 in the 15 – 64 year age group, and 0.84 of people over 65 years of age (CIA World FactBook, 1999).

**Table 2.1 Demographic characteristics of Tanzania**

<table>
<thead>
<tr>
<th>Index</th>
<th>1967</th>
<th>1978</th>
<th>1988</th>
<th>1999*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (millions)</td>
<td>12.3</td>
<td>17.5</td>
<td>23.1</td>
<td>31.3</td>
</tr>
<tr>
<td>Intercensal growth rate</td>
<td>2.6</td>
<td>3.2</td>
<td>2.8</td>
<td>2.1</td>
</tr>
<tr>
<td>Sex ratio</td>
<td>95.2</td>
<td>96.2</td>
<td>94.2</td>
<td>96.7</td>
</tr>
<tr>
<td>Crude birth rate</td>
<td>47</td>
<td>49</td>
<td>46</td>
<td>40.4</td>
</tr>
<tr>
<td>Total fertility rate</td>
<td>6.6</td>
<td>6.9</td>
<td>6.5</td>
<td>5.4</td>
</tr>
<tr>
<td>Crude death rate</td>
<td>24</td>
<td>19</td>
<td>15</td>
<td>17</td>
</tr>
<tr>
<td>Infant mortality rate</td>
<td>155</td>
<td>137</td>
<td>115</td>
<td>95</td>
</tr>
<tr>
<td>Percent Urban</td>
<td>6.4</td>
<td>13.8</td>
<td>18.3</td>
<td>26</td>
</tr>
<tr>
<td>Density (pop/km²)</td>
<td>14</td>
<td>20</td>
<td>26</td>
<td></td>
</tr>
</tbody>
</table>

* 1999 figures are estimates.

Table 2.2: Tanzanian Population Age Structure

<table>
<thead>
<tr>
<th>Age Group</th>
<th>1999*</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-14 years</td>
<td>44%</td>
</tr>
<tr>
<td>15-64</td>
<td>53%</td>
</tr>
<tr>
<td>Over 65</td>
<td>3%</td>
</tr>
</tbody>
</table>

* 1999 figures are estimates

Education

Primary school is officially compulsory and is free of charge (CIA World FactBook, 1999)\(^1\). Secondary schools have a required government stipulated fee. Villages and districts are encouraged to build their own schools with government assistance. Although there are some private schools, almost all primary schools are government owned.

Primary education begins at six or seven years of age and lasts seven years. Secondary education has two segments: an initial four-year cycle, and a second two-year cycle for those who qualify. Approximately 66% of the school-age population is enrolled in primary schools (66% of girls and 67% of boys) but only 5% of the appropriate aged population is enrolled in secondary schools (NewAfrica, 2000). Literacy levels\(^2\) are reported as approximately 68% with a significant disparity between the genders – 79% of males and 57% of females – that is not consistent with the primary school enrollment rates.

\(^1\) This statement is in direct contrast to what was found in this study. Primary school fees were charged annually as well as fees for compulsory school uniforms.

\(^2\) "Literacy" is defined in this instance as the number of people aged 15 years or older who can read and write either Kiswahili, English or Arabic.
Health Status

The health status of the general population is poor as reflected by the main health status indicators listed in Table 1.1 above. The life expectancy at birth is currently estimated at 46 years - 43.8 years for men and 48.6 years for women (CIA World FactBook, 1999). Immunization rates for 1-year-old children range from 72% for Measles to 83% for BCG. Malnutrition including stunting, wasting and vitamin deficiencies is widespread. It is estimated that 14% of infants have a low birth weight, 35% are underweight and 42% suffer from stunting. Only 74% of households use iodized salt (UNICEF, 1999).

Infectious disease is responsible for the majority of morbidity and mortality in Tanzania, as it is throughout the world. Pneumonia, tuberculosis, diarrheal diseases, measles, malaria, and HIV account for half of all premature deaths worldwide (WHO, 1999). In Tanzania, Malaria and HIV are both increasing in incidence.

The United Nations Development Program (UNDP) estimates that 50,000 babies are born with HIV each year in Tanzania. The prevalence rate of HIV among pregnant women is 12% - 20%, and the rate of infection to children born to these infected women is 35-40% (Africanews, 2000).

The impact of these sad statistics is reflected in the fact that the number of orphans has more than doubled in the past several years. In Tanzania, by the end of 1997, 500,000 people were living with HIV/AIDS, and over 300,000 children were orphaned3. However, the Institute of Public Health in Dar Es Salaam says the number of orphans has more than doubled in the past several years. In Tanzania, by the end of

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3 In Tanzania, an orphan is considered any child who has lost one or both parents
AIDS orphans in Tanzania was expected to reach 800,000 before the end of 1999 (Africanews, 2000).

Resource allocation to address this situation is still very low. One bright spot is that Tanzania was one of the four nations selected to share in the Bill and Melinda Gates Foundation’s $576 million grant aimed at protecting African youth against HIV/AIDS. It has as its stated goal the reduction of HIV/AIDS by 25% in the next 25 years in the affected countries (Africanews, 2000).
Chapter 3: The NGO – BOCED

The initial community assessment of a rural village in Tanzania was coordinated with the non-profit organization BOCED, the Buguruka Orphan and Community Economic Development Organization. BOCED is a non-governmental organization (NGO) based in New London and founded by Father Justinian Rweyemamu, a Tanzanian who is a Catholic priest in Connecticut. The 3 year-old non-denominational organization is committed to the improvement of health and general living conditions through social and economic development. Its mission is to foster integrated community development in the areas of education, health, business and culture. The initial focus is Father Rweyemamu’s childhood village called Buguruka, which is located on the western shore of Lake Victoria in northwestern Tanzania about 30 kilometers south of Bukoba (see map in appendix B). The leaders of the village had invited BOCED, under the direction of Father Justinian, to come and help them begin the process of community development.

Buguruka is a poor farming and fishing community with a subsistence level economy (see pictures of village in Appendix E-H). It utilizes the “10 Cell” program system, a socialist structure still commonly used in Tanzania. Each of the six subvillages which comprise Buguruka are divided into groups of approximately ten households, each with its own cell leader. There is no running water, electricity or sewage disposal system in the village. Water is collected from small streams and tributaries or directly from Lake Victoria. Transportation into Bukoba is available in Ntoma, the neighboring town, which is also the site of a Lutheran Center, primary school and private dispensary.

Starting in Buguruka, BOCED plans to:

1) improve medical services and health care for its citizens;
2) improve educational programs to students in grades K-8;

3) provide vocational-technical education programs to students in grades 9-12;

4) build and sustain an orphanage;

5) train adults to utilize their own natural resources to minimize the burden of preventable disease such as AIDS and malaria; and,

6) encourage, and foster efficiency and accountability to avoid problems of corruption and crime in order to maintain Tanzania as the most stable state in Africa (BOCED, 1998).
Community development for Buguruka was conceived utilizing the ideals of Community Oriented Primary Care. COPC is an approach by which a community itself develops a primary health care program to specifically address the needs of its service population. Major health problems are identified and addressed through modifications and development of primary care services and other appropriate community health programs. This requires knowledge of the community, its socioeconomic structure, its belief systems and values as well as the epidemiology of health problems to guide subsequent interventions. These dynamic interventions ideally are a joint effort of health providers and the community and incorporate continual reevaluation and modification (Nutting, 1986).

A community development program designed upon the premise of COPC would involve the following steps:

1. Define: Define and characterize the community
2. Assess: Identify community health problems
3. Review and Develop: Review findings in collaboration with the community to develop and implement appropriate programs
4. Evaluate: Continually monitor the impact of the program(s).
Chapter 5: Methodology of the Assessment

In order to begin working towards the goals of BOCED utilizing the COPC model, an initial assessment of the community was required in order to clearly define the denominator population. There was no socio-demographic information about the village of Buguruka available in Tanzania. To facilitate future planning and development, descriptive socioeconomic and health status information about the community was needed.

Background Information Collection

General background data from the World Bank, UNICEF, and WHO about Tanzania and sub-Saharan Africa was reviewed to provide a general sense of the socio-economic conditions in the region. The Demographic and Health Survey 1996 of Tanzania provided by the Bureau of Statistics and Planning is a nationally representative survey of 8,120 women age 15-49 and 2,256 men age 15-59. It provided detailed information on fertility, family planning, infant and child mortality, maternal and child health, knowledge and attitudes about AIDS, and female circumcision. It is the third survey of this kind in Tanzania; the first being completed in 1991-92 (DHS, 1996). It was a good source of specific and relatively up-to-date information describing the overall situation as well as regional differences.

Information from national, regional and district leaders in Tanzania was collected via interviews and group information sessions prior to visiting Buguruka. Information was collected in the following areas:
- overview of the Tanzanian health system;
- the relationship between government, religious and private health care services;
- access to medical care and essential drugs;
- the major causes of morbidity and mortality;
- impact of the HIV/AIDS epidemic;
- the effect of civil wars in neighboring countries on Tanzania;
- the role of local herbalists in medical care;
- potential obstacles to completing the initial community assessment; and,
- concerns about the data collection project.

**National Level Perspective**

While in the nation’s capital, Dar Es Salaam, there were meetings with two health professionals associated with the Tanzanian Episcopal Conference (TEC) who were working at the national level – the national AIDS Program Coordinator for the Tanzanian Episcopal Conference and the head of Health Services for the Rwandan Refugee Camps in Tanzania. These health professionals provided a general overview of the nation’s health system including government and religious sponsored institutions. The discussion focused on their impressions of the orphan situation, the HIV/AIDS epidemic, and morbidity and mortality issues relative to the Bukoba area in northwestern Tanzania.

A second information gathering session took place at the Evangelical Lutheran Church of Tanzania in meetings with the director of the Tanzanian Public Health Association as well as the Surgeon General of Tanzania. They referred to Bukoba as a priority area for the last 20 years because of the war in Rwanda/Uganda and the effect of HIV.

Because Bukoba is predominantly Lutheran, it was important to secure the approval, if not outright support, of the national Lutheran church before beginning the project. It appeared that they wished the project well but there was some hesitation surrounding the fact that BOCED’s director was a Catholic priest.
Based on the information gained in Dar Es Salaam, the national health system appeared to be a politically complex and disparate with government, church and private health care professional providing services. It seemed likely that this system might leave large rural areas like Buguruka without access to basic health care services. The government system is headed by the Minister of Health and the Regional Health Authorities report to him. Each Regional Health Authority is responsible for multiple district medical officers who manage district level public health programs. District health staff ideally include an AIDS coordinator, immunization coordinator, TB/Leprosy coordinator, school health program coordinator, village health worker program coordinator, and essential drug program coordinator.

It was difficult to ascertain how church health officials fit into this government schema of public health officials. It was clear that the Catholic and Lutheran religious organizations operate a significant number of health facilities and fund many health programs. All centers provide health care non-denominationally and, in theory, work together to coordinate their efforts. In fact, there is a relatively new tripartite agreement between Catholic, Lutheran and government officials to work together in the fields of health and education (Dr. Kanga, 1999). The effect of this collaboration was unclear.

Non-governmental organizations (NGOs) have a major presence within Tanzania. Each group we spoke with in Dar Es Salaam mentioned several NGOs working in the area around Bukoba and suggested meeting with them to see what they had already accomplished, what problems they had faced and any suggestions they had. Prominent NGOs included the Red Cross, Wamata, Kakau, Huyawa, World Vision, Portage, and Danida.
The national health officials indicated that the major causes of morbidity and mortality in the Kagera region, specifically around Buguruka, were malaria, diarrheal illnesses and respiratory infections. Chloroquine resistance to malaria seemed to be an increasing problem, and was exacerbated by distribution of chloroquine outside official drug dispensaries via such channels as local herbalists. The officials indicated that malnutrition and HIV/AIDS were less prevalent, although still significant problems. The national AIDS program coordinator for the TEC said that there is strong belief in the importance of HIV testing in Tanzania but that the tests are not widely available and that people have to self-pay. He said that blood donors are tested but anonymously only because it is not practical to provide pre and post–test counseling and treatment. In addition, very few anti-HIV drugs are available in Tanzania and a very small minority can afford them.

In general, these health officials were concerned about the project’s ability to collect valid information about people’s health status, especially concerning HIV/AIDS. Their personal experiences were that people were not forthcoming about their health problems, particularly with respect to HIV, because there was a feeling that “our health is our problem.” In addition, they felt there was a stigma associated with HIV/AIDS patients. They had seen a tendency for people in villages living with HIV/AIDS to be isolated from others, barely leaving their homes. They advised us to pay attention to the hygiene, social and spiritual needs of people suspected to be infected with HIV, as well as to their medical needs such as wound care and oral rehydration therapy. One physician had recently spent two weeks in a village in Kagera region providing medical care. He was dismayed to have seen only orphan children in the clinic. He felt the people of the
village viewed him as an outsider and did not feel comfortable sharing the real information with him. He cautioned us to be prepared for this type of environment once we got to the village.

**Regional and District Level Perspective**

The central government offices of the Kagera region are located in Bukoba, the city that is about 30 kilometers north of Buguruka on Lake Victoria. The region is divided into six district governments (Bukoba Rural, Bukoba Urban, Biharamulo, Ngara, Muleba, and Karagwe). These districts are then further sub-divided into Division Wards and Villages which each have their own elected officials who represent their interests on a district and regional level.

Kagera is known to be one of the poorest regions in Tanzania. More than 50% of all the orphans in Tanzania are in Kagera and 48,000 children are not in school because their families could not pay the school fees. The project focus was Buguruka, a small village in the Bukoba Rural District. Bukoba, on the other hand, is part of Bukoba Urban district. Because BOCED needed to access resources in Bukoba, both the Rural and Urban officials were important local contacts.

Kagera is a fairly homogenous region ethnically. The vast majority of people are of Bantu origin, with the Wahaya forming the largest tribe, particularly in Bukoba Urban and Rural districts. From a cultural and religious standpoint, however, they are more diverse with both Islam and Christianity being strong influences (Killewo, 1997). Kagera region had a population of 1.3 million in 1988 with an annual growth rate of 2.7 percent (Kagera Socioeconomic Profile, 1998). In Kagera region as a whole, 91% of the
employed population is engaged in agricultural activities (Kagera Socioeconomic Profile, 1998). The production level has been declining over the last several years in large part because of decreasing soil fertility. Income levels have declined since the early 1980s as the value of the Tanzanian shilling dropped from an exchange rate of 8.2 tsh per American dollar in 1982 to 553 tsh per dollar in 1994 to 700 tsh in 1999. Although the per capita income has increased from 2,556 tsh in 1982 to 50,105 tsh in 1994, the equivalent value in American dollars has dropped from a high of $268 in 1982 to $91 in 1994 (Kagera Socioeconomic Profile, 1998). In other words, the population of Kagera has become increasingly poorer each year both because of national economic troubles and agricultural production declines.

Table 4.1: Kagera Region Per Capita Income and Exchange Rate

<table>
<thead>
<tr>
<th>Year</th>
<th>Per Capita GDP (tsh)</th>
<th>Exchange Rate (Tsh/$)</th>
<th>US $</th>
</tr>
</thead>
<tbody>
<tr>
<td>1982</td>
<td>2,556 tsh</td>
<td>9.52</td>
<td>268</td>
</tr>
<tr>
<td>1994</td>
<td>50,105</td>
<td>553.0</td>
<td>91</td>
</tr>
</tbody>
</table>

Source: Kagera Socioeconomic Profile, 1998.

Bukoba Rural is the largest district within Kagera region and is comprised of six divisions, 41 wards and 164 villages, one of which is Buguruka. The district has a population of 340,000 people with a population density of approximately 76 people per square kilometer. The predominant livelihood is subsistence level farming. Coffee, tea and bananas are the main cash crops with a minority of people supplementing this income with the sale of fish or livestock. Farms are small (average 2.7 acres) and banana plots are intercropped with coffee trees and then with beans and maize during the rainy season. Banana is the preferred staple food and is supplemented with beans, yams, sweet potatoes

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4 This data from 1994 is the most recent data available about Kagera.
and cassava. Overall, banana production is declining because of soil fertility and infestation problems (Bukoba District Council Profile, 1999).

Once in Bukoba, a series of meetings and welcome ceremonies with the Regional Commissioner of Kagera, the mayor of Bukoba, and the chairman of Bukoba Rural District were held. Overall, they welcomed BOCED’s involvement although the District Chairman was less enthusiastic about our objectives as an NGO. He conveyed a level of cynicism as he described the number of NGOs and other donor groups who had come to build schools and dispensaries and offer short-term solutions to complex, chronic social and economic problems in his district. He was most intrigued by BOCED’s objective to initiate sustainable economic development and reiterated that this has not been attempted by donor groups in the past and that this would be of most interest to politicians.

Regional health information was obtained at a general level from the Acting Regional and District Medical Officers who are both based at the government hospital in Bukoba, which serves both Bukoba Urban and Bukoba Rural Districts. The basic referral pattern for medical care starts at the village where a person chooses between seeking assistance from the local herbalists or local healers and the more western designed medical system. The latter is represented at the village level by monthly Maternal-Child Health (MCH) clinics.

The next level of care is provided by dispensaries, which are located in various villages throughout the area. In Bukoba Rural, there are 44 MCH clinics and 53 dispensaries serving nearly 390,000 people. This breaks down to an average of 7,315 people over a 102 square kilometer distance per dispensary. This number reflects a slight
increase in coverage responsibility as compared to 1986 when there were approximately 7,146 people per dispensary. Roughly, one third of the dispensaries are privately run in Bukoba Rural, which is consistent with the Tanzanian government’s recent policy of privatization of the health sector (Kagera Socioeconomic Profile, 1998).

