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ASSESSING COMMUNITY PERCEPTIONS OF THE LIKELY IMPACT OF A PROBIOTIC YOGURT PROJECT ON COMMUNITY RELATIONS AND HEALTH IN MAHINA DISTRICT, MWANZA, TANZANIA

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ASSESSING COMMUNITY PERCEPTIONS OF THE LIKELY IMPACT OF A PROBIOTIC YOGURT PROJECT ON COMMUNITY RELATIONS AND HEALTH IN MAHINA DISTRICT, MWANZA, TANZANIA

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Abstract

This qualitative study explores the perceptions of the impacts of a proposed probiotic yogurt project on community relations in the Mahina community, Mwanza, Tanzania with the following objectives: to identify participants' perceptions of probiotic yogurt and health; to examine project needs and facilitators; and to explore perceived barriers to project implementation in the context of community relations and gender roles. In-depth interviews (n=26) were conducted with residents and the analysis was informed by the literature on concepts of health, gender and development. The results revealed participants' conceptions and misconceptions of probiotic yogurt including a misleading popular perceptions that probiotics can be used to replace antiretroviral therapies. Concerns about the project contributing to possible increases in abusive situations and household conflict over labour and resources were expressed. Community challenges and barriers to project implementation included cost, time constraints, women's multiple roles, lack of education, HIV/AIDS stigma, hunger, malnutrition, death and disease.

Keywords: *Probiotic Yogurt, Health, Nutrition, Gender, Community, Place, Mahina, Mwanza, Tanzania*

Dedication

I would like to dedicate this thesis to my mother, Jeanette Whaling, who has supported me throughout my lifetime and my academic career and who has shaped me into the person that I am today. Thank you for supporting me in everything I do and teaching me compassion and caring along the way. Thank you for all that you have done, and continue to do for me. I love you!

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CHAPTER ONE

Introduction

1.1 Structure of Thesis

This thesis consists of six chapters including this chapter. Chapter one introduces the research and sets the context in which it emerged. Chapter two provides a general scope of the historical, political and socio-economic background of the study area from a national, local and community perspective. Chapter three presents a review of the literature which provides the theoretical context of this research and focuses on concepts of health, gender roles and community participation in relation to international development projects. Chapter four outlines the study design and methods used to conduct this research. Chapter five presents the qualitative findings of this study which are based on the research objectives as well as the emergent themes. Chapter six provides a discussion of the study findings in relation to the theoretical underpinnings of this study as well as a discussion of project and policy implications, study limitations and future research.

1.2 Introduction

This chapter highlights the context of this study including the necessary background information and relevance of this research. The first section describes the broader context of the HIV/AIDS situation in Sub-Saharan Africa and in Tanzania and outlines the current state of the Tanzanian health care system. The second sect0ion of this chapter describes current health initiatives including the use of micronutrients (probiotics) to improve community health in the context of HIV/AIDS. This section also outlines the current Western Heads East/ Tukwamunae probiotic yogurt program. The third section outlines the study objectives which are followed up with the fourth section that describes the significance of the study.

1.3 Background

1.3.1 HIV/AIDS in Sub Saharan Africa

Since HIV/AIDS was first identified, the epidemic has surpassed all expectations in regards to its severity and the extent of its affects on societies (WHO, 2006). The epidemic has had an unprecedented impact on the social and economic well-being of entire nations and regions alike as the number of people living with HIV/AIDS world wide has risen from 8.6 million in 1990 to 39.5 million in 2007 (WHO/UNAIDS, 2008). The pandemic presents distinctive and critical challenges for the global health community, especially in the hardest hit areas such as Sub-Saharan Africa (SSA).

In the last two decades SSA has experienced the worst of the epidemic and has suffered the most severe impact of any region. In 2007, of the estimated 39.5 million people living with HIV/AIDS, 24.7 million were living in SSA (WHO/UNAIDS, 2007). Although SSA is home to 10% of the world's population, the average adult (15-49 years) HIV/AIDS prevalence rate for the region is the highest in the world (UNAIDS, 2007). The hardest hit countries within SSA have dwindling life expectancies that are much lower than they were 20 years ago (Haddad & Gillespie, 2001).

HIV transmission in SSA is dominated by heterosexual sex as well as mother-to-child transmission and the epidemic has shifted from those at high risk (commercial sex workers and vulnerable populations) to a more generalized epidemic (Haddad & Gillespie, 2001). Also, HIV/AIDS trends are shifting from concentration in urban areas to becoming equally predominant in rural areas (Parker & Aggleton, 2003).

As the epidemic has progressed, other interrelated circumstances, such as poverty, inequality and migration (due to labour shifts, conflict or civil strife), that create vulnerability to HIV infection have also become more prominent (Haddad & Gillespie, 2001). The negative social and economic effects of the epidemic are already widely recognized in SSA economies in general, which has negatively impacted other sectors including health, agriculture, transportation, education, the industrial sector and human resources (Binswanger, 2000). Without substantially expanded prevention, as well as heightened treatment and care efforts, the AIDS death toll in SSA will continue to climb.

1.3.2 HIV/AIDS in Tanzania

Tanzania is a low-income country in SSA that is severely affected by the HIV/AIDS epidemic. Tanzania has experienced a mature, ever-expanding, HIV epidemic that has exploded from a rare and new disease to a common household situation that has affected the majority of the population (NUWRT, 2008; WHO, 2005). The first cases of HIV/AIDS in Tanzania were reported in 1983 and by 1985, there were an estimated 140,000 people living with the disease (WHO, 2005). By 1990, the number of HIV/AIDS cases rose to 900,000 and in 2003, the estimated number of people living with HIV/AIDS climbed to over 1.8 million (NWURT, 2008; WHO, 2005). Due to rising HIV/AIDS prevalence rates and increasing numbers of AIDS related deaths, it is estimated that AIDS is now the leading cause of death among adults in Tanzania (TACAIDS, 2006). Because of the severe effects of the disease, it is also estimated that by 2010 life expectancy in Tanzania will be almost ten years lower than it would have been in the absence of HIV/AIDS (WHO, 2006).

Similar to other countries in SSA, the HIV/AIDS epidemic in Tanzania is influenced by a complex and interrelated set of social, behavioural, and biological factors. HIV infection in Tanzania is irregularly dispersed across a wide geographic area and is more common among particular socio-economic classes, particularly the poor (WHO, 2005). Particular regions in Tanzania, such as Mbeya, Iringa and Mwanza, demonstrate the highest HIV/AIDS prevalence estimates, up to 15%, while other regions such as Manyara, Kigoma and Zanzibar have estimated prevalence rates around 1 to 2% (NUWRT, 2008). The HIV/AIDS epidemic is also unevenly distributed according to gender and age. The most severely affected groups include women and youth. For instance, 80% of those infected with HIV/AIDS are in the productive age group of 15 to 44 years of age (TACAIDS, 2002). Women are biologically, socio-economically and socio-culturally more vulnerable to HIV infection than men (Haddad & Gillespie, 2001). The risk of becoming HIV positive during unprotected intercourse is between 2 to 4% higher for women than for men (World Bank, 1997). The combined biological, cultural and economic vulnerability of girls and women often limits their ability to protect themselves against male counterparts and may also force them into resorting to various sexual survival strategies, which ultimately increases their risk of contracting HIV

(TACAIDS, 2002; World Bank, 1997). Also, due to socioeconomic and cultural factors such as economic hardship, repressive customary practices and laws, polygamy, and biological and anatomical predisposition to the virus, women and youth are more likely to contract the virus (NUWRT, 2008).

Another characteristic that contributes the complex and expanding HIV/AIDS situation in Tanzania is severe poverty. Poverty is widespread throughout the country. Tanzania is one of the poorest countries in the world, as over half of its citizens live on less than $0.70 USD a day (Shiner, 2003). HIV/AIDS and poverty (especially relating to food insecurity) are interrelated in a vicious cycle of vulnerability and disease as poverty increases exposure to HIV as well as the impact of the virus (Haddad & Gillespie, 2001).