Dispensaries refer less serious cases to health centers and more serious cases to hospitals, which are the tertiary care centers. Health centers may also see patients directly from the community, particularly in those areas where there is no MCH clinic or dispensary. By comparison, health centers are expected to be better equipped with more highly trained staff than dispensaries. Kagera Region, as a whole, has 13 health centers and 11 hospitals (Kagera Region Profile and Potential Areas for Development, 1999). Bukoba Rural has the poorest medical coverage of the six districts within Kagera Region. It has only five health centers and two hospitals with a total of 190 beds. Because there are only four doctors (three private and one public) in Bukoba Rural, this results in 193,861 people per hospital, 96,930 people per doctor, and 2,041 people per hospital bed in this district. This is considerably worse than the Kagera regional and national averages of 791 and 882 people, respectively, per bed (Kagera Socioeconomic Profile, 1998).

General health indicators for Bukoba Rural reflect the poor health status of its people. Immunization levels for children under one year of age for BCG, DPT, Polio and Measles are roughly 80%, the lowest in Kagera Region. A 1995 nationwide study of malnutrition and low birth weight concluded that 9.3% of all babies born in Kagera were underweight, in large part due to malnutrition. A 1996 study in Kagera of children under age of five years old concluded that 17.6% were malnourished based on weight less than

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5 Local herbalists or local healers are non-medically trained individuals who provide medicines, often
the 80th percentile (Kagera Socioeconomic Profile, 1998). The 1995 infant mortality rate of 127 and the under-five mortality rate of 212 in Kagera is unsatisfactory even by Tanzanian standards (Kagera Socioeconomic Profile, 1998). These figures are worse among male children and in rural areas in Kagera.

The 1995 maternal mortality rate was reported at 242. Approximately 68% of all births occur at home in Kagera (Kagera Socioeconomic Profile, 1998). Kagera Region’s life expectancy of 45 years is the worst of the regions in Tanzania and has shown no improvement since 1978 (Kagera Socioeconomic Profile, 1998).

Based on their experiences at Bukoba Hospital, the acting regional and district medical officers believed that malaria, diarrheal diseases, pneumonia and respiratory infections (including pulmonary tuberculosis), intestinal worms, clinical AIDS and measles were the most concerning illnesses in the area. Malaria is seven times more prevalent than any other illness. It is also the number one cause of mortality in Kagera, followed by AIDS, pneumonia, diarrhea and perinatal conditions. Malnutrition ranks among the top ten causes of mortality in Kagera and was attributed to ignorance about proper nutrition needs (Kagera Socioeconomic Profile, 1998). The medical officers reiterated that underfeeding, in all age groups, is a major problem leading to low production and consequently low earnings. It is not clear whether this underfeeding is due to ignorance or lack of money or both.

In terms of HIV/AIDS, the government hospital does offer HIV testing after 15 months of age if there are risk factors such as orphanhood or a sibling death, or if there is

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6 The height and weight charts used in Kagera Region to monitor child development are based on 50% of the Denver Development charts used in the United States.
clinical suspicion of HIV infection. At this time, however, there are no anti-HIV drugs available in Bukoba. People infected with HIV who are registered at Bukoba Hospital are able to receive free antibiotics for treatment of opportunistic infections, although not prophylactically. These drugs are currently paid for by a grant funded by an international AIDS organization. The regional medical officers felt that the AIDS problem was increasing although this was very hard to quantitate because of the lack of testing. The HIV virus is thought to be transmitted primarily via heterosexual practices in Tanzania. Although, increasing educational efforts are underway, very little in the way of safe sex is being practiced in Kagera. The AIDS epidemic entered Tanzania in the Kagera region from Uganda in the early 1980s with the first documented case reported in 1983. Since then it has increased in incidence. The region attributes the rise in orphaned children to AIDS related mortality and reports that there are more than 100,000 orphans in the region as a result of death from AIDS (Kagera Socioeconomic Profile, 1998).

The medical officers for the region and district seemed overwhelmed with the problems confronting their district. They said health seeking behavior is hindered by excessive workloads in a subsistence economy, poor accessibility to medicines, and an overall doomsday approach that leads people to assume there is no treatment available. They felt that the project might experience resistance in the village because of the perception of being “outsiders” and many villages have had past experiences with corrupt agencies that resulted in no benefit for them. In addition to resistance from the village people, they warned about the information the village leadership would provide.

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7 IMR is reported per 1000 infants, U5MR is reported as per 1000 children under five years of age, and MMR is reported as per 100,000 births.
suggesting that 80% would be “purposeful lies”. They suggested using the schoolteachers in the village school and the staff from a nearby Lutheran orphanage to administer the survey. Lastly, they expressed some concern that it was not ethical to do data collection about health status without also having a system in place to address acute problems. This led to a discussion of the possibility of having a medical clinic in the village while the survey was administered so people could be referred for help as they were identified.

All of these formal and informal information-gathering sessions were helpful in providing a general background about the health and social situation in the area around Bukoba. Clearly the information was often anecdotal; however, it represented important viewpoints on the current atmosphere in the region.

**Assessment Tool and Photo Census**

After collecting national, regional, and district level information, the BOCED group arrived in the rural village of Buguruka, home for the next four weeks. In the first week, the team was introduced to the community and met with local leaders. The goal was to develop an assessment tool that could be implemented by novice interviewers in the village to quickly obtain baseline information about the community of Buguruka. The interview team was going to be people from the village assembled by the chairman and vice chairman who were a friend and relative of Father Justinian. These two village leaders together with members of the BOCED team identified the major areas of focus in terms of data collection (age, demographics, income, education level, and health status).

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8 Many different figures circulated about the number of orphaned children in Kagera Region. Reports
A survey and answer key format was developed which minimized paper utilization and pen strokes. The village leaders were heavily involved in creating the answer key that accompanied the survey so that the information was culturally relevant.

Assessment Tool

The initial survey was a one page document designed to collect socioeconomic and health data on each member of a household. There were 22 socio-economic questions and nine health questions. Four additional questions were asked of the head of the household regarding household mortality in the last ten years. The accompanying answer key was one-page in length and re-usable for the duration of the collection period (See Survey Tool and Answer Key in Appendix C). The survey was produced at the office of an agricultural cooperative in Bukoba known to the village chairman. Six hundred copies were made at a stationary store in Bukoba.

Photo Census

The socioeconomic and health assessment was accompanied by a photographic census. Pictures were taken of each individual member of a household as well as one group picture of the entire household. The photographs were matched with the surveys via an alpha-numeric coding system. The number reflected the household and the letter correlated to a person's position on the household's assessment form. Generally, the head of the house was “a”, the wife was “b”, and the oldest to youngest children were “c”, “d”, “e”, etc. For the pictures, each person held up an index card in front of them ranged from 100,000 – 400,000.
with their alpha-numeric code (eg. 23b). A photography log with the names and codes for each individual photographed provided cross-reference for the photographs and a way to track incomplete pictures. Two members of the BOCED team served as photographers during the assessment project and were assisted by two people from the village who translated and helped them from house to house. Pictures were also taken at various points during the assessment process in order to document the experience (see Appendix E).
Data Collection

Interviewing team

A group of 13 people, aged 20 to 55 years, were identified by the village leaders and asked to volunteer in BOCED’s project as members of the interview team. These individuals had at least basic English skills, a familiarity with the layout of the village, and represented different groups in terms of religion and occupation. The total interview team included nine men and four women as well as the two American photographers and organizers. None of the interviewers had prior interviewing experience. One person, Father Justinian’s cousin from a neighboring village, was a pre-medical student in the United States but did not have any formal clinical or public health experience. By training, there were two businessmen, one farmer, one Catholic priest, a retired safari guide and policeman, a retired magistrate, two unemployed teachers, two current secondary school students, and two unemployed recent secondary school graduates. The photographers were, the author, a fourth year medical and public health student, and her husband, a high school social studies teacher, neither of whom spoke Kiswahili or Kihaya.

Training the team

Two one-hour training sessions were held with the interview team prior to the launch of the project. The first included six members of the interview team. A member of the BOCED team led the session and reviewed the goals of the project and how the data would be used in the future. The survey and answer key was discussed item by item. Frequent translations by members of the group were made into Kihaya and Kiswahili.
when questions arose. Each team member was given a copy of the tool to review. A
second training session was held after the pilot study (see below). This session included
the six previously trained interviewers and the seven additional people (see picture in
Appendix E).

*Pilot Study*

The initial tool was piloted on two households in the sub-village of Bugera. The
households were selected based on their proximity to the assessment center headquarters,
the household willingness to participate, and the variability the two families represented.
The first household of 10 people spanned three generations, two houses, and included
complex social relationships including polygamy. The second was a female headed
household with five members.

The most senior member of the BOCED interview team led the first interview and
the five other interviewers observed. At the second house, two different interviewers led
the data collection. In the first house, the interview took 16 minutes per person but by the
second house it was reduced to 8 minutes, including photography time. Minor revisions
were made to the answer key as a result of the pilot study (e.g. organization of the items
on the form, the addition of respondent and interviewer names).

*Daily Process*

At the suggestion of the village chairman, the political structure of subvillages
and cells in Buguruka was utilized to organize the assessment process. The chairman
contacted the cell leaders for the respective subvillage prior to each day’s work to inform
them of the project, reiterate the goals, and ask their cooperation and participation in helping complete their cell so as not to miss any households. The cell leaders then took responsibility for informing the residents in their area about the assessment process and helped direct the interviewers from house to house. By definition, each cell contained approximately 10 households.

Several interviewers and a photographer were assigned to a particular geographical area that contained 2-4 cells (approximately 20-40 households). Because there were only two photographers, they occasionally shuttled between multiple cells in order to cover all households.

At the conclusion of each day, the census forms were collected and logged into a master document that recorded form number, subvillage, household size, and whether or not photographs had been completed. The completed forms were briefly reviewed for completeness and major problems or inconsistencies and then filed by subvillage and form number. Problems identified during the evening review process were followed-up during the next morning’s meeting.

**Interviewing Technique**

Interviews were held in the homes of village residents. The main respondent was generally the “head of the household” or the person responsible for the support and well being of the members of the household. In cases where multiple adults were living together as one household, each adult would provide his or her own information, although generally one person was still regarded as the head of the house. Information on
children, particularly young children, was generally provided by the head of the household or by the mother.

Socioeconomic information was straightforward and presented little difficulties in collection. Age, relationship to the head of the household, religion, education level, occupation and estimated annual income was recorded. The income information was generally completely attributed to the head of the household, as is the custom in the region, despite major contributions from women and children in the household.

General health status was ascertained via specific and broad questions. Whether or not each child under the age of six possessed a Maternal Child Health (MCH) card was recorded as well as the date of the last visit (see MCH card in Appendix E). MCH cards were reviewed for obvious development problems indicated by abnormal slopes of the growth curves. Immunization status was collected either from the MCH cards or from the individual directly. If a person could not recall, an appropriate scar on the upper arm was looked for as representing all immunizations.

Questions about health status perception were of the general format, “What health problems are you having today?” “What problems did you have in the last month?” “What problems did you have in the last year?” Generally, the head of the household would respond with information about all members of the household, or he would ask other adults in the house for their answers or information about the children. Occasionally, interviewers would specifically ask about disease states such as malaria, worms or obvious ailments based on evidence at the time of the interview.

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9 No formal system was in place at the time of data collection to record growth and development problems reflected in the MCH cards. Generally, potential problems were brought to the author’s attention and the individual was referred to the BOCED clinic.
People were asked to estimate the date of their last visit to a dispensary, health center or hospital and whether or not they were currently undergoing any treatment and where. The date of the last visit to a local healer and the reason for the visit was also recorded.

General mortality information was collected by inquiring about the number of deaths of children (less than 18 years of age) and adults in the last ten years. Causes of death were collected if known.

In this manner, socioeconomic and health assessment information was collected on 2577 people in the six subvillages that comprise the village of Buguruka. Photographs were taken of approximately 2200 of these individuals. The assessment was done over the course of 10, eight to twelve hour days spanning two weeks. After the first day, two interviewers no longer participated. One person had to remove himself from the project due to other professional obligations. A second individual was asked to resign due to suspicion of problems with alcohol that was impacting the quality of his work.

**Data Entry and Analysis**

Upon return to Connecticut, the data was entered into the statistical software program EpiInfo (CDC, 1998) and then converted to the statistical analysis program, SPSS (version 10.0.5). The alpha codes on the answer key were converted to numeric codes for the majority of variables. The variables *Place of Birth, Health Problems, Reason for Last Visit to Local Healer,* and *Cause of Death* were entered as string variables and then later recoded to facilitate analysis. Cross-checks were completed to ensure data integrity. Multiple other categories were also recoded in SPSS to allow more
logical analysis (e.g. education level of people aged 15 and over, MCH visits for children under six years of age, etc.). Analyses were primarily focused on descriptive information.
Chapter 6: Results of the Assessment

General Demographics

Population

Based upon our assessment, there are 2577 people living in 563 households in the village of Buguruka which has a total land area of approximately six square miles divided between six sub-villages (Bugera, Kigusha A, Kigusha B, Kalimi, Rwazi and Mishenye). Each subvillage has between 14% – 19% of the total population; Kigusha A is the largest with 499 people and Rwazi is the smallest with 362 people. In terms of gender, 50.1% of the population is female (see table 6.1).

Table 6.1: 1999 Basic Demographics of Buguruka

<table>
<thead>
<tr>
<th>Subvillage</th>
<th>Male</th>
<th>Female</th>
<th>Total Pop</th>
<th># Households</th>
<th>Mean Educ</th>
<th>Median Age</th>
<th>Mean Per Capita Income</th>
<th>Median Per Capita Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bugera</td>
<td>220</td>
<td>240</td>
<td>459 (18%)</td>
<td>104</td>
<td>5.4</td>
<td>18.0</td>
<td>36,539 tsh</td>
<td>17,500 tsh</td>
</tr>
<tr>
<td>Kigusha A</td>
<td>259</td>
<td>240</td>
<td>499 (19%)</td>
<td>95</td>
<td>5.4</td>
<td>16.0</td>
<td>18,402</td>
<td>9,375</td>
</tr>
<tr>
<td>Kigusha B</td>
<td>236</td>
<td>198</td>
<td>434 (17%)</td>
<td>100</td>
<td>5.0</td>
<td>19.0</td>
<td>36,021</td>
<td>12,250</td>
</tr>
<tr>
<td>Mishenye</td>
<td>219</td>
<td>222</td>
<td>444 (17%)</td>
<td>96</td>
<td>5.7</td>
<td>15.0</td>
<td>31,572</td>
<td>15,778</td>
</tr>
<tr>
<td>Kalimi</td>
<td>174</td>
<td>204</td>
<td>378 (15%)</td>
<td>82</td>
<td>4.9</td>
<td>16.0</td>
<td>16,258</td>
<td>9,500</td>
</tr>
<tr>
<td>Rwazi</td>
<td>176</td>
<td>186</td>
<td>362 (14%)</td>
<td>85</td>
<td>5.2</td>
<td>16.5</td>
<td>41,397</td>
<td>21,600</td>
</tr>
<tr>
<td>Total</td>
<td>1284</td>
<td>1290</td>
<td>2577</td>
<td>562</td>
<td>5.3</td>
<td>20.2</td>
<td>30,308</td>
<td>14,083</td>
</tr>
</tbody>
</table>

Missing data = 3 gender, 1 subvillage designation (<1%)

Although ages in the village range from infancy to 102 years of age, the mean age is 21.9 and the median age is 17 (See table 6.2). Nearly 75% of Buguruka’s population is under 30 years of age; 21% is five or younger. Only 16% of the population is 40 years or older. Most people are from the area, 64% reported being born in Buguruka. Of

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1 Land area is a rough estimate made by author as no records exist documenting area of village officially.
2 Mean education level only includes people age 15 and above.
3 Mean Per Capita Income is based on the total annual household income divided by the number of members in the household. (700 Tanzanian shillings (Tsh) = $1.00 US)
people 20 years and older, 51% were born in Buguruka and 47% have lived in the village over 20 years.

Table 6.2: Age Distribution

<table>
<thead>
<tr>
<th>Age (yrs)</th>
<th># of people</th>
<th>% of population</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1</td>
<td>93</td>
<td>3.6%</td>
<td>3.6</td>
</tr>
<tr>
<td>1-5</td>
<td>456</td>
<td>17.7</td>
<td>21.4</td>
</tr>
<tr>
<td>6-10</td>
<td>399</td>
<td>15.5</td>
<td>36.9</td>
</tr>
<tr>
<td>11-19</td>
<td>464</td>
<td>18.0</td>
<td>54.9</td>
</tr>
<tr>
<td>20-29</td>
<td>492</td>
<td>19.1</td>
<td>74.1</td>
</tr>
<tr>
<td>30-39</td>
<td>262</td>
<td>10.2</td>
<td>84.2</td>
</tr>
<tr>
<td>40-49</td>
<td>119</td>
<td>4.6</td>
<td>88.9</td>
</tr>
<tr>
<td>50-59</td>
<td>96</td>
<td>3.7</td>
<td>92.6</td>
</tr>
<tr>
<td>60-69</td>
<td>90</td>
<td>3.5</td>
<td>96.1</td>
</tr>
<tr>
<td>70-79</td>
<td>61</td>
<td>2.4</td>
<td>98.5</td>
</tr>
<tr>
<td>80-89</td>
<td>26</td>
<td>1.0</td>
<td>99.5</td>
</tr>
<tr>
<td>90-99</td>
<td>12</td>
<td>0.5</td>
<td>&lt;99.5</td>
</tr>
<tr>
<td>100+</td>
<td>1</td>
<td>&lt;0.1</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>2571</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Missing data = 6 (0.2%)
**Household Composition**

Households in Buguruka range in size from one to 17 members; the mean family size is 4.6 people. Nuclear families\(^{13}\) are slightly more common than extended families (47% versus 41%). Males are more than twice as likely to be designated the head of the household than females\(^{14}\).

Of people age 15 and older, 57% are married or remarried and 5% are in polygamous unions. Twenty-five percent have never been married and 18% are separated, divorced or widowed.

**Religion**

Most people in Buguruka define themselves as Catholic (52%), Lutheran (33%) or Muslim (10%). Less than 3% of people were African, Anglican, or other, and 1.6% of people followed no religion.

**Education & Literacy**

**Literacy**

Kihaya, a Bantu language, is the dominant language of the village spoken by nearly every person. Kiswahili is the language taught in primary schools and is considered the official national language in Tanzania. Seventy-seven percent of people in Buguruka aged 15 and older reported speaking both Kihaya and Kiswahili. Of people 15 years and older, nearly 80% reported being able to read and write. Of this literate

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\(^{13}\) Nuclear families defined as father, mother and their children or any subset of this group. Extended families defined as nuclear family plus any blood relative or person related by marriage.
group, 88.6% reported being able to read and write Kihaya and Kiswahili, an additional 7.9% reported also being able to read, and write English, and 2.2% reported only being able to read and write Kihaya.

**Education**

Buguruka has one government primary school (standard 1 – 7) called Byeya that has approximately 60-70 students. There are two other primary schools in neighboring towns. A year of primary school in Buguruka costs 6000 tsh for tuition and another 3500 tsh for a required school uniform. There are no textbooks except one or two for the teachers. The school day begins with the children collecting wood for the teachers’ fires and water for their tea. The day proceeds with the teachers copying page after page of their textbooks onto the chalkboard after which the children copy the text into their notebooks. Corporal punishment is practiced in schools.

There is a national exam at the end of standard four and only those who pass it may continue into standard five. After standard seven, there is a second national exam. Those who pass this exam are admitted to government secondary schools (forms 1 – 4) which are less expensive and more prestigious than private schools. The student’s performance on the exam determines which secondary school he or she can attend - a higher score brings a better school. There are several secondary schools in the city of Bukoba, but often time, students must move to other cities. Secondary school can be

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14 Head of the Household defined as the person who is responsible for the primary decision-making and economic condition of the household.

15 This was a figure quoted by the village chairman. No data was obtained directly from the school.
very expensive, ranging from 60-80,000 tsh per year, and often students need to find sponsors in order to continue.

Entry into high school (form five and six) requires passage of another comprehensive set of national exams. Again, one’s performance is matched to the next level of schooling, called high school, which could be in a different area of the country. The expense associated with these schools is approximately 100,000 tsh per year. Entry into a university is restricted to the highest performers on the national exam following form six. One can go onto university from form four, but generally it is easier and less expensive to go after completing form six. University is very expensive – for example, one year of law school costs 1.4 million tsh. Subsequently, many eligible students can not go without international sponsors to cover the costs of their tuition. At any point along the way, students are permitted to retake exams they have failed. However, the timing of these exams correlate with times when groups of students stop their education.

Of the 1392 people aged 15 and over in Buguruka, 254 (18%) people reported no formal education (see Table 6.3). This includes more women than men (67% women versus 33% men). Of people aged 15 or above reporting some education, the vast majority (92%) have completed standard seven or less (see table 6.4). In terms of education beyond primary school, 65 men and 23 women report having, or currently pursuing, an education level higher than standard seven. Only 3 people in Buguruka have completed education beyond high school (form 6). These three individuals are males ages 25, 35 and 49. Six women had completed form four. In general, it appears that girls in Buguruka are less likely to start school and, if they do start, they are less likely to proceed past standard seven.
Table 6.3: Highest Level of Education Attained (aged 15 and older)

<table>
<thead>
<tr>
<th>Education level (for 15 yrs and above)</th>
<th>Women</th>
<th>Men</th>
<th>Total</th>
<th>% of total population*</th>
</tr>
</thead>
<tbody>
<tr>
<td>No education</td>
<td>171</td>
<td>83</td>
<td>254</td>
<td>18.2%</td>
</tr>
<tr>
<td>Standard 1 – 4</td>
<td>101</td>
<td>121</td>
<td>222</td>
<td>15.9</td>
</tr>
<tr>
<td>Standard 5-7</td>
<td>415</td>
<td>413</td>
<td>828</td>
<td>59.5</td>
</tr>
<tr>
<td>Form 1 – 4</td>
<td>17</td>
<td>37</td>
<td>54</td>
<td>3.9</td>
</tr>
<tr>
<td>Form 5 - 6</td>
<td>6</td>
<td>25</td>
<td>31</td>
<td>2.2</td>
</tr>
<tr>
<td>&gt; Form 6</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>0.2</td>
</tr>
<tr>
<td>Total</td>
<td>710</td>
<td>682</td>
<td>1392</td>
<td>100%</td>
</tr>
</tbody>
</table>

* Percentages based on the 1392 people aged 15 and older in the village.

Fifty-four percent of children age 6 to 15 are not currently attending school. Girls and boys are equally represented in this group. Most of these children have never attended school, but 4% had some previous education which is consistent with stories about the difficulties of staying in school continuously. It is not uncommon to attend school for a period of time and then to stay home for period of time based on the needs of the family. The most commons reasons cited for a child not attending school were “feeling the child is too young” and “the school fees are too high” (see Table 6.4).

Table 6.4: Reasons School Aged Children Are Not Attending School

<table>
<thead>
<tr>
<th>Reason given for not attending school</th>
<th># of people aged 6 – 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Too young</td>
<td>181</td>
</tr>
<tr>
<td>Fees too high</td>
<td>115</td>
</tr>
<tr>
<td>Parents don’t value education</td>
<td>31</td>
</tr>
<tr>
<td>No room in school</td>
<td>21</td>
</tr>
<tr>
<td>Illness</td>
<td>7</td>
</tr>
<tr>
<td>Low ability</td>
<td>5</td>
</tr>
<tr>
<td>Truant</td>
<td>4</td>
</tr>
<tr>
<td>Distance too far</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total not in school</strong></td>
<td><strong>364 (54%)</strong></td>
</tr>
<tr>
<td><strong>Total pop. age 6-15 yrs</strong></td>
<td><strong>671</strong></td>
</tr>
</tbody>
</table>
Religion also appears to impact education in Buguruka. Muslims are less likely to be educated (28%) as compared to Catholics (15%) or Lutherans (28%). However, if a child starts school, he/she is more likely to attain at least a seventh grade education if he/she is Muslim (70%) as compared to Catholic (61%) or Lutheran (64%).

**Economic Status**

**Occupations**

Of the 563 households in Buguruka, economic information was collected on 562. The primary occupations in the village are farming (coffee, bananas, tea, and vanilla) and fishing. For people over 20 years old, 62.7% reported farming as their primary source of income, 12.3% reported fishing, and 14% were unemployed. Women comprised 60% of those reporting farming as their primary occupation. Men, on the other hand, represented 95% of the people citing their occupation as fishing. Unemployment was reported equally between sexes. Women rarely reported any personal income despite reporting their contributions to the main occupation in the village, farming. Other reported occupations included business, teaching and handicrafts. No one reported being a local healer or midwife although these people were known in the village.

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16 The members of the household which did not provide information reportedly ran away because they thought the interviewers were the tax collectors.
Annual Household and Per Capita Income

Reported annual household incomes in Buguruka ranged from 0 to 1.9 million tsh with a mean of 106,387 tsh and a median of 54,000 tsh. Sixty-six percent of households earned less than 100,000 tsh; the equivalent of $140. Seven percent of households reported no income (0 tsh). On the other end of the spectrum, there were five households (less than 1% of all households), ranging in size from 4-7 members, who reported incomes of greater than 1 million tsh; this is equivalent to more than $1,430.

The per capita income within each family may provide a more accurate reflection of the economic status of individuals and families within Buguruka because it takes into account household size. The mean per capita income in the village was 30,310 tsh ($43) with a median of 14,080 tsh ($20) and a range of 0 – 360,000 tsh. Nearly 60% of households have annual per capita incomes of less than 20,000 tsh which is approximately $28 per person per year (Table 6.5).

Table 6.5: Annual Per Capital Income

<table>
<thead>
<tr>
<th>Per Capita Income</th>
<th># of households</th>
<th>% of Households</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 tsh</td>
<td>41</td>
<td>7.3%</td>
<td>7.3%</td>
</tr>
<tr>
<td>1 – 19,000</td>
<td>295</td>
<td>52.4</td>
<td>59.7</td>
</tr>
<tr>
<td>20,000 – 49,999</td>
<td>128</td>
<td>22.7</td>
<td>82.4</td>
</tr>
<tr>
<td>50,000 – 99,999</td>
<td>58</td>
<td>10.3</td>
<td>92.7</td>
</tr>
<tr>
<td>100,000-149,999</td>
<td>20</td>
<td>3.6</td>
<td>96.3</td>
</tr>
<tr>
<td>150,000-199,999</td>
<td>7</td>
<td>1.2</td>
<td>97.5</td>
</tr>
<tr>
<td>200,000-249,999</td>
<td>5</td>
<td>.9</td>
<td>98.4</td>
</tr>
<tr>
<td>250,000-299,999</td>
<td>3</td>
<td>.5</td>
<td>98.9</td>
</tr>
<tr>
<td>300,000-349,999</td>
<td>4</td>
<td>.7</td>
<td>99.6</td>
</tr>
<tr>
<td>350,000 and above</td>
<td>1</td>
<td>.2</td>
<td>99.8</td>
</tr>
<tr>
<td>Total</td>
<td>562</td>
<td>100%</td>
<td>99.8%</td>
</tr>
</tbody>
</table>

17 Annual Per Capita Income is the total annual household income divided by number of members in household.
It is difficult to compare the economic situation of the people of Buguruka to the situation in other rural villages throughout Kagera Region and Tanzania because available data is several years old. However, in 1994, the mean annual per capita income in the Kagera region was 50,105 tsh which was equivalent to $91 and is twice as much as the mean per capita income in Buguruka today. In sum, the personal economic situation in Buguruka has worsened in the last 5 years. This sentiment was expressed by villagers repeatedly during the interviews.

**General Health Status**

Based on our assessment, people in Buguruka perceive themselves as fairly healthy with little chronic disease. A total of 1657 current health problems were reported by 1349 people. Overall, there was an average of 2.9 conditions per household; 55% of households reported less than three illnesses currently; and, 12% reported none. Forty-eight percent of the village population reported no current health problems and another 42% reported only one problem. Three percent of the population was attributed with some type of physical or mental handicap. More than three times as many people were reported with a physical handicap as a mental handicap.

*Morbidity and Mortality*

The major causes of morbidity in Buguruka reported in the assessment are listed in table 6.6. Malaria is clearly the most prevalent disease in Buguruka across all time frames. Musculoskeletal complaints, upper respiratory illnesses, chest pain or
cardiovascular related complaints, unknown illnesses and gastrointestinal related problems including worms were also among the more common complaints in the village. Complaints related to teeth pain, vision problems and headaches were not uncommon. Reports of HIV/AIDS, malnutrition and diarrhea were surprisingly low based on what national and regional data suggests. It is unclear whether or not diarrhea may have been part of “GI problems” reporting.
Table 6.6: Common Causes of Morbidity in Buguruka – Current, Last Month & Last Year

<table>
<thead>
<tr>
<th>Current Condition</th>
<th># reported</th>
<th>Illness Last Mo.</th>
<th># reported</th>
<th>Illness Last Year</th>
<th># reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Malaria</td>
<td>581 (35%)</td>
<td>1. Malaria</td>
<td>686 (48%)</td>
<td>1. Malaria</td>
<td>751 (51%)</td>
</tr>
<tr>
<td>4. Unknown</td>
<td>109</td>
<td>4. GI</td>
<td>76</td>
<td>4. URI</td>
<td>99</td>
</tr>
<tr>
<td>5. Cardiovas/CP</td>
<td>82</td>
<td>5. URI</td>
<td>75</td>
<td>5. GI</td>
<td>60</td>
</tr>
<tr>
<td>7. Teeth</td>
<td>74</td>
<td>7. Worms</td>
<td>44</td>
<td>7. Worms</td>
<td>41</td>
</tr>
</tbody>
</table>

Total 1657 1422 1477

| Illness/household | 2.94 | 2.53 | 2.62 |
| Malaria/house     | 1.03 | 1.22 | 1.30 |

* Information provided by 2571 of 2577 people in the village.

One would expect health problems in the last year to represent the largest number of cases followed by problems in the last month and then current problems. The data

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18 Percentages reflect number of cases of malaria divided by total number of health problems reported during that time frame. This figure represents the share of morbidity attributable to malaria.

19 URI = Upper respiratory infections were defined as any complaints consistent with the common cold or references to sinus pain or throat pain.

20 Unknown = This terms refers to conditions where the etiology was unknown to the respondent or was unable to be translated by the interviewer.

21 Cardiovas/CP = refers to conditions related to cardiovascular disease such as reports of high blood pressure and heart problems as well as complaints of chest pain or just “chest”

22 GI = Gastrointestinal problems were defined as complaints about “ulcers” or “stomach problems.” The location or timing of pain in women was not discussed so it is unclear if actually menstrual or reproductive tract related pain.

23 Eyes = This term encompassed complaints related to eye pain as well as vision problems including cataracts.

24 Pneumonia = This term was meant to include traditional pneumonia symptoms (cough, fever, chest pain).

25 Pregnancy = This term was used to refer to all conditions that people referred to as “pregnancy”. For example, one man said his wife was pregnant, with an enlarging abdomen, and had been this way for 2 years. Reports of miscarriages and cesarean sections were also included in this category.

26 Anemia = This term refers to sickle cell disease as well as reports of “anemia” or “too little blood.”

27 Malnutrition = This term was both provided by respondents and also applied by the interviewers based on observation of the child. This was inconsistently done by the interviewers.
reflected a higher number of current complaints which may suggest that the questions were unclear, that the respondents are not focused on chronic conditions, or that perhaps a current problem did not get mentioned again by the respondent or was not recorded again by the interviewer.

The top five causes of morbidity for Kagera Region and Bukoba Rural are listed in Table 6.7. Our findings in Buguruka are consistent in terms of the high prevalence of malaria and relative moderate prevalence of URI but differs with regard to the other illnesses. One reason may lie in the fact that these data from the Kagera Region were probably collected in hospital settings which is a very different population than the village.

Table 6.7: Common Causes of Morbidity, Kagera Region & Bukoba Rural District

<table>
<thead>
<tr>
<th></th>
<th>% of top 10 causes</th>
<th>% of top 5 causes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Kagera Region</strong></td>
<td></td>
<td>Bukoba Rural</td>
</tr>
<tr>
<td>1. Malaria</td>
<td>53.3%</td>
<td>1. Malaria</td>
</tr>
<tr>
<td>2. Other anemias</td>
<td>8.3</td>
<td>2. URI</td>
</tr>
<tr>
<td>3. Pneumonia</td>
<td>8.0</td>
<td>3. Worms</td>
</tr>
<tr>
<td>4. Perinatal Conditions</td>
<td>5.7</td>
<td>4. Diarrhea</td>
</tr>
<tr>
<td>5. Diarrhea</td>
<td>5.1</td>
<td>5. Ill-defined diagnosis</td>
</tr>
<tr>
<td>6. URI</td>
<td>5.0</td>
<td>Total</td>
</tr>
<tr>
<td>7. Worms</td>
<td>4.8</td>
<td></td>
</tr>
<tr>
<td>8. Enteric infections</td>
<td>4.8</td>
<td></td>
</tr>
<tr>
<td>9. Bacterial Diseases</td>
<td>2.6</td>
<td></td>
</tr>
<tr>
<td>10. Amoebiasis</td>
<td>2.4</td>
<td></td>
</tr>
</tbody>
</table>

Source: Kagera Region Socio-Economic Profile, 1998

28 Total = includes additional problems other than those listed in table above.
29 Statistics about the top causes of morbidity in Kagera Region, Tanzania are taken directly from the source document. No further definitions of the terminology were available. The distinction between diarrhea diseases, enteric infections, bacterial diseases and amoebiasis is unclear. In addition, it is not noted how the data was collected.
30 Statistics about Bukoba Rural are also taken directly from the source document. No further explanation of the data was provided.
General mortality data for Buguruka is shown in Table 6.8. In addition to the causes listed below, tuberculosis, pneumonia, and “bewitched” were reported as some of the more common causes of adult mortality deaths. The large number of deaths recorded as “other/unknown” are primarily due to the respondent not knowing the cause of death, an unusual cause of death, or the interviewer recording a death but not a cause of death.

Table 6.8: Mortality in Buguruka in the Last 10 years – Adult, Child and Total

<table>
<thead>
<tr>
<th>Adult Mortality in last 10 yrs</th>
<th># deaths</th>
<th>% of all deaths</th>
<th>Child (&lt;18) Mortality in last 10 yrs</th>
<th># deaths</th>
<th>% of all deaths</th>
<th>Total Mortality in last 10 yrs</th>
<th># deaths</th>
<th>% of all deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Other / unknown</td>
<td>354</td>
<td>38.6%</td>
<td>1. Other / unknown</td>
<td>223</td>
<td>49.6%</td>
<td>1. Other / unknown</td>
<td>577</td>
<td>42.2%</td>
</tr>
<tr>
<td>2. HIV</td>
<td>340</td>
<td>37.1%</td>
<td>2. Malaria</td>
<td>87</td>
<td>19.3%</td>
<td>2. HIV</td>
<td>385</td>
<td>28.9%</td>
</tr>
<tr>
<td>3. Malaria</td>
<td>72</td>
<td>7.9%</td>
<td>3. HIV</td>
<td>55</td>
<td>12.2%</td>
<td>3. Malaria</td>
<td>159</td>
<td>11.6%</td>
</tr>
<tr>
<td>4. Accident</td>
<td>53</td>
<td>5.8%</td>
<td>4. Perinatal</td>
<td>26</td>
<td>5.7%</td>
<td>4. Accident</td>
<td>65</td>
<td>4.8%</td>
</tr>
<tr>
<td>5. Old Age</td>
<td>31</td>
<td>3.4%</td>
<td>5. Yellow Fever</td>
<td>15</td>
<td>3.3%</td>
<td>5. Old Age</td>
<td>31</td>
<td>2.3%</td>
</tr>
<tr>
<td>6. URI</td>
<td>17</td>
<td>1.9%</td>
<td>6. Accident</td>
<td>12</td>
<td>2.7%</td>
<td>6. Pregnancy / Miscarriage</td>
<td>26</td>
<td>1.9%</td>
</tr>
<tr>
<td>7. Cancer</td>
<td>15</td>
<td>1.6%</td>
<td>7. Typhoid Fever</td>
<td>11</td>
<td>2.4%</td>
<td>7. Yellow Fever</td>
<td>24</td>
<td>1.8%</td>
</tr>
<tr>
<td>8. Typhoid Fever32</td>
<td>11</td>
<td>1.2%</td>
<td>8. Diarrhea</td>
<td>6</td>
<td>1.3%</td>
<td>8. Typhoid Fever</td>
<td>22</td>
<td>1.6%</td>
</tr>
<tr>
<td>9. Yellow Fever</td>
<td>9</td>
<td>1.0%</td>
<td>9. Sickle Cell Anemia</td>
<td>6</td>
<td>1.3%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Diarrhea</td>
<td>6</td>
<td>0.6%</td>
<td>10. Pneumonia</td>
<td>5</td>
<td>1.1%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total - adult 917               Total - child 450  Total 1367

Common Diseases

Malaria

Malaria is the number one cause of morbidity and mortality in Kagera Region and throughout Tanzania. In Buguruka, it was the number one cause of morbidity and the

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31 These cases reflect instances when a respondent reported the death of a baby due to abortion (elective or spontaneous) or a complication of delivery.