Poverty increases the relative cost of avoiding and treating HIV, as it is difficult for the poor to afford preventative measures such as condoms or treatment such as antiretroviral medications (Haddad & Gillespie, 2001). Poverty also intensifies immune suppression as a result of a more aggressive bacterial and viral environment and further exposes people to bacterial infections and other sexually transmitted diseases that enhance transmission of HIV (Haddad & Gillespie, 2001). Also, the poor often lack the knowledge and resources to protect themselves from contracting HIV and those who are infected generally have less access to care and treatment (UN, 2005). Poverty reduces people's access to accurate and accessible information and education about sexual health and sexually transmitted diseases as those with the fewest resources have the least access to health-related information and health care services (TACAIDS, 2002; UN, 2005). Economic and social safety nets are also limited in resource-poor regions such as Tanzania. Individuals, families and communities have fewer coping resources and struggle more intensely with the affects of the epidemic (TACAIDS, 2002).

At the same time, HIV/AIDS also leads to impoverishment and intensifies poverty. HIV/AIDS strips families and communities of human, social, financial, informational, physical and political assets and resources and deprives affected individuals of the means to cope with the disease (UN, 2005). Although the impacts of HIV/AIDS are felt at every level, impact at the familial and household level is most intense as these are the primary units for coping with the disease and its related effects (UN, 2005). Families often bear the burden of cost of care of the person living with

HIV/AIDS and are often forced to spend their savings, sell their assets and borrow money to cope with changes in familial roles and costs of treatment (Haddad & Gillespie, 2001). Thus, affected households often make a quick transition into poverty, if not already experiencing such circumstances (UN, 2005).

HIV/AIDS has also had an impact at the national and community level as it has diminished the accumulation of skills and knowledge of the Tanzanian labour force, creating gaps in human capital which makes it more difficult to achieve the goals of sustainable development and poverty eradication (UN, 2005). The HIV/AIDS epidemic in Tanzania has eroded human capital that is imperative for the nation's future economic development by creating challenges within the public sector, especially the health care and educational sectors (TACAIDS, 2006). For example, HIV/AIDS is claiming the lives of many health and education specialists such as doctors, nurses and teachers and is increasing the amount of capital needed to support health facilities and hospitals (TACAIDS, 2002). Also, a number of studies have shown that there has been lower school enrolment in HIV/AIDS affected households as children are forced to assume domestic roles or to find some sort of paid labour; for girls this sometimes means entering into commercial sex work (Ainsworth, 1993; UN, 2005).

1.3.3 Limited Health Care Options

Although HIV/AIDS and other related health issues are quite prevalent in Tanzania, the quality of the majority of health services in Tanzania is poor as infrastructure is poorly developed. Supplies of medications, drugs and equipment are also often quite scarce (Shiner, 2003). Health care in Tanzania is currently provided by a mixture of government, private not-for-profit and private-for-profit agencies but there are numerous issues that stem from access and quality of care. Many public facilities have staff shortages and high rates of staff burnout, low quality of staff training and services, as well as inadequate equipment and supplies (Peabody, 1996).

Due to the influence of past and present policy issues (see Chapter 2) and the economic budgetary shortfalls of the Tanzanian government, Tanzania's health care system is far from obtaining the overriding goals of good health, accessibility, equality and sustainability (Sekwat, 2003). Financing issues have dwindled health care

expenditure to total only $8.00 USD per person each year, which meets only one third of the health care needs and requirements of the public system (Shiner, 2003). Currently, a large segment of the Tanzanian population, especially the rural poor, has limited access to basic health services and some have no access at all (Kopoka, 2000). Life expectancy in Tanzania is among the worst in the world, sitting at 51 years of age, as poverty, malnutrition and a number of preventable diseases such as malaria, HIV/AIDS and tuberculosis remain in high prevalence and as the health care system is unable to adequately provide needed services (Shiner, 2003).

1.3.4 Tanzanian HIV/AIDS Response: Abilities and Gaps

Due to the extent and severity of the HIV/AIDS epidemic in Tanzania and the incapacity of the health care system to deal with such an epidemic, there is a strong political commitment to help minimize the epidemic and its various socio-economic effects through HIV/AIDS specific programs. A number of government task forces and organizations have been created over the last few years to assist in providing local health and support for projects that assist in alleviating some of the effects of the epidemic. The Tanzania Commission for HIV/AIDS (TACAIDS) was created in 2001 to provide strategic leadership and to synchronize and strengthen the efforts to fight against HIVAIDS (TACAIDS, 2006). Also, in 2003, a specific framework called the National Multisectoral Strategic Framework for HIV/AIDS was developed by government agencies in order to strategically guide the planning of interventions, projects and programs that are related to the fight against HIV/AIDS (TACAIDS, 2002). This strategic framework sets out a number of goals to improve stakeholder empowerment and the capacity building skills of families and communities that are affected by the epidemic (TACAIDS, 2002). As this framework also focuses on the dynamics and determinants of the HIV/AIDS situation, it also outlines a monitoring and evaluation system that is designed to assess the progress of various national response programs (TACAIDS, 2001).

Since the late 1980s, Tanzania has also experienced a sharp increase in the number of non-governmental organizations (NGOs) that comprise a dense network of national, regional and district initiatives to improve the health and socio-economic well being of the population (Shivji, 2004). Within Tanzania, there are a number of NGOs

that assist in the fight against HIV/AIDS including some international agencies such as World Vision, Care International, Catholic Relief Services (CRS) and African Medical and Research Foundation (AMREF). Thousands of other non-profit organizations are also situated in Tanzania, focusing on improving the HIV/AIDS situation and tackling its related issues such as poverty, violence against women, sexually transmitted diseases, civil conflict, access to basic services, as well as many other related issues (Shivji, 2004). These organizations often contribute to the easing of various aspects of the HIV/AIDS epidemic through community counselling and education, research, advocacy, capacity development, emergency relief, economic development and a number of other community empowerment activities (Delisle *et al.*, 2005).

While these programs have fashioned a number of strategies that have contributed to both the prevention and control of HIV/AIDS in Tanzania, the scaling up of HIV/AIDS care and treatment has been severely constrained by a number of structural factors such as lack of financial and human resources; inadequate coordination; low implementation rates; bureaucratic and processing inefficiencies; as well as limited integration of partnership and stakeholder programs and development strategies (TACAIDS, 2002). Several socio-cultural determinants have also hindered HIV/AIDS prevention and treatment efforts including disease stigma and discrimination; inequality and violence against women; poor access to basic health and social services; lack of educational services as well as circumstances of poverty (Binswanger, 2000; Collins & Rau, 2000; Beeker *et al.*, 1998; Fredland, 1998). Also, insufficient resources limit the capacity of the government to provide the social services and education necessary to prevent and control HIV transmission (Delisle *et al.*, 2005). Therefore, despite the combined efforts of the Tanzanian government and NGOs, the HIV/AIDS epidemic continues to burden the Tanzanian population and the number of people living with the disease continues to rise.

1.3.5 The Growing Need for Community Health and Nutrition Projects

There have been a magnitude of responses to HIV/AIDS in SSA, and many attempts have included national or other 'blanket' approaches to health and development. While these blanket approaches are widely utilized, there are specific cultural and place-

specific needs and issues relating to HIV/AIDS prevention and treatment that need to be addressed at the community level.

While the capacity of governments and existing organizations in SSA to deal with the epidemic is dwindling as time, money and resources are becoming severely over-exhausted, at the same time, the need for more effective and efficient programs is growing. As Luginaah et al. (2007) explain,

> Against the backdrop of the inability of governments in SSA to provide adequate health services to their populations, increasing attention is being directed towards the diverse range of local organizations and informal groups that are forced to bear an increasing share of responsibility through direct involvement in provision of HIV/AIDS-prevention and care services (p.440).

Consequently, the increasing burden of HIV/AIDS and other related diseases on affected populations has led to a growing demand for local level health promotion strategies and programs. Community-centered interventions have become increasingly recognized as a fundamental component to an effective and useful response in marginalized, resource-poor contexts (Marks, 2001; Macfarlane *et al.,* 2000; Bracht, 1999). Community-based health initiatives play a vital role in compensating for the gaps in service provision in many HIV/AIDS devastated communities and have been successful in promoting contextual and culturally sensitive programs that may benefit communities at large (Edwards *et al.,* 2000; Bracht, 1999; Beeker *et al.,* 1998). There is significant potential to reduce the HIV/AIDS disease burden by harnessing the skills available within communities who are prepared to take action against the disease and its related effects (Ogden & Nyblade, 2005; Baylies & Bujra, 2000). However, there is a need for research examining the needs, challenges and community reactions that are associated with implementing such interventions and programs in a community context (Power, 1998). There is also a need for qualitative research in this area that addresses local needs and gives a voice to those involved.

More recently, several calls have been made for community-specific health and nutrition interventions that are best adapted to deal with emerging issues in the local context (Anabwani & Navario, 2005). Food and malnutrition issues have now taken centre stage within the HIV/AIDS epidemic (Gillespie & Kadiyala, 2005; Anabwani &

Navario, 2005; Semba & Tang, 1999; Gramlich, 1995). There are few programs that link nutritional support to HIV/AIDS prevention, treatment and care at the community level (e.g., Bezner Kerr *et al.,* 2008; Byron *et al.,* 2006) with the aim of meeting local food and nutrition needs and that take advantage of local knowledge and resources.

Researchers, policy makers, program implementers and health care providers are increasingly acknowledging the importance of integrated programming that provides services beyond clinical care for HIV-positive individuals (Byron *et al.*, 2006; Marks, 2001; Macfarlane *et al.,* 2000; Bracht, 1999). There is therefore a strong need to find ways to assess community health and nutritional capacities, challenges and general socio-cultural context in order to be able to utilize community assets and human resources to their full potential and to improve food insecurity and health through nutritional supplementation.

1.4 Current Health and Nutrition Initiatives

1.4.1 The Role of Micronutrients in Community Health

The broader context of this research focuses on the relationship between community health, HIV/AIDS, and food security in SSA. With the HIV/AIDS pandemic scourging through the region, additional attempts must be made to alleviate the devastating circumstances of this disease (WHO, 2002). The concept of using microbial supplements, particularly probiotics, as part of a long-term strategy to alleviate suffering in this region, emerged in 2001 when an Expert Panel Report from the World Health Organization (WHO) and the Food and Agriculture Organization (FAO) of the United Nations stated that efforts must be made to make microbial food supplements such as probiotics more widely available (WHO, 2002). Probiotics are live microorganisms, which, when administered in adequate amounts, confer a health benefit on the host (Rolfe, 2000; WHO, 2002). Studies have shown that particular probiotic strains can improve host defences and enhance quality of life, especially within areas with high prevalence of disease and malnutrition (Lenoir-Wijnkoop *et al.*, 2007; Rolfe, 2000; WHO, 2002).

A recognition of the varying health benefits of probiotics and other microbial supplements led the WHO and the FAO to suggest that these beneficial food products be made extensively available especially for relief work and populations at high risk of morbidity and mortality (FAO, 2006; WHO, 2002). Because of the ease of the biological culturing of microbial supplements such as probiotics, the use of these beneficial micronutrients are particularly promising in poorer countries haunted by malnutrition, urogenital infections and diarrheal diseases (Hodgens, 2003; Rolfe, 2000; WHO, 2002). I shall return to a discussion of the importance of probiotics in Chapter 3.

In response to the United Nations' call to action, The University of Western Ontario (UWO) in collaboration with the Kivulini Women's and Children's Rights Organization (Kivulini) and the Tanzanian National Institute of Medical Research (NIMR), implemented a sustainable probiotic food-based project entitled "Western Heads East" (WHE) to improve nutrition and to potentially help alleviate the suffering of a population overwhelmed by the impacts of HIV/AIDS.

1.4.2 Probiotic Community Health Projects in Mwanza, Tanzania

This study is part of the larger Western Heads East (WHE) program, which has an overall aim to introduce probiotic yogurt as a nutritional health aid to communities in SSA. This project also aims to improve the health and economic status of people living in HIV/AIDS devastated areas (WHE, 2007). Currently, a WHE probiotic community health program has been implemented in the Mabatini community in Mwanza, Tanzania. The Tanzanian name of this probiotic community health program is Tukwamunae.

The WHE/ Tukwamunae project was initiated in 2003 and currently employs 12 local women (The Yogurt Mamas) who produce probiotic yogurt on a daily basis in the community. The probiotic bacteria used in the yogurt (*Lactobacillus rhamnosus GR-1*) is cultured at the National Institute of Medical Research (NIMR) in Mwanza, Tanzania and is delivered to the Tukwamuane Probiotic Yogurt Kitchen bi-weekly. Local cow milk is also delivered on a daily basis in order to produce the yogurt. Approximately 100 litres of probiotic yogurt is produced each day; some is consumed by the employed women (The Yogurt Mamas) and their families, some is donated to registered people living with

HIV/AIDS (PLWA) in the community, and the rest is sold at a standard cost (250Tsh/ 200mL =$0.25 CAD) to other individuals living in the community.

The Mwanza region was chosen as the location for the WHE/ Tukwamunae project as it contains the largest population in the country and one of the highest HIV/AIDS prevalence rates which has been a major threat to the health, economic and social well-being of the region's population (NUWERT, 2008).

With the population becoming more familiar with the social, economic and health benefits that the WHE/Tukwamuane Probiotic Yogurt Project offers, there exists a growing interest to expand the project into other communities. A number of communities in particular, such as the Mahina community in the Nyakato district of Mwanza, have expressed an interest in expanding the WHE/ Tukwamuane probiotic community health project into their areas. Since current WHE/ Tukwamuane probiotic project has been successful in improving overall community nutrition, health and well being, expanding this health project into other HIV/AIDS devastated communities is essential.

Before the WHE/ Tukwamuane probiotic community health program can be successfully expanded into communities, an investigation of the varying social, cultural and economic impacts of such a project on community relationships and health must be understood. Along with this, community needs, resources and relationships must be investigated in order to create an understanding of community dynamics for project sustainability.

1.5 Study Objectives

This study utilizes the literature on place and space, concepts of health and medicine, gender roles and relations, and community participation in project development and implementation to explore the perceptions of the likely impacts of a proposed probiotic yogurt project on community relations and health in Mahina, Tanzania. The specific objectives are as follows:

1. To identify community perceptions, knowledge, and opinions of the health benefits of probiotic yogurt and the WHE/Tukwamunae Probiotic Community Health Program.
2. To examine probiotic yogurt project needs, and project facilitators in context, as they may relate to the sustainability of the project.
3. To explore perceived barriers to project implementation and development in the context of community relations, familial relations and gender roles.

1.6 Significance of the Study

1.6.1 Significance at the Community Level

Examining the perceptions and meanings that are associated with people's decisions, actions, values and beliefs will provide a better understanding of the contextual background of the individuals within the Mahina community. By investigating the various social, economic and cultural characteristics of the Mahina community; by working closely with this community; and by attempting to understand local perceptions and beliefs, more effective community health intervention strategies may be possible. For example, assessing community resources, relationships, needs and dynamics may provide valuable information for the development of effective and useful policies and strategies as the results can be used at the local level to better inform the planning and implementation of community health programs. It is hoped that this study will also assist in informing future policy and decisions related to health project implementation that may also strengthen the effectiveness of this probiotic yogurt community health program. It is also expected that the research process will be of inherent value; serving to give voice to the stories of local people including those of people living with HIV/AIDS thereby helping to validate their experiences and acknowledge their valuable perspective in the development process.