32 Typhoid, Yellow Fever, Sickle Cell Disease were not defined in addition to the proper names of the disease. They were only recorded is the respondent used the exact terminology. In dome cases, the
number three cause of mortality. In all time periods, malaria was the most common condition representing 35% of current illness, 48% of illness in the last month, and 51% of illness in the last year. In terms of overall mortality in the last decade, 159 deaths, or 11.6%, were attributed to malaria infection. Malaria represents 19.3% of all childhood mortality versus 7.9% of adult mortality reflecting the disproportionate adverse impact on childhood mortality.

At the time of the assessment, 23% of the village population reported suffering from malaria. The numbers increased with the length of time of the reporting period; 27% had malaria last month and 29% suffered from the disease during the course of the last year. The hardest hit age group in all time frames were children between the ages of 1 and 5 years old. In this age group, 31% of children had malaria currently and 38% had the disease over the course of the last year.

Half of all houses (51%) had at least one member with a current case of malaria and 27% of houses had two or more cases currently. The largest house in the village with 17 members reported 8 current cases of malaria. The subvillage of Kalimi, which is located in the southernmost part of Buguruka and includes a large fishing village, consistently had the highest concentration of malaria cases across all time frames (27% - 31% of its population). However, this subvillage also reported the fewest deaths attributable to malaria in the last 10 years. This may be because the population is a more transient population.

There was an inverse relationship between per capita income and currently reporting malaria. Fifty-five percent of the poorest people (i.e. per capita income less
than 20,000 tsh) compared to 23% of the total population had malaria currently. Even more significant was the data showing that 61% of people who reported no cash income had malaria at the time of the survey.

It was not clear if people in the village took precautions against malaria infection. There was no observed use of mosquito nets, insect repellent or protective clothing. Houses in the village do not have glass windows or screens.

Treatment for malaria in the village ranges from nothing, to visiting the local healer, taking aspirin or a three day course of chloroquine tablets purchased at a dispensary, to seeing a clinician at a health center or hospital clinic. In Buguruka, malaria accounted for 45% of reported local healer visits. It is unclear what treatments the local healers utilized for presumed malaria infection or if it really accounts for 45% of their practice.

Health clinicians staffing the temporary BOCED clinic in Buguruka acknowledged that chloroquine resistant malaria is an increasing problem in their area but that chloroquine remains the cheapest and most available drug. Ideally, they would follow the parasite load within the person’s red blood cells to verify response to chloroquine but this technology was not available in the village. If resistance is identified, quinine or chloroquine plus penicillin is used.

Chronic malaria infection leading to splenomegaly is one of the three main etiologies of the protuberant abdomens seen in many of the village children. The spleen becomes enlarged secondary to extravascular hemolysis because of the parasitic infection if offered by respondent.
of red blood cells. The recommended treatment is weekly chloroquine tablets, however, this treatment is rare in the village.

**HIV**

HIV is an underreported cause of morbidity and mortality in Buguruka based on the government estimates for Kagera Region and Tanzania overall. Only four current cases were reported – 2 women and 2 men. Another person reported it as an illness in the last year but not currently so it was taken to be a mistaken entry or a misunderstanding of the disease. There are many possible reasons for the low morbidity figures. The most obvious is that testing is very unusual in this region so people are unaware. People may assume HIV status based on commonly associated signs and symptoms, primarily wasting, frequent illnesses, and/or the recent suspicious death of a spouse or lover.

The four individuals reporting current HIV positive status ranged in age from 17 to 78 years old, two of whom were women. Three reported seeking medical care in 1999 and none had ever utilizing a local healer for HIV or any other reason. The pictures of these individuals do not reveal any visible cachexia or acute illness. It is very difficult to interpret anything from such a small group except to assume vast underreporting based on lack of knowledge of infection.

Interestingly, despite this low reported morbidity for HIV, people in the village attributed significant mortality to the disease. Over the last 10 years, 395 deaths were attributed to the virus. This is 29% of all deaths; 14% were children. Specific data was not collected about why HIV was believed to be the cause of death.

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33 Other causes of protuberant abdomens in children in this region according to the clinicians at the government hospital include weak abdominal musculature secondary to malnutrition and intestinal worm infection.
Village leaders warned that the morbidity and mortality figures for HIV might be problematic. They warned that the morbidity numbers could be low because people either would be unwilling to reveal their status or would not know because of the lack of testing. Others felt that the numbers could be overstated because of assumptions that any illness that caused anorexia, chronic cough or diarrhea was HIV. The concern was that people then adopted a defeatist attitude and neglected to seek treatment for non-HIV illnesses leading to unnecessary morbidity and mortality. The situation here of low morbidity but high mortality seems to suggest that it may be easier to acknowledge HIV infection after the person has died.

At the BOCED health clinic, the clinicians were very suspicious of what they termed "ARCS" (Aids Related Complex Syndrome) in a young woman from one of the fishing villages. She presented with right shoulder and chest pain but was also cachetic with widespread skin disease, fungal infection, stomatitis, dysparunia, and an irregular menstrual cycle. The clinicians said this was a typical presentation of HIV/AIDS. The patient was not informed of their suspicions. She was provided some analgesics and sent home.

The majority of transmission in Kagera Region and throughout Tanzania is thought to be via heterosexual intercourse and unsafe cultural practices. The occasion of a wedding is cause for a week long celebration in the village where sex occurs outside of marriage. Deaths are mourned for up to one month and traditions include shaving the heads of family and friends of the deceased, often with the same razor thereby facilitating the transmission of the blood borne virus.
Although there is some knowledge about condoms and the protection they provide from HIV, condoms are not used in the village. During an informal interview with an existing women's group in one of the fishing communities within Buguruka, the women reported that they felt a major factor in the spread of HIV in Buguruka was infidelity and their inability to make their husbands use condoms. These women complained that their husbands go out fishing for extended periods and live on fishing islands. Some of the islands located off shore from Buguruka are believed to have a high prevalence of HIV as well as an active sex trade businesses. Women in the village do not feel comfortable in their ability to protect themselves.

In addition to heterosexual transmission, vertical transmission during breastfeeding is also a major mode of viral transmission given the data that up to 20% of pregnant women are HIV positive (Africanews, 2000). The women in Buguruka generally breastfeed their babies during the first year of life or until getting pregnant again. Breast milk provides the best nutrition for their children and this is reflected in malnutrition statistics in sub-Saharan Africa: malnutrition begins during the year following weaning (12-24 months) because there is lack of knowledge regarding proper nutrition for infants and children. However, breastfeeding does increase the transmission of the HIV virus. The WHO and UNAIDS are currently trying to assess how to address this problem.

**Malnutrition**

In total there were 20 cases of malnutrition, 16 current cases, 2 cases in the last month and 2 cases in the last year. Of the 16 current cases, 11 children under six years of
age and the other five were ages 8, 12, 14, 17 and 42 (see Table 6.9). Males represented 69% of the reported current cases. Only two of the 11 children less than six years of age attended the MCH clinic in July of 1999 (the last session prior to the assessment); and two others reported attending in June, 1999. Two people reported seeing a local healer for malnutrition. Families with malnutrition had an average household size of 6.6 as compared to the village average of 4.6 people.

The pictures of the individuals with malnutrition were reviewed for overt signs of malnutrition such as stunting, coarse or light colored hair, skeletal deformities, protuberant abdomens, thin extremities and developmental delays. Only a few potential physical signs were evident from the photographs (see Table 6.9 and Appendix F).

**Table 6.9: Reported Cases of Current Malnutrition**

<table>
<thead>
<tr>
<th>Age</th>
<th>Gender</th>
<th>Orphan</th>
<th>Family Size</th>
<th>Last MCH clinic visit</th>
<th>Local healer seen for malnutrition</th>
<th>Picture #</th>
<th>Physical signs of malnutrition</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 mos</td>
<td>Female</td>
<td>Father died</td>
<td>8</td>
<td>06/99</td>
<td>No</td>
<td>102, E</td>
<td>No overt signs</td>
</tr>
<tr>
<td>1 year</td>
<td>Male</td>
<td>No</td>
<td>4</td>
<td>07/99</td>
<td>No</td>
<td>202, C</td>
<td>No overt signs</td>
</tr>
<tr>
<td>1 year</td>
<td>Male</td>
<td>No</td>
<td>2</td>
<td>06/99</td>
<td>Yes</td>
<td>_b</td>
<td>_b</td>
</tr>
<tr>
<td>1 year</td>
<td>Male</td>
<td>No</td>
<td>6</td>
<td>_c</td>
<td>No</td>
<td>571, D</td>
<td>Mirasmus-like appearance, can not stand</td>
</tr>
<tr>
<td>2 year</td>
<td>Female</td>
<td>No</td>
<td>6</td>
<td>02/98</td>
<td>No</td>
<td>571, E</td>
<td>No overt signs</td>
</tr>
<tr>
<td>2 year</td>
<td>Male</td>
<td>No</td>
<td>4</td>
<td>07/99</td>
<td>No</td>
<td>_b</td>
<td>_b</td>
</tr>
<tr>
<td>2 year</td>
<td>Male</td>
<td>No</td>
<td>9</td>
<td>02/99</td>
<td>No</td>
<td>616, G</td>
<td>Stunted, bony deformity</td>
</tr>
<tr>
<td>3 year</td>
<td>Male</td>
<td>No</td>
<td>9</td>
<td>02/97</td>
<td>No</td>
<td>616, F</td>
<td>Stunted, bony deformity</td>
</tr>
<tr>
<td>3 year</td>
<td>Male</td>
<td>Father died</td>
<td>5</td>
<td>??/97</td>
<td>No</td>
<td>415, E</td>
<td>Stunted, hair growth</td>
</tr>
<tr>
<td>4 year</td>
<td>Female</td>
<td>Father died</td>
<td>12</td>
<td>02/98</td>
<td>No</td>
<td>76, J</td>
<td>Coarse hair</td>
</tr>
<tr>
<td>5 year</td>
<td>Male</td>
<td>Father died</td>
<td>5</td>
<td>??/95</td>
<td>No</td>
<td>415, D</td>
<td>Stunted, hair color changes</td>
</tr>
<tr>
<td>8 year</td>
<td>Female</td>
<td>No</td>
<td>10</td>
<td>N/A</td>
<td>No</td>
<td>_b</td>
<td>_b</td>
</tr>
<tr>
<td>12 yrs</td>
<td>Male</td>
<td>Father died</td>
<td>6</td>
<td>N/A</td>
<td>No</td>
<td>_b</td>
<td>_b</td>
</tr>
<tr>
<td>14 yrs</td>
<td>Male</td>
<td>Father died</td>
<td>6</td>
<td>N/A</td>
<td>Yes</td>
<td>214, C</td>
<td>Stunted, Hair color changes</td>
</tr>
<tr>
<td>17 yrs</td>
<td>Male</td>
<td>Mother died</td>
<td>7</td>
<td>N/A</td>
<td>No</td>
<td>230, C</td>
<td>Stunted</td>
</tr>
<tr>
<td>42 yrs</td>
<td>Female</td>
<td>N/A</td>
<td>6</td>
<td>N/A</td>
<td>No</td>
<td>147, B</td>
<td>Large woman</td>
</tr>
</tbody>
</table>

a. Month of last MCH clinic attendance was not reported.
b. Individual was not available for photograph during census.
c. Individual reported never attending the MCH clinic.
Subjectively, malnutrition seemed to be a much greater problem than this data suggests. There were many other children in the village that were not reported as malnourished who had many typical findings. Based on a meeting with a women’s group, discussions with parents during the survey process, and discussions with clinicians at the BOCED clinic, there was an overwhelming lack of knowledge surrounding proper nutrition for infants and children in Buguruka as well as the signs and symptoms of malnutrition. Frequency of meals was often inadequate, tea was served in place of a food or liquid with nutrients, fish porridge, a readily available and cheap nutritious food was often overlooked as baby food. In fact, despite being a fishing community, some families did not include fish in their diet. The MCH clinics were reportedly inadequate in terms of providing appropriate information and guidance regarding nutrition.

Published data about malnutrition in Tanzania also reports a more dire picture than reported in Buguruka. More than 30% of children under five in Tanzania are underweight (low weight for age). This may reflect stunting, wasting or both. It is most common during the second year of life corresponding to the transition from breastfeeding. In Kagera region, the number is over 36% (DHS, 1996). Factors that are correlated with higher levels of child malnutrition include low level of maternal education, living rurally, and having a short birth interval.

Significant to Buguruka, the DHS survey in 1996 found that 46% of rural children versus 33% of urban children were stunted. Stunting (low height for age) is a condition that reflects long-term malnutrition or chronic illness. Overall, 43% of Tanzanian
children are classified as stunted and 18% are severely stunted. Stunting increases from 11% among children less than six months old to greater than 50% among children 12 months to 4 years old (DHS, 1996). Males are slightly more likely to be stunted as well as children in families with short birth intervals.

Wasting (low weight for height), on the other hand, is more a reflection of an acute illness or acute change in nutritional status. This is also most prevalent at the age of 12 –24 months when babies are being weaned. In Tanzania, 7% of children are classified as wasted and another 1% are severely wasted (DHS, 1996).

Clearly our data did not reflect the situation as subjective data and other objective information from the region reports. Reasons for this underreporting likely include ignorance and embarrassment.

**Other Common Causes of Morbidity and Mortality**

Gastrointestinal problems including complaints of ulcers or vague abdominal pain, chest pain and blood pressure, vision complaints, and dental problems were other fairly common complaints. Oftentimes, people would provide an old, torn slip of paper that they had received at a visit to a clinic or hospital that had the symptom or diagnosis written on it. It was unclear how much knowledge people had about their problems or their significance.

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34 Children who are more than two standard deviations below the median of the reference population are considered stunted, or short for their age. If the child is below three standard deviations from the median of the reference population, the child is considered to be severely stunted.

35 Similarly, children who are more than two standard deviations below the median of the reference population are considered wasted. If the child is below three standard deviations from the median of the reference population, the child is considered to be severely wasted.
**Immunization Status**

The standard immunization schedule in Tanzania includes BCG, polio, DPT and measles by age one. In Buguruka, 84.5% of people reported having completed these immunizations which is roughly consistent with figures available for rates within Bukoba Rural district and slightly less than rates for the Kagera Region as a whole. Another 4.4% were still receiving immunizations; the majority of these were children under 1 year of age. Of the 50 people (less than 2% of the village population) who had not been immunized, 21 were under 18 years of age.

Throughout sub-Saharan Africa, reports of decreasing rates of immunization correlate with reports of increasing incidence of preventable diseases, particularly measles (WHO, 1999). While in the village, we sent one 25-year-old woman with apparent measles to the government hospital for care. The increasing incidence of some of these preventable infectious diseases could also be exacerbated by HIV’s effect on immunity and subsequent relative ineffectiveness of childhood vaccinations.

No data was collected about the status of immunization of women of childbearing age. At least two tetanus inoculations are necessary in order to protect the fetus from tetanus infection. In Buguruka, there were no reports of infant deaths from tetanus. Tanzania as a whole reports maternal vaccination rates for tetanus in the range of 11-17% of all reproductive age women.

**Maternal Child Health**

I first saw the 17-month old child while observing the interview of her family for the assessment. The child was jaundiced, edematous and appeared to be uncomfortable. She was slightly lethargic and was moaning, unable to walk, talk or feed herself, apparently never having reached any of these developmental
milestones (see picture in appendix J). The MCH card reflected that the child had been seen fairly consistently at the monthly clinics with the last visit dated one month prior to our interview.

The growth chart gave a graphic display of the baby's increasingly severe low weight for age. The baby weighed 7.5 kilograms at 5 months of age but by the age of 16 months, the weight had only increased to 8.5 kilograms and by 17 months, the weight was 8.4 kilograms. The baby reportedly had been weaned from her mother's milk at 12 months because she was pregnant again. The family did not know what was wrong with her and had not taken her to anything but the MCH clinic because of lack of money. They reported that the MCH clinicians never told them anything was wrong with the baby, never talked to them about proper nutrition, nor advised them to take her for further evaluation. We arranged to have the baby taken to the hospital the next morning where she died within 48 hours. A definitive diagnosis was never made, but the impression was that the baby died from severe kwashiokor.

On a monthly basis, a Maternal Child Health Clinic is held in Buguruka for pregnant women and children under five. Each child is given a MCH card that records immunizations and the baby's weight for age as a graphical display (see MCH card in appendix D). Attendance at this clinic can be monitored via dates of service marked on the child's card. Of 449 children five years and younger in the village, 417 had their MCH card. Utilization of the MCH clinic was measured by recording the date of the last visit to the clinic. Of the 449 children for which we have data, more than half (298) had visited the clinic in 1999 and 38.6% of these had visited in the current month. This represents 21% of the children five and under in the village. Another 105 children attended the clinic within the last 3 months. This indicates that 42% of all children age five and under had visited the MCH clinic within a three-month period. Common reasons for not attending the clinic included being too busy with normal domestic chores or being pregnant and feeling too tired to walk to the clinic. Women are responsible for getting the children to the clinics so rarely would a husband take over the responsibility in cases of illness, pregnancy or time conflicts. In the days spent observing at the

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36 There are 545 children aged five years and younger in Buguruka but 96 of these children did not have data recorded relative to their MCH card or last visits.

37 This number may under or over report visits however, since we are missing data on 96 children.
BOCED health clinic, it was very unusual to see a man bring his children without his wife.

There were 41 pregnancy-related conditions reported including pregnancy, miscarriages and cesarean sections in the course of the last year (24 current cases, 8 cases last month, and 9 cases last year). There were 536 reproductive age women\textsuperscript{38} (aged 15 to 44) in Buguruka. Eight percent of all reproductive age women were pregnant during the previous 12 months. Unfortunately, data that might provide a better understanding of fertility rates, maternal and infant mortality, or prenatal care utilization and birth attendance was not collected.

Labor and delivery is handled either by village midwives, clinicians at the Ntoma dispensary (2-6 mile walk), or at the government hospital in Bukoba. The BOCED health clinic clinicians reported that abortions are handled in the village by local healers who reportedly provide chloroquine tablets to kill the fetus, or insert objects such as metal or cassava branches through the cervix into the uterus. These methods put women at great risk of serious complications including death.

There are at least three midwives in Buguruka who provide labor and delivery services to women in the village. The following information is based on an interview with one of these midwives. This particular midwife provides services to women in the village regardless of ability to pay. She charges 1,500 tsh per delivery but will accept 500 tsh plus soap or another item of barter if the woman is very poor. She tends to see the women who cannot afford to go to a clinic or hospital for delivery.

\textsuperscript{38} Reproductive ages of 15 through 44 were used in analysis to be consistent with those parameters used in the Kagera Region Socio-Economic profile.
The midwife received her training from European midwives in the village where she used to live. She reports performing approximately 15 to 20 deliveries a year but actually had done six deliveries in the previous month. She evaluates women in advance via physical exam to assess their ability to have a vaginal delivery. Anyone she feels is high risk, she advises to go to the Ntoma dispensary (located in the next village) for delivery.

Deliveries take place in her grass house if they are not urgent otherwise she will go to the woman's house. Her equipment includes boiled water, pieces of cloth and a braided mat. She cannot afford gloves although she recognizes the risk of HIV exposure.

**Medical Services Utilization**

**“Western” Systems**

When asked about current treatments, 52% of people in the village reported none. Of those who did report current treatment, most were using home and/or preventive treatments not otherwise specified. The next most common treatment source was dispensary, followed by local healers, the hospital and health center (see Table 6.10). Of the 1230 people reporting current treatment, 829 had only one source. Another 401 people reported utilizing two to four different sources.

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39 Preventative and Home treatments were meant to be a distinct category from treatment from a local healer. However, upon analysis, it is clear that the local healer often is utilized for preventive therapies. Subsequently, it is unclear how respondents and/or interviewers recorded preventive treatments in this current treatment section of the survey.
Table 6.10. Current Health Care Utilization by Source

<table>
<thead>
<tr>
<th>Source of Treatment</th>
<th># of reports</th>
<th>% of total population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. None</td>
<td>1347</td>
<td>52%</td>
</tr>
<tr>
<td>2. Self/Home Treatment</td>
<td>658</td>
<td>26%</td>
</tr>
<tr>
<td>3. Preventive</td>
<td>301</td>
<td>17%</td>
</tr>
<tr>
<td>4. Dispensary</td>
<td>288</td>
<td>11%</td>
</tr>
<tr>
<td>5. Local Healer</td>
<td>190</td>
<td>7%</td>
</tr>
<tr>
<td>6. Hospital</td>
<td>162</td>
<td>6%</td>
</tr>
<tr>
<td>7. Health Center</td>
<td>122</td>
<td>5%</td>
</tr>
<tr>
<td>Total</td>
<td>3068</td>
<td>100%</td>
</tr>
</tbody>
</table>

Traditional systems

Table 6.10 indicates that 190 people were seeing a local healer for a current health condition. Overall, 623 people from 182 different households reported seeing a local healer in the past. This represents 24% of the village population; 22% had seen a local healer in 1999. Reported reasons for a person’s last visit to the local healer are listed in Table 6.11. Malaria was clearly the most common reason. There seemed to be a trend of decreasing usage with increasing income. For example, 58.5% of households with no reported income had used a local healer compared to only 25% of people with per capita incomes between 100,000 and 149,000 tsh.

Table 6.11: Most Commonly Reported Reasons for last Local Healer Visit

<table>
<thead>
<tr>
<th>Reasons</th>
<th># of people</th>
<th>% of total reasons</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Malaria</td>
<td>354</td>
<td>45.5%</td>
</tr>
<tr>
<td>2. Pneumonia</td>
<td>103</td>
<td>13.2%</td>
</tr>
<tr>
<td>3. Other/Unknown</td>
<td>64</td>
<td>8.2%</td>
</tr>
<tr>
<td>4. Preventative</td>
<td>45</td>
<td>5.8%</td>
</tr>
<tr>
<td>5. Musculoskeletal</td>
<td>42</td>
<td>5.4%</td>
</tr>
<tr>
<td>6. URI</td>
<td>34</td>
<td>4.4%</td>
</tr>
<tr>
<td>7. GI related problems</td>
<td>23</td>
<td>3.0%</td>
</tr>
<tr>
<td>8. Headache</td>
<td>15</td>
<td>1.9%</td>
</tr>
<tr>
<td>9. Typhoid Fever</td>
<td>14</td>
<td>1.8%</td>
</tr>
<tr>
<td>10. Pregnancy/Miscarriage</td>
<td>12</td>
<td>1.5%</td>
</tr>
<tr>
<td>11. Other*</td>
<td>72</td>
<td>9.3%</td>
</tr>
<tr>
<td>Total</td>
<td>778</td>
<td>100%</td>
</tr>
</tbody>
</table>

---

*No data was collected about how many local healers there are in Buguruka or how they are trained.
* "Other" represents 13 other reported reasons for visiting the local healer including diarrhea, worms, yellow fever, malnutrition, HIV, anemia, mental health, bewitchment, vision problems, hearing problems, dental problems, cardiovascular/chest pain related problems, and skin complaints.
Effect of Age, Gender and Income on Health Status

Age & Illness

The relationship between age, gender, income and illness was examined via chi-square analyses. Current illness was generally associated with age (see Table 6.12 and Figure 6.2). As mentioned, 52% of the total village population reported at least one illness. However, there was a general trend of lower morbidity for people under the age of 20. Only 44% of people under 21 years of age reported one or more illnesses whereas 64% of people 21 and over reported one or more illnesses. Other explanations for this behavior include 1) underreporting of illness for non-respondents (i.e. children), and/or reporter bias; and 2) unrecognized morbidity such as malnutrition, chronic malaria, worms or HIV infection in children because of guilt, embarrassment or ignorance. There is a bump in the morbidity in children ages one to five that may correspond with the higher prevalence of malaria reported in this age group.

Table 6.12 – Effect of Age on Illness

<table>
<thead>
<tr>
<th>Age Categories</th>
<th>No current illnesses</th>
<th>One or more current illnesses</th>
<th>Total people</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – 5 years</td>
<td>299 (55%)</td>
<td>250 (45%)</td>
<td>549 (21%)</td>
</tr>
<tr>
<td>6 – 20 years</td>
<td>524 (57%)</td>
<td>395 (43%)</td>
<td>919 (36%)</td>
</tr>
<tr>
<td>21-40 years</td>
<td>302 (42%)</td>
<td>415 (58%)</td>
<td>717 (28%)</td>
</tr>
<tr>
<td>&gt; 40 years</td>
<td>97 (25%)</td>
<td>289 (75%)</td>
<td>386 (15%)</td>
</tr>
<tr>
<td>Total</td>
<td>1222 (48%)</td>
<td>1349 (52%)</td>
<td>2571 (100%)</td>
</tr>
</tbody>
</table>

Chi-square value = 129.836, p<0.0001, r =.277.
Gender & Illness

With regard to gender, women were slightly more likely to report a health condition than men. Fifty-three percent of women versus 47% of men reported one or more conditions. There was no difference between the genders relative to reporting two or more conditions. Seventy-five percent of the GI complaints, 56% of the vision problems, and 55% of the teeth problems were attributed to females. Males, on the other hand, accounted for 69% of the reports of malnutrition. Reports of malaria and musculoskeletal complaints were the same (50% and 51% males respectively).
**Income & Illness**

As mentioned above in relation to malaria, the data reflects that people with lower income were more likely to report an illness (see Table 6.13). For example, 60% of households have incomes under 20,000 tsh (approximately $28) which was arbitrarily designated as the marker of very low income in the village. One can see the negative relationship between increasing illness in a household and income levels by examining the trends in the table below. In other words, with increasing income, people were more likely to report better health.

**Table 6.13: Effect of Income on Illness**

<table>
<thead>
<tr>
<th># of Current Illnesses by household</th>
<th>Per Capita Income &lt; 20,000 tsh</th>
<th>Per Capita Income &gt; or = 20,000 tsh</th>
<th>Total households</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>40%</td>
<td>60%</td>
<td>70</td>
</tr>
<tr>
<td>1 illness</td>
<td>53%</td>
<td>47%</td>
<td>118</td>
</tr>
<tr>
<td>2 illnesses</td>
<td>58%</td>
<td>42%</td>
<td>120</td>
</tr>
<tr>
<td>3 illnesses</td>
<td>68%</td>
<td>32%</td>
<td>74</td>
</tr>
<tr>
<td>4-5 illnesses</td>
<td>68%</td>
<td>32%</td>
<td>98</td>
</tr>
<tr>
<td>&gt; 6 illnesses</td>
<td>84%</td>
<td>16%</td>
<td>82</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>62%</strong></td>
<td><strong>38%</strong></td>
<td><strong>562</strong></td>
</tr>
</tbody>
</table>

Chi-square value = 39.061, p < 0.0001, r = -0.222.

These results are consistent with aforementioned data suggesting that the best predictor of a child’s health is his or her level of poverty. It also suggests that in Buguruka, one could expect the correlation relating improved socioeconomic status with improved health to be true (World Bank, 1999).
Orphanhood in Buguruka

Buguruka suffers from a high proportion of orhanced children. Deaths from AIDS as well as the 1996 Lake Victoria ferry accident are thought to be the major causes of death for the children’s parents. A total of 363 of the 1412 children under the age of 20 are orphans; 89 have lost a mother, 179 have lost a father and 90 have lost both parents (see table 6.14). This means that 26% of the children of Buguruka have lost at least one parent and over 6% have lost both parents.

Orphanhood & Age

The likelihood of being orphaned increases with age; only 5% of children under one year of age are orphaned as compared to 26% of those age six to ten and 47% of those age 11 to 19 years. Most orphans (47%) are between the ages of 11-19 years of age.

Table 6.14: Orphanhood by Age in Buguruka

<table>
<thead>
<tr>
<th>Type of Orphan</th>
<th>Ages: &lt; 1 yr</th>
<th>1 to 5</th>
<th>6 to 10</th>
<th>11 to 19</th>
<th>Total Orphans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Father died</td>
<td>4</td>
<td>26</td>
<td>63</td>
<td>86</td>
<td>179 (49%)</td>
</tr>
<tr>
<td>Mother died</td>
<td>1</td>
<td>6</td>
<td>18</td>
<td>64</td>
<td>89 (25%)</td>
</tr>
<tr>
<td>Both died</td>
<td>0</td>
<td>3</td>
<td>23</td>
<td>69</td>
<td>95 (26%)</td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
<td>35</td>
<td>104</td>
<td>219</td>
<td>363</td>
</tr>
<tr>
<td>% of age group population</td>
<td>5%</td>
<td>8%</td>
<td>26%</td>
<td>47%</td>
<td>26%</td>
</tr>
</tbody>
</table>

In Tanzania, an orphan is any child who has lost one or both parents. Orphans are often taken in by extended families. However, if it is the father who has died, often the father’s family will take in the children but will refuse to provide any support for the widowed woman.
Orphans & Household Structure

Thirty-two percent of the households in Buguruka support at least one orphaned child. Of these houses, 49% support one orphan, 21% support two, and 30% support more than three orphans. The majority of orphans (68%) live with extended relatives but children who have lost their mother are slightly more likely to stay in a nuclear family with their father rather than move into an extended family arrangement (see table 6.15).

Table 6.15: Orphans and Family Structure

<table>
<thead>
<tr>
<th>Family Type</th>
<th>Father died</th>
<th>Mother died</th>
<th>Both died</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuclear</td>
<td>35%</td>
<td>44%</td>
<td>13%</td>
<td>32%</td>
</tr>
<tr>
<td>Extended</td>
<td>65%</td>
<td>56%</td>
<td>87%</td>
<td>68%</td>
</tr>
<tr>
<td>Total</td>
<td>178</td>
<td>89</td>
<td>94</td>
<td>361</td>
</tr>
</tbody>
</table>

Of the 11 heads of household in Buguruka who were less than 20 years of age, eight were orphans between the ages of 14 and 19. Four of these orphans had lost both parents and four had lost their father. Two of them lived alone but the rest lived in families ranging in size from two to seven people.

One nuclear family was comprised of a 14-year-old girl and her 12-year-old brother who live alone in Kigusha B. Their father died and their mother left two years ago without explanation. They are both in the third grade and reported earning 1000 tsh from tea last year. A non-related person pays their school fees.

Another orphan family is comprised of two brothers, aged 18 and 14, who reported losing both parents and now live alone as a nuclear family in Kigusha B. No income was reported although the older listed himself as a farmer. The older brother has

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43 The “nuclear family” in cases when both parents had died was a household comprised of the remaining children. In some cases, these children also lived with a non-related individual. Some people under 20 years old had lost both parents and were now married and living with their “new” nuclear family.
completed grade seven and the younger boy is currently in grade 3. It was not clear who paid the school fees.

One extended family listed a 15-year-old boy as the head of the house. Both his parents died and now he is responsible for his 26 year old sister and her four children aged 1, 4, 5 and 10 years old, one of whom is frequently hospitalized with complications from sickle cell disease. They reported a household income of 3000 tsh from the sale of tea. The older sister completed grade seven and the boy has completed grade four. It is unclear whether or not he is currently in school. None of the other children attend school.

Another nuclear family is comprised of a 16-year-old girl and her two younger brothers who are 6 and 9 years old. Their mother reportedly died of HIV in 1998 and their father, suspected of having HIV, has moved to Bukoba to find work. He comes to the village every two to three months to visit. The 16-year-old girl is now leading the family, caring for the cassava crops, cooking, cleaning and raising her two brothers.

**Economic Situation of Families Supporting Orphans**

Families supporting orphans tend to be poorer. The mean per capita income of these families is 18,000 tsh - half of that which households not supporting orphans report (see table 6.16). Orphans whose fathers have died fare the worst from an income standpoint. These households have a mean per capita income of only 13,200 tsh (see Table 6.20). The relative impact on income increases significantly with the number of orphans in the household – dropping from 36,000 tsh in homes with no orphans to 9,800 tsh in homes supporting three or more orphans. When one looks at income brackets in
the village, 75% of households with orphans have per capita incomes of less than 20,000 tsh as compared to under 60% of the village overall.

**Table 6.16: Impact of Orphans on Income**

<table>
<thead>
<tr>
<th>Household Description</th>
<th>No Orphans</th>
<th>1 to 7 Orphans</th>
<th>1 orphan</th>
<th>2 orphans</th>
<th>3 or more orphans</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of households</td>
<td>68%</td>
<td>32%</td>
<td>16%</td>
<td>7%</td>
<td>9%</td>
</tr>
<tr>
<td>Mean Per Capita Income (tsh) *</td>
<td>36,000</td>
<td>18,000</td>
<td>25,000</td>
<td>13,000</td>
<td>9,800</td>
</tr>
</tbody>
</table>

* Rounded off to nearest 100

**Orphanhood & Education**

The effect of orphanhood on education is interesting. When one looks at children ages six through 19, there does not seem to be a negative effect on education and, perhaps, there is even a positive impact (see table 6.17). Orphans are more likely to have some education (64% versus 46%). Those who lost a mother are more likely to start school than both other orphans and non-orphans. However, when one looks at the population of adolescents aged 15 to 19, the trend reverses slightly and being an orphan seems to hinder opportunities to obtain an education in Buguruka (see table 6.18).

**Table 6.17: Education Levels of Orphans and Non-Orphans - Ages 6 to 19 years**

<table>
<thead>
<tr>
<th>Education Level</th>
<th>Non-orphans</th>
<th>Orphans Total</th>
<th>Father died</th>
<th>Mother died</th>
<th>Both died</th>
<th>Overall – Ages 6-19 yrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>53%</td>
<td>36%</td>
<td>45%</td>
<td>23%</td>
<td>33%</td>
<td>46%</td>
</tr>
<tr>
<td>Standard 1-7</td>
<td>45%</td>
<td>62%</td>
<td>54%</td>
<td>74%</td>
<td>64%</td>
<td>52%</td>
</tr>
<tr>
<td>&gt; Standard 7</td>
<td>1%</td>
<td>2%</td>
<td>&lt;1%</td>
<td>2%</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td>Total</td>
<td>520</td>
<td>319</td>
<td>147</td>
<td>82</td>
<td>90</td>
<td>839</td>
</tr>
</tbody>
</table>

The cohort of people age 15-19 was reviewed as a way to evaluate how orphans fare at the end or near the end of the education process. Among this group of 234 people, 53% had lost at least one parent and 18% had lost both parents. By comparing the different types of adolescents (non-orphans, orphans who lost a father, orphans who
lost a mother, orphans who lost both, orphans overall), one can see that there is a small negative effect on an orphan’s chances to begin school in this age group. Whereas 12% of non-orphans have no education, 16% of orphans have none. Within the subtypes of orphans, losing both parents increases one’s chances of not getting an education.