It is also important to assess social relations and dynamics, including gendered dynamics in this community, since establishing and sustaining community participation depends on social unity and other related factors. Because of socially constructed gender

norms, values, and relationships, men and women encounter different opportunities and life processes. The gendering of societies results in the unequal distribution of opportunities and resources whereby women are almost always at a disadvantage. It is therefore important to investigate gendered relationships and norms within the development process in order to better understand inequalities that affect community health projects.

Information on project needs and project facilitators relating to community health project implementation, including understanding local relations and gender roles, can aid in producing effective health promotion programs and preventive policy plans that can reduce negative health outcomes of diseases such as HIV/AIDS. Project needs and project facilitators must be examined alongside any perceived barriers that may stem from community relations, familial relations and gender roles as unsettled community issues or foreseen community issues may inhibit sustainable project implementation and development (Edwards *et al.*, 2004).

By exploring the material aspects of 'place' (i.e. structures and resources) within Mahina including access to appropriate services and the varying aspects of the structural environment, community capacity may be understood in terms of access to and effective use of resources (both financial and material) as well as access to organizational capacities such as community support and citizen engagement (Beeker *et al.*, 1998). This type of investigation may also assist in identifying what characteristics of health projects and interventions are appropriate, preferred and possible as well as where they should be located and when.

1.6.2 Contributions to the Health and Development Literature

It is hoped that by portraying a comprehensive description of this community's perceptions and knowledge about community dynamics, resources and other related aspects of 'place', that this research may contribute to the growing body of knowledge on health project development and gender relations in SSA. Overall, this study aims to identify community perceptions, knowledge, and opinions of the health benefits of probiotic yogurt and the WHE/Tukwamunae Probiotic Community Health Program; examine probiotic yogurt project needs, and project facilitators in context, as they may

relate to the sustainability of the project; and explore perceived barriers to project implementation and development in the context of community relations, familial relations and gender roles. Although one must be careful not to generalize the accounts of individuals and communities, the investigation of isolated, case-specific community health programs and interventions are not endpoints in themselves but may represent components of the relationship between health and broader societal structures that influence health. For example, the investigation of perceptions of project implementation, community dynamics, gender roles and relationships as well as cultural and environmental factors of the Mahina community may yield important information or clues that may be applicable at different scales.

1.7 Chapter Summary

This chapter describes the broader context of this research as situated within the context of HIV/AIDS and health care in Tanzania with an emphasis on the need for local community health and nutrition projects. Specifically, this chapter outlines the Western Heads East/ Tukwamunae probiotic yogurt community health program and describes the study objectives that have led to the exploration of the perceptions of the impacts of a proposed probiotic yogurt project on community relations in Mahina, Tanzania.

CHAPTER TWO

Community Profile

2.1 Introduction

This Chapter presents the study context including background infromation on the study country (Tanzania), the city that the research was conducted in (Mwanza) and finally, the study community itself (Mahina). The first section gives a brief overview of historical and political shifts within Tanzania and their impact on the national health care system. The second section presents a description of the current situation in Tanzania in regards to poverty, HIV/AIDS, health care, education and employment. The third section describes the city of Mwanza including some geographical information, a brief history, socio-economic data, health statistics as well as the current health care situation. The concluding section describes the Nyakato district as well as the study community (Mahina).

2.2 Tanzania: A Brief Overview

2.2.1 Location

Tanzania, or formally, The United Republic of Tanzania, is a country in East Africa that is bordered by Mozambique, Malawi, Zambia, Democratic Republic of the Congo, Burundi, Rwanda, Uganda and Kenya (NWURT, 2008). *Figure 1* displays the location of Tanzania within the continent of Africa.

Figure 1- Tanzania Within the Continent of Africa

Source: Adapted from Flynn, K. (2005). *Food, Culture, and Survival in an African City.* Palgrave Macmillan: New York. & Anne E. Donkin from U.N. Map # 4045

2.2.2 Tanzania: Political-Economic Shifts and Health Care

The United Republic of Tanzania (formerly known as Tanganyika and the Island of Zanzibar) has been transformed and influenced over the years by various colonial powers, dating all the way back to the early 1400s as Portuguese and Arab traders colonized the costal regions of this East African country, as well as the island of Zanzibar (Kankik, 1979). In the late 1600s the Portuguese were expelled from Tanganyika by the Arabs from Oman as they were interested in the commerce of the slave trade and spice industry that was mainly centered in Zanzibar (NWURT, 2008).

As the fight for African territory among European powers intensified in the 1880s, German colonial governemnt signed treaties with a number of African tribes between the years 1884-1885 so that large land areas could be governed by the German

East Africa Company (Coen Flynn, 2005). In 1891 the German Government took over the country and declared it a protectorate (Turshen, 1984).

The Germans exercised their authority by implementing German colonial administration and by disregarding existing local ways of life and traditions (NWURT, 2008). Under German rule, several new crops were brought to Tanzania for cultivation including cotton, rubber and sisal (Kankik, 1979). In addition, many Christian missionaries immigrated to the area, establishing religious schools for the local people (Coen Flynn, 2005). The dismissal of local and traditional ways of life did not happen without African revolt or opposition as small scale domestic rebellions broke out. These anti-colonial rebellions, known as the Maji Mahi revolts, were eventually suppressed by the German military (Kankik, 1979). Tanganyika remained a part of the German empire until the end of World War One.

In 1890, two treaties between Germany and Great Britain were signed: the first divided the territories on the mainland previously controlled by the sultan of Zanzibar; the second established a British protectorate over Zanzibar and Pemba (NWURT, 2008). At the end of World War One the mandate to administer the former German colony was bestowed on the United Kingdom under the terms of the Supreme Council of the League of Nations. Under the League of Nations, the territory became a British Mandate from 1919 to 1961 as it served as a military base during the Second World War (Kankik, 1979). The British slowly developed the territory's economy by first introducing plantations and wage employment for many indigenous people (Turshen, 1984).

Tanzania endured centuries of exploitation and oppression by the various colonial powers at hand and the social, economic and health situation in Tanzania was left in shambles. Although Western biomedical health care arrived in Tanzania in the pre-colonial era, with several missionary organizations, to service a growing colonial population, the Germans, during their administration of the country from 1890-1919, opened hospitals in several of the main administrative centers of the country (Benson, 2001). After World War One, Tanzania was transferred from German to British rule and The British Government continued the preceding German policy and provided similar urban hospital-based health care to those who could afford it (Benson, 2001). Health care during the colonial period was severely deficient as the majority of the Tanzanian

population did not have access to basic health services which were expensive and centrally located (Kopoka, 2000). Many Tanzanians could not even afford to feed their families due to agricultural and other economic and social shifts, let alone pay for any kind of health care (Kopoka, 2000).

As health care in Tanzania was transferred to an urban curative based system that that placed little emphasis on equality and accessibility, advances in Western medical services and technology contributed little to the health of the Tanzanian population. With the changing economic and social conditions that resulted from centuries of colonial domination, exploitation and rule, the health of Tanzanian citizens changed dramatically as rates of malnutrition, disease prevalence and morbidity continued to climb (Turshen, 1984). The exploitive and oppressive social relations and divisions of power that stemmed from the imposition of capitalist structures contributed to a drastic decline in the health of the Tanzanian people. Health care services barely existed and those that did remained severely inadequate. For example, nearing the end of British rule over Tanzania, the health care system was left with only 12 trained doctors due to dwindling social and health services and a broken educational system (Nyerere, 1968).

With the harsh conditions of the slave trade, constant wars, imposition of taxes, compulsory cultivation of export crops on commercial farms and the development of plantations and cash crop farms, Tanzanian social relations drastically changed from a community orientated way of living to a hierarchal model of production where the majority of Tanzanians became exploited and impoverished (Turshen, 1984). Taxation was a mechanism by which Tanzanians were pushed into a money economy which forced Tanzanians to sell their labour for power and reinforced compliance with colonial law. With the implementation of taxes, plantations and cash crops, standards of nutrition fell as Tanzanians were paid extremely low wages and were exposed to very harsh working conditions (Turshen, 1984). Workers were exposed to a variety of parasitic and communicable diseases as working conditions were often crowded and unsanitary. The new plantation economies were not intended to produce for domestic consumption so there was a drastic decrease in local food supply which created rising levels of malnutrition in the local population (Lugalla, 2006). Fertile lands that were once used to support the local population were used to grow cash crops. Food scarcity became

common and this affected the nutritional health status of the Tanzanian people (Turshen, 1984).