Information on important factors such as the age at which the adolescents lost their parents and the nature of their current support system would be helpful to augment this data. This difference between the overall orphan data and the data of just the late adolescent orphans raises the question of whether something changes over time to impact an orphans educational opportunities.

**Table 6.18: Education Levels of Non-Orphans and Orphans – Ages 15-19 years**

<table>
<thead>
<tr>
<th>Education Level</th>
<th>Non-orphans</th>
<th>Orphans Total</th>
<th>Father died</th>
<th>Mother died</th>
<th>Both died</th>
<th>Overall – Ages 15-19 yrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>12%</td>
<td>16%</td>
<td>15%</td>
<td>10%</td>
<td>23%</td>
<td>14%</td>
</tr>
<tr>
<td>Standard 1-7</td>
<td>82%</td>
<td>80%</td>
<td>82%</td>
<td>86%</td>
<td>72%</td>
<td>81%</td>
</tr>
<tr>
<td>&gt; Standard 7</td>
<td>6%</td>
<td>4%</td>
<td>3%</td>
<td>5%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Total</td>
<td>110 (47%)</td>
<td>124 (53%)</td>
<td>39 (17%)</td>
<td>42 (18%)</td>
<td>43 (18%)</td>
<td>234 (100%)</td>
</tr>
</tbody>
</table>

**Orphanhood & Health Status**

Finally, the effect of being an orphan on health status was measured. Current illness reports were looked at relative to orphan status. There was no significant difference between orphans and non-orphans (see table 6.19). However, the subtypes of orphans have unexpected differences. Orphans who lost their father or who lost both parents were more likely to report a current illness than non-orphans. In contrast, those who lost their mother were less likely to report a current illness. One possible reason is underreporting of illness on behalf of orphans who lost their mother.
Table 6.19: Effect of Orphanhood on Illness

<table>
<thead>
<tr>
<th>Current Illnesses</th>
<th>Non-orphan</th>
<th>OrphanFather died</th>
<th>Mother died</th>
<th>Both died</th>
<th>Overall – Ages 0-19 yrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>54%</td>
<td>56%</td>
<td>45%</td>
<td>74%</td>
<td>49% 51% 45%</td>
</tr>
<tr>
<td>1 or more</td>
<td>46%</td>
<td>44%</td>
<td>55%</td>
<td>26%</td>
<td>51% 45%</td>
</tr>
<tr>
<td>Total #</td>
<td>110</td>
<td>125</td>
<td>40</td>
<td>42</td>
<td>43 235</td>
</tr>
</tbody>
</table>

The Significance of Which Parent is Lost

The above discussion of orphans relative to family structure, economics and education noted some of the differences in a child’s well-being between losing a mother versus losing a father versus losing both parents. Table 6.20 highlights these areas specifically for the purpose of comparing the different types of orphaned children.

Children whose mothers die are more likely to start school, live in a nuclear family environment, be healthier, and live in households with a per capita income of about 21,000 tsh. This is presumed to be due to the fact that the head of the household, the father, is still in place and the father’s extended family participates more actively in the care of the orphaned children.

In contrast, the loss of a father (which 49% of orphans experience) seems to be associated with less education (although better than non-orphans), with higher incidence of illness, and with the lowest household income (13,000 tsh). These children may experience more hardship because their mother may not be accepted into the father’s extended family. If they remain as a single parent family, additional support systems may be lacking.

Children that have lost both parents standout among orphans for living in households with relatively higher income (27,000 tsh). In regards to education, these
children are fare better than non-orphans in the age group 6-19 years but fare the worst of all children by late adolescence. They have less illness than those who lost their father, but more than those whose mother died.

Table 6.20: The Overall Impact of Losing a Parent(s) and the Differences Depending Upon Who is Lost

<table>
<thead>
<tr>
<th>Indicators*</th>
<th>Father died</th>
<th>Mother died</th>
<th>Both died</th>
<th>Non-Orphan</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td># and % of &lt; 20 year olds</td>
<td>179 (13%)</td>
<td>89 (6%)</td>
<td>95 (7%)</td>
<td>1049 (74%)</td>
<td>1412 (100%)</td>
</tr>
<tr>
<td>% educated</td>
<td>55%</td>
<td>77%</td>
<td>67%</td>
<td>47%</td>
<td>54%</td>
</tr>
<tr>
<td>% healthy</td>
<td>45%</td>
<td>74%</td>
<td>49%</td>
<td>54%</td>
<td>55%</td>
</tr>
<tr>
<td>Financial Support</td>
<td>13,000**</td>
<td>21,000**</td>
<td>27,000**</td>
<td>36,000</td>
<td>30,000</td>
</tr>
</tbody>
</table>

* “% educated” = % who have some education; “% healthy” = % who reported no current illnesses; “Financial Support” = Household Mean Per Capita Income (tsh).

** The sample group for these categories is the 151 households who are supporting orphans of one subtype. Fifty-five households support orphans with different losses (i.e. one that lost a mother and one that lost both parents). The sample for the rest of the data in the table is inclusive of all 181 households who support orphans.
Chapter 7: Discussion and Conclusions

Introduction

This project was part of the initial phase of community oriented community health and economic development. Our goal was to define and characterize the target community of Buguruka in terms of socioeconomic factors and health status. Many things were learned in the process of developing and implementing this community assessment. The most important success of this initial phase was the collaborative relationship established between BOCED and the Buguruka community. The American BOCED volunteers maintained an active role, particularly in the development of the tool, but were assisted to a great extent during the implementation process. A nucleus of people from Buguruka did the majority of the work. There was an amazing amount of positive energy contributed by the 12 individuals who dedicated two weeks to this project.

The data that was collected provides a general description of the current situation in Buguruka. There are gaps. The data is subjective. Before major program development begins, it will be necessary to do more specific, secondary studies focusing on health specific content areas of interest. However, it is possible to make an initial assessment and formulate some general recommendations.

The following section is a critical evaluation of the process used in Buguruka to collect the baseline data. The discussion has been divided into comments regarding the process of developing the tool and collecting the data, the content and quality of the data
collected, and the implications this entire project has for BOCED and other development organizations attempting similar projects.

**Critique of Process**

As mentioned, the assessment tool was developed after spending several weeks in Tanzania. As the team learned more about the current situation and were able to talk to the leaders of Buguruka about their community, the topics and methods for data collection became more evident. Time, or lack thereof, was a factor in almost all aspects of the process of developing the survey tool and collecting the data. It also impacted our ability to reflect and redesign our tool before implementation. This obviously contributed to many of the problems we subsequently faced during data collection and analysis.

**Background Information Collection**

The lack of preparatory time drastically limited the amount of background information that could be collected. The team left the U.S. with minimal general information about Tanzania, little to none about sub-Saharan Africa in general, and three reference manuals about doing rapid community needs assessments.

This less than ideal preparation was then mixed with an eclectic introduction to Tanzania with a variety of high level but disparate meetings with religious leaders and international investment experts. These meetings provided helpful information about the general public health situation, current NGOs in Tanzania, and the overall structure of the health system but much of the information was anecdotal. Of all the meetings, those with the regional medical officers in Bukoba were the most helpful. The specific nature of the
information helped shape the development of the survey significantly, particularly in
regards to the health status measures.

It would have been advantageous to have met with more public health people in
Tanzania who had had experience working in rural villages and who had developed
models that may have provided us with additional insight. Had there been more time, the
numerous NGOs in the Kagera could have been important resources as well.

BOCED had no prior experience with public health assessments, nor had there
been any thought to BOCED’s goals from a public health standpoint. As one of four
BOCED volunteers and the only public health person involved, it was challenging to stay
focused on public health goals without being distracted by the simultaneous efforts
relative to women empowerment, economic development and infrastructure
improvements. Not having a colleague to discuss ideas with contributed to premature
closure in some important areas of the assessment, specifically maternal and child health
care.

The Team

Father Justinian, the leader of BOCED, is a personality who is remarkable and
dynamic, revered within his Tanzanian community. It is impossible to describe the
immense benefits realized solely because of his strong connection to Buguruka as well as
his relationships in the city of Bukoba and throughout Tanzania. BOCED arrived into the
community on his coattails and was immediately viewed in a positive light. In addition,
welcome ceremonies which featured Father Justinian laid out BOCED’s objectives to the
community punctuated the first week in the village.
During this time, the assessment project was introduced to the community in general terms. People were made aware that the BOCED team was there to work with the community towards the goal of improving the living situation in the village. The team had immediate credibility with the vast majority of people. Father Justinian also had strong connections to the village chairman and vice chairman in Buguruka who both became heavily involved with BOCED and continue to have roles in the organization. At most ceremonies, one or the other of these men encouraged the community to welcome BOCED, cooperate and contribute to the development efforts. As respected, long time political figures in the area, the village chairman and vice chairman contributed to the easy transition into the village. Perhaps their biggest contribution to the project was their recruitment of the volunteers for the interview team.

The volunteers who made up the interview team were dependable, consistent and an overall tremendous asset to the project. They had good people skills, were educated, and respected in the community. This project demanded much of them; two of them left their families for four or five days at a time and slept at Father Justinian’s house. They were promised neither payment nor a future position with BOCED. However, it was clear that several had volunteered because they hoped that participating would lead to some stipend or future opportunity. Even if their motivation was not purely altruistic, their performance and dedication to the project was very strong.

Table 7.1 depicts the contributions of each of the 12 interviewers involved with the project. The disparity in numbers reflects both total days participation in the assessment process plus variations in individuals’ interviewing speed. Kai and Bina
were clearly the most efficient interviewers, and Muta, the most conscientious, which is reflected in their respective positions in the table. However, another reason to examine these numbers is to provide some reassurance that one interviewer’s biases were hopefully offset by another given the large number of interviews completed by most people.

Table 7.1: Number of Interviews per Interviewer

<table>
<thead>
<tr>
<th>Name</th>
<th># interviews</th>
<th>% of total</th>
<th>Name*</th>
<th># interviews</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kai</td>
<td>386</td>
<td>15%</td>
<td>Muta</td>
<td>191</td>
<td>7%</td>
</tr>
<tr>
<td>Bina</td>
<td>354</td>
<td>14%</td>
<td>Verdiana</td>
<td>162</td>
<td>6%</td>
</tr>
<tr>
<td>Wilbard</td>
<td>324</td>
<td>13%</td>
<td>Alfrida</td>
<td>158</td>
<td>6%</td>
</tr>
<tr>
<td>George</td>
<td>281</td>
<td>11%</td>
<td>Jonas</td>
<td>134</td>
<td>5%</td>
</tr>
<tr>
<td>Prosper</td>
<td>271</td>
<td>11%</td>
<td>Father Justinian</td>
<td>40</td>
<td>&lt;2</td>
</tr>
<tr>
<td>Dauda</td>
<td>250</td>
<td>10%</td>
<td>Anna</td>
<td>21</td>
<td>&lt;1</td>
</tr>
</tbody>
</table>

* The six individuals listed in the right-hand columns participated in the interview process from 1-8 days versus the people in the left-hand column that participated all 10 days.

In addition to this core team of interviewers, each day different groups of cell leaders would be involved as the interview team canvassed their part of the village. The cell leaders were responsible for alerting the households in their area about the assessment and help complete their area. This responsibility seemed to be very well received. The cell leaders felt they were contributing to an important project that they hoped would bring about some positive changes in the future. Because of the positive attitude of the cell leaders, their participation helped spread the sense of ownership for the project throughout the community.

A problematic aspect of the team’s composition was that none of the interviewers had any prior interviewing or medical experience. The quality of the health data in particular suffered because of this (see Critique of Content in next section). Had the

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44 These two individuals were actually from Maruku, a neighboring village and part of BOCED’s long-
impact of this been recognized earlier, more in-depth training could have been provided initially.

Materials

The headquarters for the project was Father Justinian’s house. The simple supplies consisted of the one-page census forms, a paper folder or newspaper in which to carry them in, pens, pencils and paper clips, and three cameras and film. Despite the small amount of materials, it would have been more efficient to have a dedicated area to store everything as well as a place to work each night to review the completed forms and prepare for the next day. A laptop computer would have allowed development of the survey while in the village and facilitated revisions throughout the process. It would have also been an asset to track the progress, provide initial results, and stay on top of missed people and photographs.

The simple fact that pens, paper clips and folders were available to the interviewers seemed to reinforce their pride in the project. These very simple items helped connect them to BOCED and the community’s efforts to bring about community development. Providing baseball caps or matching folders or T-shirts identifying the interviewers as BOCED volunteers would have been well received by the team.

The main difficulty regarding materials centered around the logistics of getting into Bukoba to use a computer and printer to produce the survey and to buy film for the photographic census. Trips to town required a whole day which meant that the census process would be setback a day if, for example, a minor revision to the census was terms plans.
desired. Subsequently, the process was never interrupted by such a trip and adjustments were made accordingly (e.g. reduced number of photos taken per household to stretch film supply).

**Pilot of the Survey Tool**

In general, the pilot study was successful in energizing the interviewers and the village about what they were going to be doing. It allowed the interviewers to get an idea of the flow of the interview and what the possible points of confusion were. In addition, it started spreading the news around the village what BOCED was actually doing and generated a lot of interest and excitement.

Unfortunately, the pilot used too few houses to actually uncover the difficulties in the design of the survey. There was not time to do a more extensive pilot because of the short duration of the project. However, the disadvantages of not having done so are evident in the problems experienced later in the project (see critique of content below).

**Daily Process Management**

The flow of the assessment improved with each day. Key reasons the process improved other than just repetition include: 1) the fact that one interviewer, George, stepped up and assumed a leadership role for the group; 2) the cell leaders were consistently used for help in organizing our approach to their area - the assignment of
households for interviewers and photographers became more logical and efficient; and 3) consistency in interviewers allowed for a cohesive group that worked well together.\textsuperscript{45} 

Unfortunately, problems with organizing the photographic census plagued the project continually because the personnel was not consistent and a film shortage required an alteration in the initial process and a reduction in the numbers of pictures taken per household. In addition, the nightly mandatory reorganization and preparation for the next day continued to be a burden because of space, time and lighting.

Because of the fact that interviewers were coming into contact with nearly every person in the village, a number of acute medical situations and obvious opportunities for education were uncovered, particularly in relation to children’s health and nutrition. It was very difficult to combine the role of data collector with educator but almost unethical not to. It was a continual source of stress and anxiety and as a result, there were frequent changes in the strategy and recommendations to the interviewers about how to handle these acute needs.

BOCED’s temporary health clinic was operative by the sixth day of the assessment process. This allowed the interviewers to refer people with acute medical needs for evaluation and treatment at a reduced rate in comparison to the nearest clinic in Ntoma. However, because none of the interviewers had a health care background, they likely did not identify numerous individuals with acute needs or stress the importance of going to the clinic. In addition, there was not a system in place with the clinic to track those people referred to the clinic to ensure follow-up.

\textsuperscript{45} George played a critical role throughout the process and was named the director of the census parts B and C, after our departure based on his leadership qualities and successes.
Quality Control

Quality control was a continual problem that plagued the project. Many of the problems noted during data entry could have been rectified if they had been identified during data collection. The project lacked a system for timely review of data. The only quality control utilized was to have the team member who was a medical and public health student circulate among the different interviewers on different days in order to get a sense of how they handled different situations and provide suggestions and clarifications when possible.

Finally, a conscious decision was made to sacrifice quality for the sake of pushing ahead and finishing the village by the deadline (the group’s departure date). There clearly was some problematic data (e.g. 65-year-old people attending the MCH clinic, male wives, etc). The picture census was helpful in sorting out some of these contradictions because one was able to see, for example, that the 65-year-old man looked more like a five-year-old boy.

Data Organization

Data organization was handled with a master log for the survey forms and notebooks for the photographic census. This system was critical in maintaining the ability to quickly process the forms in the evenings and prepare for the next morning’s interviews. The simplicity of the master log for the survey forms worked out very well and facilitated relocating forms when necessary. It is important to note that having an

46 For the first several days, the composition of the group varied such that we always had 1-2 new interviewers to acclimate to the project.
organization system in place also lent credibility to the project that seemed to be recognized by the interview team.

Unlike the master logs used for the survey forms, the photo logs did not facilitate an organized approach to monitoring the progress of the photo census and became cumbersome to maintain. The household number, the names of the individuals photographed and their alphanumeric code was logged into these notebooks after each photograph.

The system was designed to allow track the completion of an individual’s photograph. However, relocating a particular family or individual to figure out the appropriate family identification number to use became a tedious process of reviewing notebooks page by page. Subvillages were intermixed and household numbers were not necessarily consecutive. Compounding things was that, at one time, there were three photographers working, each with a separate log so one had to review three separate sets of logs when an individual who was not present during his or her family pictures appeared to have a picture taken.

In hindsight, a better system would have been to number the logs in advance 1 – 600 and have the photographers fill in the information as they took the pictures. This would have facilitated locating a person after the initial visit.

**Involvement of Key Community Members**

As stated above, the chairman and vice-chairman of the village were instrumental to the acceptance BOCED received from the village and in securing the quality interview team. In terms of meeting the needs of BOCED outside of Buguruka, Father Justinian
had key contacts with the Mayor of Bukoba, as well as the chairman and town council members of both Bukoba Town and Bukoba Rural districts. Different individuals would make appearances at different village events (inauguration of BOCED Center, the initial welcome Mass for BOCED, and the farewell ceremony for the larger group of Americans, etc). Father Justinian called on these different people for access to the computer and supplies needed in town as well as to facilitate BOCED's other projects including a village road, electrical and telephone lines, and construction projects.