Over the years Tanganyika gradually shifted toward self-government and independence. In the late 1950s a man named Julius Nyerere became the leader of the TANU (Tanganyika African National Union) political party that fought for independence from the commonwealth (NWURT, 2008). On December 9th, 1961, Tanganyika became independent. A few years later, in 1963, neighbouring Zanzibar also became independent and in 1964 merged with Tanganyika to become what we now know as Tanzania (NWURT, 2008). The political, economic and social hardships endured during colonial rule prompted Nyerere and his political party to push for independence. After independence there were high expectations from the people of Tanzania which included freedom from the colonial grip (Riddel, 1992). Thus, Nyerere's government sought to recover from the perils of the past and improve quality of life in Tanzania by nationalizing the key socio-economic sectors and by providing basic health and social services; they also refused to maintain close ties with the West (Kimaro & Sahay, 2005).

Nyerere's strong scepticism of liberal polices that were based upon 'Western' ideologies of development and modernization led him to join the socialist bloc as he developed a socialist policy that focused on African roots and traditions called "Ujamaa na Kujitegemea" ("Reliance on Family"). This policy was created in order to guide sustainable development for the newly independent nation (Duhu, 2005). In 1967, Nyerere formalized his desire for independence from the West as he inaugurated an era of economic collectivism based on self-reliance and socialism through the Arusha Declaration as he partially withdrew from the international economy (Gilson, 1995). The 1967 Arusha Declaration for African socialism was embedded in the traditions of family, village and social structures that existed prior to colonial rule (Wobst, 2001). The Arusha Declaration propelled a restructuring of the economy and a new ideological approach that differed greatly from the colonial economic system (Kopoka, 2000).

With the onset of his socialist policies Nyerere brought a new social system to Tanzania that focused on equity and access for all, especially for those in previously neglected rural areas (Benson, 2001). Although a number of social reforms occurred, one of Nyerere's greatest concerns was improving the health and general well-being of the

people of Tanzania (Riddel, 1992). Nyerere focused on a form of African socialism that sought to revert to more 'traditional' African ways where resources are shared for the betterment of all rather than concentrating them in the hands of a few. Tanzania's early and wide-ranging decentralization policies were praised as ensuring that all citizens would have access to basic health and social services (Gilson, 1995). As approximately 80% of the population lived in rural areas, development of rural infrastructure was given priority in order to meet the needs of the entire population (Kopoka, 2000). Many health and social services were provided free of charge by government institutions while voluntary agencies charged modest fees (Kopoka, 2000).

During the late 1970s and 1980s the Tanzanian economic and social structures suffered greatly as the impacts of both internal and external economic crisis set in (Kimaro & Sahay, 2005). As well, the rise of communicable and preventable diseases such as tuberculosis, malaria, AIDS in conjunction with collapses in health budgets drew back the health and social gains of the previous decades (Epprecht, 2005). External economic and political forces also played a large role in the apparent 'failure' of Nyerere's quest for socialism and equality. Upon independence, Nyerere's government was faced with situation of massive poverty, narrow commodity markets, an externally dependent economy, budgetary limitations, unemployment, economic hardship, subsequent declining terms of trade, and poor health including massive bouts of malnutrition, death and disease as a result of years of exploitation from various colonizing nations (Epprecht, 2005).

Nyerere's socialist policies were praised for unifying the country, expanding education and health care. Economically, however, a number of internally and externally driven issues arose as per capita income fell way below previous values, agricultural production declined, and industrial production plummeted to less than 50% of capacity (Wobst, 2001). Although there was dissatisfaction among many with the numerous fiscal difficulties that arose from external political pressures and Nyerere's concepts of African socialism, Nyerere was re-elected in 1980 to his fifth term as president.

Due to mounting political pressures, Nyerere decided to resign in 1985 and handed power over to Vice-President and Chairman of the CCM party, Ali Hassan Mwinyi (Kankik, 1979). Mwinyi tried to distance himself from Nyerere and his policies

and instituted an economic recovery program which included the adoption of structural adjustment policies (SAPs). The Tanzanian government initially attempted to resist international donor support and SAPs but out of economic desperation in the late 1980s, substitution policies were adopted in order to spur economic growth (Sahn *et al.*, 1997). In 1986, the Tanzanian government under the leadership of Ali Hassan Mwinyi approached the World Bank and International Monetary Fund (IMF) for loans and signed a structural agreement and accepted the subsequent conditions (Benson, 2001). It was at this point in time, in 1986, that Tanzania also began its transition from a planned economy with a single party political system to a free market economy with multiparty democracy (Wobst, 2001). This transition spawned Tanzania's outward orientated approach to export on the world market (Sahn *et al.*, 1997). Under pressure from international donors and balance of payments constraints, the Tanzanian government turned to trade liberalizations including lower tariffs and export taxes (Sahn *et al.*, 1997) and accepted IMF and World Bank packages of reforms (Peabody, 1996).

Many argue that the introduction of SAPs and the neoliberal ideology that is embedded in these policies has been extremely detrimental to Tanzania's health care system. As McMicheal & Beaglehole (2000), explain, "structural adjustment programs imposed by the IMF on the economies of various poor countries, promoting particularly the wealth-creating role of the private sector, have often impaired population health".

SAPs have had both direct and indirect effects on health care in Tanzania. Direct effects stem from cuts in government revenues that led to cuts in health care (Peabody, 1996). For example, there has been very little development in the health infrastructure since the adoption of SAPs, as the pre-SAP policies are the ones which have been responsible for improving accessibility (Lugalla, 2006). Also, there are massive cutbacks in health care expenditure. For instance, health sector expenditures from 1978 to 1988 fell from 2.4 percent of Tanzania's national Gross Domestic Product (GDP) in 1978 to less than 1.9 percent in 1988 (Lugalla, 2006). The proportion of new health care facilities also drastically declined. For example, during Nyerere's era from 1967 to 1985, the number of hospitals increased 31%, but during the period in which structural adjustment policies were implemented, from 1986 to 1993, the number of hospitals only increased by 14% and per capita spending on health declined by more than a third between 1986

and 1993 (Lugalla, 2006). Overall, there has been a 50% decline in expenditure on health care within Tanzania from the 1970s to 1980s and 1990s (Lugalla, 2006). These figures display that the Tanzanian Government's ability to maintain, expand, or improve the health care system declined following economic liberalization and after the adoption of SAPs, leading to serious deterioration of health services.

Indirect effects on health care that have resulted from structural adjustment include a number of cuts to other health benefiting social sectors including education and agriculture (Peabody, 1996). For example, total social sector expenditures between 1978 and 1988 in Tanzania dropped from 8% of the GDP in 1978 to less than 4.5% in 1988 (Lugalla, 2006). According to the World Bank, the literacy rate in Tanzania declined from 85% in the 1970s and 1980s to just 68% in the 1990s and enrolment in primary school also dropped from 93% to 63% during the same time period (World Bank, 1993). Also the effects on the economic structure of Tanzania has placed a severe economic burden on families as family incomes have declined and a greater proportion of the Tanzanian population are living below the poverty line (less than $2 USD per day) (Peabody, 1996).

The economic liberalization of Tanzania has also been characterized by the emergence of private hospitals, dispensaries and pharmacies (Kopoka, 2000). During economic liberalization the promotion of private health facilities was emphasized and access to health care and individual health began to polarize as the rich remained healthy and the health of the poor deteriorated (Hanson, 2000). Budget cuts also meant a reduction in staff wages and salaries, cutbacks in training and safety equipment, as well as major increases in patient load for doctors and nurses (Therkildsen, 2000). These public facilities have fewer staff, less equipment, inadequate supplies or low quality services (Peabody, 1996). As low wages and poor conditions disheartened health workers, many left the profession or transferred to private clinics that provided better working conditions and higher salaries (Lugalla, 2006). The proportion of private health facilities began to far outweigh the number of government funded health facilities.

Even with the acceptance of neoliberal polices, tension remained between those who supported the subsequent assistance from the 'West' and the adoption of market-based economies and those who pushed for a more collective responsibility and social

justice (McMicheal & Beaglehole, 2000). Some supporters of Nyerere's socialist policies suggest that much can be learned from Nyerere's emphasis on linking development to collective economic and social policies, as essential services would be brought to the greater whole (Castro-Leal *et al.*, 2000). As some saw the adoption of structural adjustment policies as a 'new dependency', others saw this 'progressive' globalization of trade and capital markets as a way to boost development and as a way to meet deteriorating economic and social needs (Kaiser, 2007). It was believed by some (mainly Westerners and those supporting neoliberal ideologies) that by adopting open market economies, countries would redirect resources, share technological developments and achieve high levels of human prosperity (Kaiser, 2007). SAPs were expected to stabilize developing nation's external and internal balance of payments and to promote their export growth through currency devaluation, producer price changes, trade liberalization, privatization and legal reforms that were imposed by the IMF and World Bank (Lugalla, 2006). SAPs were thought to deliver high quality services that the government could not provide by mending social and economic conditions through the reduction of final deficits, increases in economic efficiency and by encouraging private sector investments and export-oriented production (Mercer, 1999).

Although there were high expectations for SAPs to improve the social, economic and health care situation in Tanzania, the current state of the health of the Tanzanian population demonstrates otherwise.

2.2.3 The Recent Situation in Tanzania

As previously mentioned, Tanzania remains one of the poorest countries and has one of the lowest life expectancies in the world (Shiner, 2003). Poverty, malnutrition and a number of preventable diseases such as malaria, HIV/AIDS and tuberculosis remain in high prevalence and the health care system is unable to adequately provide services (Shiner, 2003). It was estimated that at the end of 2003, 1.8 million people were living with HIV/AIDS in Tanzania (UNAIDS, 2004). At the same time expenditure on health per capita is only $8.00 USD per year (Shiner, 2003). Tanzania also has one of the lowest average gross national incomes in the world sitting at only $241 USD (Changalucha *et al.*, 2002; WHO, 2006). According to the World Bank (2006), 36 % of

people living in Tanzania are living below the poverty line (i.e. a large proportion of people are living on less than $2 USD per day and do not have the expenditure necessary to buy a minimum standard of nutrition and other basic necessities) (World Bank, 2006). It is estimated that the malnutrition prevalence in Tanzania sits at an alarming 22 %; also, it is estimated that 44% of children in Tanzania are stunted for their age due to malnutrition (World Bank, 2006). Other health indicators such as infant mortality rate (73.6 per 1000) also reveal Tanzania's stark socioeconomic underdevelopment (WHO, 2006). Although many of these figures fail to represent the 'full picture' including particular social and political achievements, they can indicate a country's socio-economic situation relative to the rest of the world (Changalucha *et al.*, 2002).

Education is one of the most powerful tools for reducing poverty and inequality within populations and is at the basis of sustained economic growth (World Bank, 2006). Although the literacy rate in Tanzania is approximately 70%, a significant percentage of the population remains uneducated (WHO, 2006). Within Tanzania, 23.1 % of the adult population has no formal education and 27.3% of the population is unable to read at all (WHO, 2006).

Tanzania's economy, similar to many developing nations, is based upon farming and agriculture (NWURT, 2008). Tanzania's agricultural sector is the primary employer in the country, with 78% of women and 71% of men working within this sector (NWURT, 2008). Unskilled manual labour is the second leading sector in Tanzania, comprising approximately 10% of employment for women and approximately 9% of total employment for men (World Bank, 2006). Service sector jobs, including managerial, specialized and technical occupations employ only 2% of women and 4% of men (NWURT, 2008). Unemployment in Tanzania is relatively high, especially among women as estimated figures sit between 10-13% for women compared to 7-10% for men (World Bank, 2006).

It is in this context of historical colonial exploitation and current social and political-economic struggle that it is necessary to implement health and development projects and initiatives such as the WHE/ Tukwamunae probiotic yogurt projects that will assist in improving the health, nutrition and socio-economic status of Tanzanians.

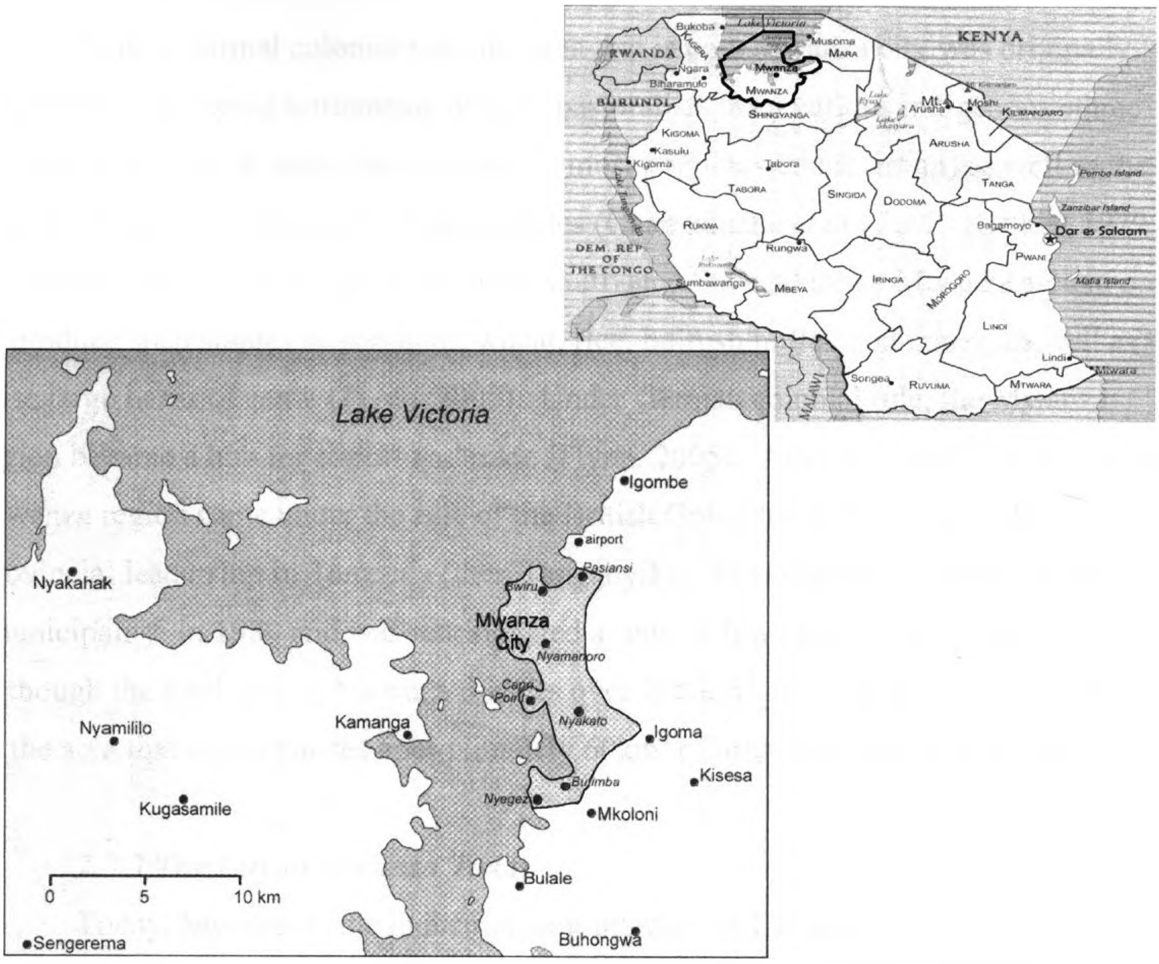
2.3 Mwanza Community Profile (Study Area)

2.3.1 Location

The city of Mwanza, Tanzania is located on the southwest shore of Lake Victoria in northern Tanzania (Wedner *et al.*, 2002). Mwanza sits at 2°31'0 south latitude and 32 °53'60 east longitude (NWURT, 2008). Mwanza experiences a cool equatorial, semiarid climate with an average annual temperature of 27°C, as its elevation lies at 1127m plus above sea level (Changalucha *et al.*, 2002; Flynn, 2005). Mwanza is Tanzania's second largest city, after Dar es Salaam, with an estimated population between 450,000 and 600,000 and is the capital of the Mwanza Region (NBST, 2006).