In hindsight, these contacts should also have been utilized to establish relationships with more public health officials in the area. However, BOCED was successful in rapidly putting together and staffing the BOCED health clinic in Buguruka (see Appendix I). The clinic was staffed by a retired regional nursing officer who had trained in Germany and was a good friend of Father Justinian. His staff included one clinician, two nurses and two technicians. They were employees of the government hospital in Bukoba and had been “loaned” to BOCED for the first two weeks of clinic operation with the understanding that a longer term agreement would be worked out after the trial period in the village.

The satisfaction of some of the clinic staff was an issue during the course of the clinic. They had concerns about being in such a rural environment, the quality of their food and housing after the BOCED group left (i.e. after things returned to “normal”), the absence of a liaison in the village, and the lack of clear communication about their wages. Some of the clinicians had agreed to come to Buguruka out of respect for the retired nursing officer and had concerns after finding the conditions in the village to be more primitive than they had anticipated.
Other key individuals who were not contacted who may be helpful in the future include the school teachers at Byeya and other key village leaders from Kalimi and Rwazi, two subvillages located the furthest from BOCED center. Relative to health issues, it may be useful to expand existing knowledge about health delivery systems in the village by developing relationships with the village midwives and the local healers. Also, the informal women’s groups are an untapped resource for outreach programs and small economic initiatives. The other NGOs in the region should be contacted to develop relationships that could be mutually beneficial in the future in terms of idea and resource sharing.

**Duration of Project**

The project spanned a total of 17 days including development and piloting the tool. The actual data collection took ten days of working from 7:30 a.m. to approximately 6:00 p.m. and then several hours of organization in the evenings. Because there was not a clear departure date at the beginning of the project, the initial phase was marked by constant pressure to move through as many of the subvillages as possible. This pressure led to significant coverage of households and land area during the first few days providing an unexpected benefit to the project because it infused positive energy into the process.

**Photo Census**

The photo census was attractive to BOCED because it was thought it could provide a tremendous potential resource in terms of fund raising and orphan sponsorship.
purposes. The process suffered from a lack of forethought in the beginning about how exactly the photographs would be utilized, what expense would be associated with them, and what populations BOCED was most interested in capturing (entire village, children, orphans, etc.). In addition, experienced photographers using a standardized picture technique and better quality cameras would have been helpful.

Originally, the photo census was going to be done by a skilled photographer who was part of the larger group which spent only three days in the village. Once in the village, it was clear that time was too short for him to be able to complete any kind of photo census. From then on, the photo census fell under the umbrella of the general assessment project.

It was expensive and logistically difficult. Because there was no good organization system and no dedicated cameras for the census, personal photographs and census photographs were intermixed on rolls of film. Consequently, it is difficult to know, other than counting the pictures individually, how many total census pictures were taken. The master log included whether or not at least one picture had been taken at a given household but it did not include information about whether or not each individual was successfully photographed. Individuals missed initially were relied upon to come find a photographer at a later date and bring with them their household number and their alphanumeric code so their picture could be taken. Midway through the process, another village volunteer was trained to replace a photographer. This person had been assisting the photographers from the beginning so knew the system and easily learned how to use the simple camera. It was fortunate to have such an adequate replacement available. It would have been impossible to complete the process with only one photographer.
At this point, there are over 2000 pictures of individuals and families. Despite the problems, it truly is a remarkable resource but needs an individual to step in and take responsibility for its utilization.

Data Entry

All forms and film were brought back to the United States at the end of the trip. Removing the primary data from the village was uncomfortable given that the interview team had developed a sense of pride and ownership in the data after contributing so much time and effort to the process. However, one BOCED team member had clearly been in charge of the data, collecting completed forms each day, logging them in, and redistributing new forms the next morning; it was not surprising to anyone that BOCED should take the data back to the States for analysis. Even so, in hindsight, it may have been better to make copies of the data in Bukoba and leave a set with the village so they had the ability to begin their own analysis should they choose.

There was no real alternative with the film because it needed to be developed stateside for timing and cost reasons. In addition, the end use was still uncertain and if the photos were to be used for fund-raising, BOCED would need to have the negatives.

The data entry was a very time consuming process – definitely the rate-limiting step of the analysis. Each form took between three and eight minutes depending on the size of the family. It was during this phase that it became clear which questions were poorly phrased, which interviewers misunderstood the intent of certain questions, and which interviewers could be associated with various other reporting trends. For example, some of the older interviewers tended to be more attuned to collecting information about
local healer utilization than the younger ones; some entered MCH dates for people of all ages although the clinic is only for people aged five and under; another used the answer key codes for current illness in the reason for death section.
**Critique of Content**

In general, the survey tool and answer key provided us with the ability to relatively easily and quickly move through a small village and collect general baseline information about households and individuals. However, there were some problems with the content of the data collected using these simple tools. The analysis of the data reveals a few major oversights as well as underdeveloped areas of data collection. This section contains a discussion of both neglected and problematic content.

**Neglected Content**

**Figure 7.1: Content Areas Neglected in the Assessment Tool**

**Health**

1. Pregnancy Data – age at pregnancies, number of pregnancies, number of live births, number of abortions, birth attendant
2. Mortality Data – age, year, relationship, place of death
3. Malaria prophylaxis – bed nets, clothing, prophylactic meds
4. Current medicine
5. MCH card data – height percentile, slope of curve
6. Number of meals per day
7. Source and distance to water supply
8. Type of toilet (no pit, pit, flush)
9. Greatest health concern

**Socio-Economic**

1. Economic indicators – housing type, number of pieces of clothing, shoes, furniture, bicycle, radio, flush toilet, water tank
2. Orphan data - Age at time of parent’s death, support systems
3. Education data - Currently attending school, location of school
4. Household relationships – women-children relationships
5. Membership in women’s group
6. Greatest socio-economic concern
Figure 7.1 lists some of the major areas of content overlooked in the development of the assessment tool. One of the most significant shortcomings of the tool is its lack of pregnancy related information. This information is integral to computing fertility rates as well as maternal and infant mortality rates. In a community in which all of these areas are assumed to be problematic, it would be an important area to focus on in subsequent data collection efforts so that the impact of programs and/or developmental efforts could be tracked.

In addition, from a public health standpoint, developing a clean water supply is a crucial developmental step for this community. Lake Victoria is a beautiful but contaminated body of water. Gathering more information about the water supply would be useful as well as the type of sewage system employed. Additionally, developing the capability to store a relatively large volume of water could provide purification as well as decreasing the amount of time spent collecting water.

Malaria was clearly reported as a major cause of morbidity and mortality in Buguruka. This is consistent with data throughout Tanzania and sub-Saharan Africa. This mosquito-borne disease is a major problem with no easy solutions. However, bed nets, protective clothing, and an awareness of dawn and dusk as times of high risk has been shown to reduce the incidence and prevalence of malaria morbidity and mortality as well as being inexpensive and effective. The challenge is the behavior change that is required in order to realize the positive health benefits. There was no indication that people in the village were utilizing any of these preventive measures but no assessment data was collected.
From a child health perspective, it would be helpful to get a better sense about the prevalence and degree of malnutrition in Buguruka. The MCH clinics record growth and development information on a monthly basis for the children who attend. Part of our assessment included asking for the MCH cards of children under six years of age to review for immunization status and attendance history. It may have been possible to record the height and percentile of the child at the last visit as well as a general description of the growth curve’s slope (e.g. positive, negative, or flat). In hindsight, this might have provided useful information regarding the prevalence of malnutrition without doing extensive diet histories or physical exams. Also, collecting some general data about the number of meals eaten per day could be used as a general indicator of caloric intake without doing full diet histories.

Finally, another key area where the quality of the data could be improved immensely is the collection of culturally relevant economic indicators. Buguruka has a subsistence level economy so income levels may not be reflective of one household’s ability to support itself in comparison to another household’s ability to do so. Other components that would help provide additional information include the type of house (mud, brick, concrete, metal versus grass roof, windows/screens, number of rooms) type of toilet, type of water supply, ownership of bicycle, radio and amount of clothing.

**Problematic Content**

Another aspect of the critical evaluation of the content of our assessment tool includes recognition of questions that did not collect useful information. Figure 7.2 lists the areas that were problematic in terms of utility of information or cumbersome analysis.
Malnutrition provides a good example of problems encountered in interpreting some of the data. The malnutrition data is suspicious for the low prevalence it suggests. Possible reasons for the surmised underreporting of childhood malnutrition include embarrassment, guilt, and ignorance on the part of the responsible family members. There also may have been confusion around what the term “malnutrition” represented either on the part of interviewers or respondents. The 42-year-old woman who reported currently suffering from malnutrition appears overweight in the photograph without any signs of wasting (see appendix F). This suggests that “malnutrition” was interpreted as meaning “inappropriate weight” in this instance. Underlying confusion also may have been exacerbated by the fact that the code used for malnutrition was “N” which could have been taken to represent nutritional problems including obesity.

Because of all these reasons it is hard to interpret the data on malnutrition other than to acknowledge that malnutrition is most likely a major cause of primary morbidity in Buguruka, particularly among young children, as well as contributing factor in other illnesses including HIV.
Figure 7.2: Questions/Response Options that Complicated the Analysis

**Health**

1. **Current Treatment** – unclear distinction between response possibilities (home/self vs. preventive vs. local healer); utility of information unclear

2. **Morbidity questions** – unclear how a chronic disease was handled (current, last month and last year morbidity reporting); unclear why some diseases were presumably underreported (HIV, malnutrition).

**Socio-economic**

1. **Marital status** – unclear how complicated marital history was reported; polygamous unions in which some of the unions have ended in divorce inconsistently coded

2. **Relationship to Father** – neglected relationship between children in household and women; motherhood was unclear.

The answer key options for designating what treatment people were undergoing currently also was problematic. The analysis suffered from an unclear description of how the options “self/home,” “preventive,” and “local healer” differed. This likely led to each interviewer utilizing the terminology differently.

The level of chronic disease in the village appears to be low but maybe due to differences in the way interviewers recorded such illnesses or inquired about them. The use of three different time frames in the survey (current illness, illnesses within the last month, and illness within the last year) was meant to capture acute versus chronic disease burden in the community. However, there was no discussion during the training sessions clarifying this intent or reiterating the need to report chronic illness in all three time frames. Subsequently, variability may have existed in the way interviewers reported chronic illness.

Finally, an important oversight to mention relative to socioeconomic condition is the inability of our tool to capture the relationship between children in a household and
adult females. The only relationship that was designated was between each household member and the father. Because of the important data that shows strong correlations between maternal education level, health status and the health status of her children, it would have been helpful to be able to look at these variables in Buguruka.
Implications of the initial assessment for BOCED

At the conclusion of the initial process, there are a few things that should be considered in the areas of information sharing, education, social development, and health services as BOCED and Buguruka pursue the next stage of community-oriented development. The following section outlines suggestions in each of these areas.

Information Sharing

One of the most basic yet most important suggestions is to share the results of the analysis with the community. The Buguruka community was very invested in the data collection phase of the project and deserves to see the results of their efforts in some usable format. Whether that be creating a slimmed down version of this thesis, or another document with just some of the results and conclusions presented, doing so would help foster the strong relationship that began last summer.

Education

Since we left Buguruka, a new kindergarten and elementary school has been opened by BOCED and is accommodating over 50 students. There has been some discussion with the Bukoba Rural District Council about acquiring Byeya Primary School.

Our results indicate that less than 50% of school age children have ever attended school. This needs to be addressed. It is unclear whether the issue is a cultural, economic or school capacity issue at this point. If it is a capacity issue, then the new BOCED school will be a great advancement. Regardless, it will be important for
BOCED to build a relationship with the teachers of Byeya school to learn from them about the particular difficulties relative to education in Buguruka.

The fact that the village Chairman has been named the Director of Education for BOCED is significant because of the real and symbolic emphasis this gives education. I believe education is one issue around which lay people are easily mobilized and recommend that BOCED push educational improvements in its fund-raising initiatives. Low expense items such as used textbooks and general school supplies would be relatively easy to collect.

**Social Development**

The main problems relative to social development in Buguruka include the number of orphaned children, the burden this creates on already stressed extended families, and the continuing inferior status of women who are not contributing as they might to the economic and health status of their families. The section below briefly suggests some starting points for mobilizing resources in these areas.

**Orphans**

The assessment process produced descriptive data about the current situation of orphans in the census area. The number and well-being of these orphans is of great concern to the village leadership and to BOCED. This project has given BOCED information about the relative burden of this problem within the village and current data about how the orphans are faring. As noted in the results, 26% of children have either lost one or both parents and 32% of households currently support at least one orphan.
These families tend to be significantly poorer. Children who have lost their father seemed to be at the biggest disadvantage among orphans – unfortunately, this group constitutes 49% of the 363 orphans in Buguruka.

Orphans certainly need to be considered as immediate recipients of aid but more information needs to be collected to better understand their specific needs. First, it would be helpful to understand the impact of losing a parent as a toddler versus as a school-aged child versus as an adolescent. The developmental needs of the child certainly differ but the impact of the number of years without a parent is less clear.

In addition, the data reflected a worsening in orphans’ educational status relative to non-orphans in late adolescence. It would be helpful to know what factors are involved in this. Perhaps these children are independent at an earlier age and therefore they are no longer able to afford the time nor expense of attending school. This would have ramifications on the type of support that might be most suitable for them.

Finally, the status of children who have lost a father need to be clearly articulated. These orphans appear to be lagging behind in education, health status, and financial support. It is not clear who helps support these children. If they are taken in by extended family, it would be helpful to know how closely involved the mother remains.

**Women’s Empowerment**

Membership in women’s groups subjectively appeared to be quite high with a high level of solidarity among women in Buguruka. Although specific questions regarding membership in women’s groups were not included in the assessment, it was clear that
women are less likely than men to receive an education. In addition, women contribute equally to income earning activities (e.g. farming) but are not often credited with income.

In one informal meeting with a women’s group in a fishing community, a BOCED team member discussed malnutrition and the importance of a healthy diet for infants and children as well as the problem of HIV and condom use. The women in the meeting were totally engaged in the discussion. They were already organized in the right forum to share and discuss the information and seemed to be craving the knowledge. These intact groups are a wonderful resource for BOCED in terms of a ready and willing audience that, with the proper knowledge, can have an immediate and significant impact on the health of the village.

BOCED has already taken a stance by highlighting the issue of women empowerment in all ceremonies and opportunities to share the mission of the organization. In addition, four women were involved with the assessment process and one woman was named to head the on-going effort to empower women in Buguruka.

Other recommendations include utilizing more women in positions of leadership within the village; further developing ideas to provide money to women’s economic initiatives; and, providing educational programs and training sessions for women’s groups to increase their ability to provide for, and assess the well-being of, themselves and their children.

Handling Future Requests for Assistance

Many of the people of Buguruka suffer from acute and chronic economic and/or health needs, a phenomenon that became increasingly difficult for BOCED group
members to handle while in the village for four weeks. Father Justinian and many of the American volunteers continually received requests for various types of assistance (finding a sponsor for continuing education, paying for the medical expenses for a child, getting someone a job in the United States, etc.). Language problems and cultural differences compounded this situation. There often seemed to be a dramatic style of asking for assistance that communicated an obligation to meet their demand. Americans, on the other hand, are not used to such dramatic personal appeals. Because of this, it was difficult to stay sympathetic and receptive to each acute need that was identified. In the end, the determination of which Tanzanians received acute assistance turned out to be rather haphazard. It may be useful for future groups to have a discussion about these types of situations and to consider in advance the best way to handle them.

**Health**

The causes of morbidity and mortality reported in Buguruka are generally consistent with regional and national data. We do not have the ability to estimate mortality rates from this assessment. Clearly, malaria, HIV and other infectious diseases are the major causes of morbidity and mortality in the community. There is a dramatic lack of awareness about disease prevention and health maintenance in general. The positive implication of this is that BOCED has the opportunity to make a significant impact in decreasing the burden of malnutrition, malaria and other infectious diseases through education and outreach efforts. The primary areas of focus should include childhood vaccination, maternal health, nutrition, malaria control and HIV prevention.
BOCED Health Clinic

The continuing presence of the BOCED clinic, which is currently offering services at the rate of 30% of cost, is critical to making progress towards improving the general health of the people of Buguruka. There is a wonderful opportunity to develop health education programs and to use the clinic to begin outreach programs. However, the quality of the staff of the clinic is critical. They must be sympathetic to the mission of BOCED and must play an active role in making the clinic a valuable public health institution. As mentioned, the satisfaction of some of the clinic staff was an issue during the assessment project. In order for the community to feel comfortable utilizing the services provided through the clinic, there must be some mutual acceptance and appreciation developed.

Maternal Child Health Services

The MCH clinic is clearly an underdeveloped system that could be revitalized by connecting it to the BOCED clinic and educational programs. Because infectious disease is such an important etiology of childhood morbidity and mortality, the immunization program needs to be given immediate attention as a first initiative towards improving health status. This includes ensuring that all infants in the village are completing their immunization programs by one year of age and that pregnant women are protected against tetanus.

Maternal health care is the second area where an immediate response from BOCED could have tremendous benefit in the community at large. A program that identifies pregnant women, monitors their prenatal care, provides prenatal vitamins, and
ensures proper vaccination would be feasible to develop in conjunction with the BOCED clinic and the midwives in the village. In addition, the provision of anti-malaria drugs during pregnancy could also be considered.