Figure 2 displays a map of Mwanza with respect to its location within Tanzania.

Figure 2- Map of Mwanza, Tanzania, Africa



Source: **Adapted from Flynn, K. (2005). Food, *Culture, and Survival in an African City.* Palgrave Macmillan: New York. & The National Geographic Society, 1998.**

2.3.2 Brief History

Prior to formal colonial rule, the area that is now Mwanza city was originally inhabited by scattered settlements of agro-pastoralists from various indigenous ethnic groups such as the Wasukuma (Tanzania's most populous ethnic group) as well as the Kerewe, Kara, Jita, Haya and Chaga peoples (Changalucha *et al.*, 2002; Kankik, 1979; Mirambo, 2005). These agro-pastoralists cultivated the land in the Mwanza area in order to produce such staples as sorghum, wheat, rice, bulrush millet, and maize, as well as to raise large herds of cattle (Flynn, 2005). Under German colonial rule, the Mwanza region became a hub for export and trade (Flynn, 2005). After the First World War, the Mwanza region came under the rule of the British Government who established Provincial leadership in Tanzania (then Tanganyika). Mwanza was officially deemed a 'municipality' in 1980 and was redesignated a 'city' a few years later (Flynn, 2005). Although the total area of Mwanza reaches over 258 km^2, many locals refer to 'Mwanza' as the area that compromises approximately 60km^2 of urbanized land (Flynn, 2005).

2.3.3 The City of Mwanza Today

Today, Mwanza is the industrial, commercial, and administrative centre for the Lake Zone area which includes the Mwanza, Mara, Kagera and Shinyanga regions (Flynn, 2005). The City is also known as a primary transportation hub as routes by ferry, rail, air and road are easily accessible from the city. Mwanza has its own airport and is connected by rail with Dar es Salaam and Dodoma (WHO, 2006). There are also paved roads that connect the city to nearby Shinyanga, Singida, the Western Gate of the Serengeti and Musoma as well as two truck and bus routes that link Central Africa with Kenya and the coastal parts of Tanzania (Changalucha *et al.*, 2000). Mwanza is also the home of a local ferry service that transports people and goods five times per day over Lake Victoria (WHO, 2006).

Due to its accessibility to transportation routes and its rich historical and colonial past, Mwanza has become a primary region for wage labour jobs and agriculture. Currently, maize and cotton are the primary cash crops of the region (Changalucha *et al.*, 2002). A large part of Mwanza's agricultural industry is also comprised of livestock

raising, especially dairy cattle production (Sumberg, 1996). Smallholder cattle farms make up the majority of dairy farming in this area as large-scale farms only produce about 18% of dairy products (Kurwijila, 2002). Mwanza produces over 1.5 million litres of milk per year, over half of which is sold; the rest is consumed by farmers and their families. Also, approximately 1,770 litres of processed milk (both fresh and in yogurt form) is sold within the city usually at the cost of 1000 Tsh/ per liter (~$1.00 CAD) (UNDP, 2004). Most milk that is produced in Mwanza area is consumed at the farm level or is sold locally to neighbours since many prefer fresh and refrigeration is limited (Sumberg, 1996). Although milk substitute products are available (such as powdered milk) local people tend to consume more fresh milk as the taste is preferred and it is perceived to contain a higher nutritional value (Sumberg, 1996). The majority of dairy products are produced outside the urban centre and are transported around the city via bicycle on a daily basis to those who can afford it (Kurwijila, 2002). For the average Tanzanian, milk is expensive, costing between 250-500Tsh/ litre ($0.25-0.50 CAD) which represents approximately 30-60% of the average daily income in Mwanza but because of its dense nutritional content it is preferred and consumed by many (Kurwijila, 2002).

In recent years, many foreign companies have become involved in the gold mining industry which is bringing about major changes in terms of demography, economics as well as health, especially relating to sexually transmitted infections (Changalucha *et al.*, 2002). A lot of industrial development has also taken place in Mwanza since the mid 1990s including the development of textile and leather factories, beer breweries, boat yards, fish manufacturing plants, cotton production as well as other enterprises related to finance (Changalucha *et al.*, 2002; Flynn, 2005). The construction industry is also booming as the city is growing at a fast pace and as Mwanza is becoming a gateway for tourism in the Serengeti region (Changalucha *et al.*, 2002). Mwanza is also a prime location for trade with neighbouring Uganda and Kenya (WHO, 2006).

Due to the city's attractive characteristics and increasing birth rates, it is predicted that the population of Mwanza will exceed 1.3 million by the year 2011 (Flynn, 2005). Mwanza currently has a population growth rate of approximately 8% per annum and this rate is expected to continue for a lengthy period of time (Changalucha *et al.*, 2002). Also,

since the majority of Mwanza's population (over 63%) is under the age of 14, there is expected to be a population boom when these children grow to maturity (Flynn, 2005). The municipality's employment and educational opportunities are also attracting large numbers of immigrants from surrounding regions and other parts of the country as many are in search for future opportunities (Flynn, 2005). Mwanza has also provided a safe haven for many refugees from neighbouring countries (for example Rwanda), many of which have decided to permanently reside in the city. Mwanza is also home to some of the leading health facilities in the country including The National Institute for Medical Research (NIMR), Sekou Toure Regional Hospital and Bugando Hospital (Flynn, 2005).

As Mwanza is an attractive place for many, the city is very religiously, culturally and linguistically diverse. Within the municipality of Mwanza there are multiple religious sects including Christians (70%), Muslims (20%), Hindus (4%) and Sikhs (3%) (Changalucha *et al.*, 2002; Flynn, 2005). First and second generation Africans make up the majority of the Mwanza population (77%) with East Indians (18%), Arabs (2%) and Europeans (1%) comprising the rest of the population (Flynn, 2005). Main spoken and written languages include the local languages of Swahili and Sukuma, as well as Arabic and English (NWURT, 2008).

Although Mwanza is one of the fastest growing cities in East Africa, infectious diseases such as HIV/AIDS, malaria, and tuberculosis have been a major threat to the health of the region's population as well as to the economic and social well-being of the people (NWURT, 2008). It is estimated that the HIV/AIDS rate in Mwanza lies between 9% and 15% of the total population (NWURT,2008). As well it is estimated that 10% of all deaths in Mwanza are related to malaria and 3% are related to tuberculosis (WHO, 2006).

As there is an increasing disease burden in Mwanza that arises from HIV/AIDS and other related diseases, there is a need for local relief services and health care services that assist in reducing morbidity and mortality. Within Mwanza there are two private hospitals, one regional hospital, and one teaching hospital, that assist in preventing, treating, and minimizing the effects of infectious diseases and other local health problems (Changalucha *et al*,. 2002). There are also a number of Non-Governmental Organizations that assist in relieving the burden of disease and death (Kivulini, AMREF, World Vision,

CARE, ACORD, CRS). These organizations often contribute to all aspects of poverty alleviation, including: research, priority setting, knowledge translation and transmission, advocacy, resource mobilization, community counselling, capacity development and a number of other community empowerment activities (Delisle *et al.*, 2005).