Malnutrition is a huge problem throughout Tanzania and, despite the low incidence reflected in our data, our experience in the village supports our assumption that the majority of children in the village suffer from nutritional deficiencies. Malnutrition is particularly lethal in combination with infectious diseases such as pneumonia, malaria and diarrhea. The WHO has reported that as many as one in four child deaths from infectious disease could be prevented by giving children vitamin A supplements. Malaria deaths could be reduced through the use of iron supplements to treat anemia (WHO, 1999).

One recommendation relative to maternal and child health that supports both BOCED’s health and educational initiatives is to recruit students from the village who would like to pursue advanced education to serve as interns at the clinic with primary responsibility for maternal and child health care. The interns could link the BOCED clinic and the MCH clinic and have responsibility for monitoring attendance, providing follow-up with patients, and developing and delivering health education programs. In return, for one year’s service in this capacity, the students could be awarded an educational scholarship by BOCED. This sort of program might also attract stateside donor groups or individuals because of its specific and immediate benefit.
**Malaria Control**

Malaria is a disease that may have been over-reported in the village. People in the village attributed any number of illnesses to “malaria,” somewhat analogous to the way we, in the United States, refer to viral illnesses, or the common cold. The WHO reported that chloroquine resistance is increasing for similar reasons. People seem to be using it more than aspirin as a way to treat minor fevers, aches, and pains (WHO, 1999). Regardless of the exact morbidity and mortality figures, there is no reason not to believe that malaria is a major factor behind the poor health in Buguruka.

Potential opportunities exist for Buguruka and BOCED to take advantage of the new worldwide Rollback Malaria Initiative announced in 1999 by the WHO. The initial information released by the WHO indicates that they are interested in community level involvement and realize that the success of the initiative is directly connected to local support. Because BOCED seems to have the attention of district and regional level leaders in Kagera Region, it may not be unrealistic to apply some pressure to connect Kagera Region and the Bukoba Rural District to the RBM initiatives.

Finally, the BOCED clinic’s drug supplying methodology for malaria could be altered towards “user-friendly” packaging of drugs. This has been shown to increase compliance with antimalarial therapy by 25% (WHO, 1999).47

**HIV Prevention**

The incidence and prevalence of HIV is unclear in Buguruka. There is no reason to expect it is not a large problem, given that there are no indications that any preventive
measures are being used in the village. The government hospital has published HIV research from the Bukoba area including some rural villages within the last five years (Killewo, 1997). By fostering a relationship with this hospital, Buguruka could possibly get connected to some of these researchers and reap the benefits of increased attention in future studies, drug trials, outreach programs, etc.

In addition, it is recognized that women are more biologically vulnerable than men to HIV infection and account for 75% of all new infections (WHO, 1999). In addition, women in SSA are unlikely to be empowered to insist upon the use of a male condom nor the visible female condom. However, vaginal microbicides could be used without a male partner’s consent and provide the woman protection against HIV infection. Based on my discussion with women in the village, there might be a role for such prevention strategy.

**Other Health Care Improvement Opportunities**

Vision care and dental health are two important areas that affect people of all ages in Buguruka. There is no preventive dental health care locally, and vision care is out of reach for all but the minority. Dramatic improvements in both areas could be made with basic interventions like teeth extraction or provision of reading glasses. This would also do much to improve quality of life immediately.

47 Studies in Ghana show that over 80% of patients given a course of antimalarial drugs packaged in a
**Fund Raising**

Obviously much of the above discussion requires the infusion of funds and human resources into BOCED and Buguruka. It is important to recognize that some of the recommendations are less capital intensive than others and may be more feasible for BOCED based on its financial resources. However, with the results of this study now available, BOCED is also in the position to be able to systematically describe the general environment of the community which may make it a more attractive charity for individuals and groups.

The formal photo census as well as extensive informal video footage filmed over the four weeks in the village is an untapped resource that, if properly coordinated, could be turned into the cornerstone of BOCED’s fund-raising and sponsorship programs. CD-ROMS of the photographs could be produced at relatively little expense to BOCED. These would allow for multiple uses including family and individual sponsorship and marketing for future trips to Buguruka, etc. One caveat to this recommendation is that privacy concerns need to be considered before BOCED utilizes these photographs.
Implications for Other Development Projects

This process of community-oriented development has been utilized in many arenas. Its utility for gaining a rapid assessment of the basic situation at the village level in sub-Saharan Africa is good. Below is a list of some of the general recommendations that came out of our experience in Buguruka, Kagera Region, Tanzania.

1. Collect as much general background information on regional (e.g. sub-Saharan Africa), national, and the local area as possible.

2. Work with well-respected community figures to introduce project and team and facilitate on-going needs.

3. Involve community leaders from the beginning.

4. Live in, or spend as much time as possible, in the community throughout the duration of the project.

5. Utilize dependable, respected community members as interviewers. Find people with a medical and/or public health background or orientation if possible.

6. Position team as assistants to community members. Work with community leaders to instill community pride and ownership in the program.

7. Be analytical and cautious in developing the assessment tool. It should be a user-friendly, simple tool requiring few materials, handling and storage space.

8. Re-evaluate the tool’s content repeatedly for utility in the future, and its ability to collect the desired information on critical areas such as maternal-child relationships and acute versus chronic disease burden.

9. Do a substantial pilot study and thoroughly analyze the results for comprehension and utility. Don’t be afraid to back-up and rework the tool as necessary.

10. Verify the answer key with a representative sample of the community.

11. Do extensive, meticulous training with interviewers.

12. Reward and acknowledge contributions of all volunteers often and publicly.

13. Return the data and results to the community as quickly as possible.
Conclusion

In conclusion, this project represented the opportunity to be part of the initial introduction of a development organization into a community with many needs, social, economic and health. Often times, the understanding is that by improving economic conditions in a sustainable and egalitarian manner, social and health improvements will follow. However, it can also be said that significant improvements in the health of families and workforce can stimulate improvements in economic returns.

BOCED’s vision of stimulating sustainable development in the areas of education, economy, women’s empowerment and health status reflects the recognition of the mutual dependency of these dimensions in the community of Buguruka. Hopefully, the results and analysis of the initial community assessment will be helpful to the ongoing mission of the organization.
BoCED. BoCED Brochure. 1998.


Interviews


Dr. Hokororo, National Health Chairman, Head of Rwandan Refugee Camp Health Services, Tanzanian Episcopal Conference, Dar Es Salaam. June 29, 1999.

Dr. Adeline Kimambo, Tanzania Public Health Association, Evangelical Lutheran Church of Tanzania, Dar Es Salaam. June 30, 1999.

Appendix A: How this Project Came to Be

In mid-June 1999, Father Rweyemamu contacted Professor Judy Lewis at the University of Connecticut Health Center to inquire about collaborating with BOCED in its mission of health development. Through discussions, it was proposed that a census of the village of Buguruka be done that would provide descriptive socioeconomic and health status information about the people of the village to facilitate future planning and development. This was to be BOCED’s first trip to Buguruka and, heretofore, there had been no official data collection, nor was there any official information about the sociodemographic make-up of the village of Buguruka. BOCED was excited about the prospect of someone with a public health or survey development/data collection background to accompany the group and take responsibility for this piece of the project. The interested individual(s) would travel to Tanzania with BOCED on a group trip leaving on June 28.

At the time, I was a third year dual degree student in medicine and public health and had been looking for an international health experience that I could do together with my husband, Matt, a high school social studies teacher. We had 15 days to prepare for our trip including renewing passports, obtaining visas, getting vaccinated, and canceling our previously fully-booked summer.

The group was comprised of Father Rweyemamu, Anna Safari (also Tanzanian from the Buguruka area who now was an undergraduate in Pennsylvania), my husband Matt and myself, and 18 other Americans who had various backgrounds including construction planning, economics and cultural preservation, and computer technology. The majority of the group returned to Connecticut after two weeks (3 days of which were spent in Buguruka). Matt, Father, Anna, and Erin Shields, a high school senior from Connecticut, stayed another four weeks to complete our project.

The trip was organized into three parts: 1) one week in Dar Es Salaam and touring Tanzania; 2) one week in Bukoba (the city approximately 30 kilometers from Buguruka) and the village of Buguruka; and 3) four weeks in Buguruka completing the census and fulfilling other parts of BOCED’s mission for this trip (political and diplomatic engagements, cultural events, welcoming ceremonies etc.).
Appendix B: Map of Tanzania
Map of Tanzania

The city of Bukoba is on the west side of Lake Victoria in northwestern Tanzania. The village of Buguruka is about 30 kilometers south of Bukoba on the shores of Lake Victoria.
Appendix C: Assessment Tool and Answer Key
<table>
<thead>
<tr>
<th>BOCED Census - July, 1999</th>
<th>Census Number:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name(s)</td>
<td></td>
</tr>
<tr>
<td>Socioeconomics</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Place of birth</td>
<td></td>
</tr>
<tr>
<td>Years in village</td>
<td></td>
</tr>
<tr>
<td>Relationship to HH</td>
<td></td>
</tr>
<tr>
<td>Orphan</td>
<td></td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
</tr>
<tr>
<td>Education level</td>
<td></td>
</tr>
<tr>
<td>Source of school fees</td>
<td></td>
</tr>
<tr>
<td>Amount of school fees</td>
<td></td>
</tr>
<tr>
<td>Reason not in school</td>
<td></td>
</tr>
<tr>
<td>Literacy - read/write</td>
<td></td>
</tr>
<tr>
<td>Literacy - spoken</td>
<td></td>
</tr>
<tr>
<td>Religion</td>
<td></td>
</tr>
<tr>
<td>Primary Occupation</td>
<td></td>
</tr>
<tr>
<td>Other Training/Skills</td>
<td></td>
</tr>
<tr>
<td>Tsh from fishing per yr</td>
<td></td>
</tr>
<tr>
<td>Tsh from bananas per yr</td>
<td></td>
</tr>
<tr>
<td>Tsh from coffee per yr</td>
<td></td>
</tr>
<tr>
<td>Tsh from tea per yr</td>
<td></td>
</tr>
<tr>
<td>Other- please explain</td>
<td></td>
</tr>
<tr>
<td>Total annual income</td>
<td></td>
</tr>
<tr>
<td>Health</td>
<td></td>
</tr>
<tr>
<td>Last MCH visit (mo/yr)</td>
<td></td>
</tr>
<tr>
<td>Have MCH card</td>
<td></td>
</tr>
<tr>
<td>Current health problem</td>
<td></td>
</tr>
<tr>
<td>Current treatment</td>
<td></td>
</tr>
<tr>
<td>Illness in last month</td>
<td></td>
</tr>
<tr>
<td>Illness in last year</td>
<td></td>
</tr>
<tr>
<td>Last Health Visit (yr)</td>
<td></td>
</tr>
<tr>
<td>Immunization Status</td>
<td></td>
</tr>
<tr>
<td>Last visit to local healer (yr)</td>
<td></td>
</tr>
<tr>
<td>For what reason</td>
<td></td>
</tr>
<tr>
<td>Handicapped</td>
<td></td>
</tr>
<tr>
<td># Adult Deaths last 10 yrs</td>
<td></td>
</tr>
<tr>
<td>Cause of Death</td>
<td></td>
</tr>
<tr>
<td># Child Deaths last 10 yrs</td>
<td></td>
</tr>
<tr>
<td>Cause of Death</td>
<td></td>
</tr>
<tr>
<td>Respondent:</td>
<td>Head of Household:</td>
</tr>
<tr>
<td>Interviewer:</td>
<td># in household:</td>
</tr>
<tr>
<td>Cell Leader:</td>
<td># outside household:</td>
</tr>
<tr>
<td></td>
<td>Subvillage:</td>
</tr>
</tbody>
</table>
### BOCED Survey Answer

#### Key

**Socioeconomic**

**Relationship to HH**

- H - Head of House
- W - Wife
- F - Father
- M - Mother
- So - Son
- D - Daughter
- Si - Sister
- Br - Brother
- GSo - Grandson
- GD - Granddaughter
- Sol - Son in law
- DI - Daughter in law
- Er - Extended relative
- O - Non-blood relative other

**Orphan Status**

- 0 - Not an orphan
- 1 - Father dead
- 2 - Mother dead
- 3 - Both parents dead
- 4 - Parents alive but child not with them

**Marital Status**

- S - Single
- M - Married
- P - Polygamist
- Sp - Separated
- D - Divorced
- W - Widowed
- R - Remarried

**Education**

- 0 - No schooling
- 1 - 7 Primary School
- 9 - 12 Secondry School
- 13-14 High School
- 15 Diploma
- 16 Full Degree
- 17 Masters Degree
- 18 Post-graduate

**School Payment Source**

- C - Charitable organization
- P - Parents
- G - Grandparents
- F - Other family
- N - Other non-family

**Not in School**

- F - Fees too high
- N - No room in school
- Y - Too young
- D - Distance too far
- I - Illness
- P - Parents don't value education
- L - Low ability
- X - Expelled
- T - Truant

**Literacy**

- H - Haya
- S - Swahili
- E - English

**Religion**

- C - Catholic
- L - Lutheran
- M - Muslim
- A - African
- An - Anglican
- O - Other
- N - None

**Primary Occupation**

- A - Farmer
- B - Business
- C - Civil Servant
- F - Fisherman
- M - Minister/Clergy
- O - Other
- R - Retired
- H - Homemaker
- U - Unemployed

**Other Training/Skills**

- A - Artisan (Carpenter, Handiwork)
- T - Technical (Engineer)
- E - Education (Teacher, Administrator)
- H - Health (Local Healer, Midwife)
- At - Athletics
- O - Other

**Health**

**Current Health/Illnesses**

- M - Malaria
- D - Diarreha
- P - Pneumonia
- W - Worms
- T - Typhoid
- Y - Yellow Fever
- N - Malnutrition
- H - HIV
- A - Anemia
- S - Sickle Cell
- MS - Musculo-skeletal
- CS - C- Section
- R - Respiratory Infection
- MH - Mental Health
- B - Bewitched
- U - Unknown
- O - Other

**Current Treatment**

- N - Nothing
- D - Dispensary
- HC - Health Center
- H - Hospital
- L - Local healer
- S - Self/Home treatment
- B - Birth Control Pills
- P - Prevention/herbal

**Handicapped**

- P - Physically
- M - Mentally

**Cause of Death**

- A - Accidents
- H - HIV
- M - Malaria
- T - Tuberculosis
- P - Pneumonia
- T - Typhoid
- D - Diarreha
- R - Respiratory Infection
- B - Bewitched
- U - Unknown
- O - Other

**Immunization Status**

- F - Finished
- C - Continuing
- N - Not started
Appendix D: Maternal Child Health Card (MCH Card)
### Maendeleo ya Kukua Kwa Mtoto

#### Vidokezo Vya Hatari ZilizoPO

**Chunguza Vyote Kila Safari Weka Alma (V) Panapohusika**

<table>
<thead>
<tr>
<th>Kilometer</th>
<th>Count</th>
<th>Cumulative Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1.0</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2.0</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>3.0</td>
<td>4</td>
<td>10</td>
</tr>
</tbody>
</table>

- **Vidokezo Vya Kwali**: 60-80%
- **Chunguza Vyote Safari ya Kwali**: 10%
- **Uzito wa Kugaliwa za Chini ya Kwali**: 2.5%
- **Mitoto wa 5**: 2%
- **Mitoto wa 10**: 1%
- **Mitoto wa 20**: 0.5%
- **Mitoto wa 50**: 0.2%
- **Mitoto wa 100**: 0.1%

**Chini ya Asili**: 60%

**Chini ya Asili**: 60%

**Mitoto Anaendelea Kukua Vizuri**: 50%

**Mama Anaahirini Ushauri wa Utunzi Wara Mitoto**: 40%

**Mitoto Apelekwa Kwa Vingina Wa Kitu Enacha**: 10%

**Mitoto Anaendelea Kukua Vizuri**

**Vidihi vijinzi vikweli**
Appendix E: Pictures of People reporting Malnutrition
The Community Oriented Assessment Process

Training the Interview Team in front of Father Justinian's House

The first person photographed as part of the pilot study
The Pilot Study – the first interviews of the assessment process

A typical interview in a home

Doing the assessment in a fishing community in the subvillage of Kigusha B
George – The Team Leader of the Assessment Process, a retired policeman and Safari Guide

The photo census attracting attention in the fishing community of Kigusha B
Typical Household picture taken as past of the photo census

Example of individual picture in photo census; this child is one of the children in the above family
Appendix F: Pictures of BOCED Health Clinic
Cases of Malnutrition Reported in the Assessment

# 147 B – 42 year old woman, question of over-weight?

102E – 9 month old girl in arms of mother, no overt signs
415E – 3 year old boy, stunted, hair color changes?

#571E – 2 year old female, no overt signs
#571D – 1 year old boy, cannot stand without support, thin marasmus-like legs

#616F – 3 year old boy, stunted, bony deformity
#616G – 2 year old male, stunted, bony deformity

#76J – 4 year old female, stunted?, coarse hair
#202C – 1 year old boy, no overt signs

#214C – 14 year old boy – Stunted, hair color changes
#230C – 17 year old boy, stunted

#415D – 5 year old boy, stunted, hair color changes?
Appendix G: Pictures of the Community Assessment & Photo Census Process
The BOCED Health Clinic – Buguruka Village, July, 1999

Patients waiting to be seen during one of the first days the clinic was open
The BOCED Clinic Staff administering IV fluids to a dehydrated infant

The BOCED Clinic staff taking a history from a patient
Appendix H: General Pictures of Buguruka
A Buguruka fisherman holding his handmade rope and anchor

A child from Buguruka
Two women collecting grasses for the floor of their homes

A typical scene of children being washed in the village
An example of the protuberant abdomens of children in the village as well as the leather cord which is worn to protect the child from evil spirits.

Village men constructing a fishing boat
The very sick 17 month old baby girl who died.

The after effects of a local healer's treatment of a rash on young boy's legs.
A 50 year old woman with a goiter in Buguruka where few have access to iodized salt.

A fisherman making homemade nets
The Byeye Primary School in Buguruka

Two school girls on their way to school in Buguruka