Although there are a number of leading health facilities and Government and Non-Government Organizations located in Mwanza that continue to assist in improving the overall health of the population, many have limited funding and few resources. For example, the increasing disease burden in Mwanza is contributing to a shortage of hospital space, medical supplies and medical professionals to care for a growing population within an already constrained system (Changalucha *et al.*, 2002). Also many government and non-government HIV/AIDS treatment programs such as the National AIDS Control Program, The Tanzanian National Antiretroviral Treatment Plan and many others, are limited in funding and their services fail to reach the majority of the needy population. For instance, the National AIDS Control Program recognizes that there are approximately 315, 000 people in Tanzania who should be receiving antiretroviral (ARV) treatments but only about 15% of these people are covered by the program due to financial constraints and only about 11% are actually receiving treatment. Low ARV administration rates are also affected by other constraints such as hunger, wait times, transportation costs, stigma and other health-related complications (Mshana et al., 2006).

Utilization of, adherence to and effectiveness of many health benefiting ARV treatment programs have also been limited due to the impact of severe poverty and high rates of malnutrition in the area (Flynn, 2001). Food insecurity and malnutrition drastically affect adherence to ARV programs as well as the effectiveness of ARV regimes, since individuals who are malnourished encounter more severe side-effects from the drugs, and since ARVs are not absorbed as well in nutrient-deficient individuals. Patients who take ARV treatments often experience a number of nutrition-related side effects, including nausea, dizziness and vomiting, which are often cited as reasons for non-adherence to and discontinuation of ARV treatment as the effects of these conditions are often greater in food insecure populations (Chen *et al.*, 2003). Although it is recommended that ARVs be taken with a rich nutritional diet, many individuals, especially those living with HIV/AIDS in Mwanza overall, are malnourished (Flyann,

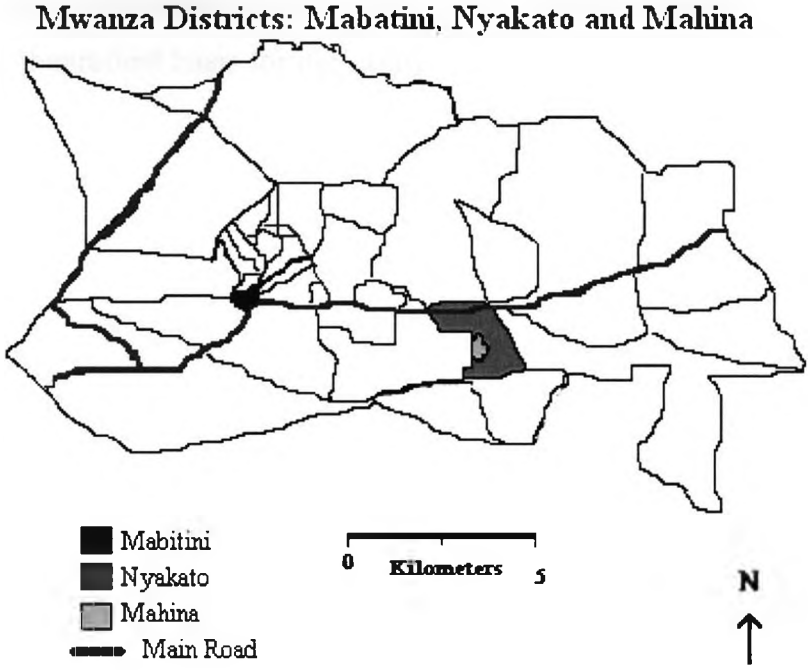
2001; Mshana *et al.*, 2006). Because of such links between nutrition, health and HIV/AIDS, there exists a need for programs and interventions that focus on improving nutrition in nutrient-deficient populations such as Mwanza.

Since there are such financial limitations and logistical constraints for these health promoting facilities and organizations, there is a strong need for additional programs that could assist in the prevention and treatment of poverty related diseases (PRDs) such as HIV/AIDS, tuberculosis and malaria as they are the major cause as well as the consequence of extensive poverty in Mwanza (Degrand-Guillaud, 2002). Also, as nutrition plays such a large role in the general health of individuals and the effectiveness of therapies for those living with HIV/AIDS, there exists a growing need for nutritional health programs in the Mwanza region.

2.4 The Mahina Community, Nyakato District, Mwanza Tanzania

Mahina was chosen as the study site for this research as there exists a need for a nutritional health program within this community (this will be explained further in Chapter 4). Mahina is a relatively small community in the Nyakato district of Mwanza (see *Figure 3*). Nyakato is located just off of the main highway (Nyerere Rd) that runs through the city of Mwanza, straight through to the town of Nyanguge, on to Musoma. Mahina is located approximately 6.5 Km from the current probiotic yogurt kitchen in Nyakato district. The Nyakato district is one of the most populated districts in Mwanza with a population of 82,080 (49.6% males: 50.4% females) (NBST,2008). Mahina is a smaller community that is located within the Nyakato district, with a population of 2,740 (46.8% males: 53.2% females) (NBST,2008). Although HIV/AIDS prevalence rates for both Nyakato and Mahina are unknown, staff members from Kivulini (a local women's and children's rights organization) estimate that the HIV/AIDS levels are approximately 2-3 times higher in the Mahina compared to the average prevalence rate of Mwanza. Although it is preferred that more socio-economic/ demographic data of the Nyakato district and the Mahina community could be included in this section, reliable data from the Mwanza region is limited.

Figure 3- Mwanza District Map: Mabatini, Nyakato and Mahina



Source: Created by Melissa Whaling: Adapted from:
http://www.tanzania.go.tz/mkurabita/PDF/03%20%20Maps.ppt#269

2.5 Chapter summary

This chapter provides a general scope of the historical, political and socio-economic background of the study area from a national, local and community perspective. First, a historical account of the political-economic shifts within Tanzania and how these shifts have affected health care were described in order to situate the current economic and health care situation in Tanzania. Next, a description of the city of Mwanza was discussed including the socio-demographics of the area as well as the increasing burden of HIV/AIDS and the struggles facing the health care system in this community. As the city of Mwanza attempts to deal with the burden of numerous poverty related diseases, including HIV/AIDS, it is important to gain a better understanding of community health projects that utilize nutritional supplements to aid in the prevention and treatment of these diseases. The Mahina community, located within

the Nyakato district of Mwanza was chosen as the study site for investigation of the perceptions of the likely impacts of a proposed probiotic yogurt project on gender relations and health. The following chapter outlines relevant literature which will assist in providing the theoretical basis for this study.

CHAPTER 3

Literature Review

3.1 Introduction

In order to situate this study relating to perceptions of the likely impacts of a proposed probiotic yogurt project on gender relations and health, this chapter will outline and elucidate the background, concepts and theories that form the basis of this research. This chapter is initiated with an explanation of concepts of health with a particular focus on Western concepts of health and African (specifically Tanzanian) concepts of health. Next, a review of HIV/AIDS food and nutrition is explored including an examination of perceptions and adherence to HIV/AIDS therapies and the effects of HIV/AIDS stigma on therapy use as well as alternative and complementary therapy use including probiotic yogurt. Public health at the community level is the next section that is discussed including the importance of space and place in health geography. This section also includes a description of the contextual and compositional aspects of place which include project needs and facilitators related to the implementation of a community health project. This section also provides an overview of the benefits and downfalls of community participation. The concluding section specifically focuses on gender and development including the historical shifts in feminist theory from Women in Development (WID) to Gender and Development (GAD). The final part of this section focuses on specific gender and development issues within Tanzania.

3.2 Concepts of Health and Medicine

3.2.1 Concepts of Health, Illness and Medicine

It has been recognized that 'health' 'illness' and 'medicine' are not all encompassing, static terms that are concrete in their meaning, but are rather complex and changing concepts. In the past, within a Western biomedical paradigm, the term 'health' seemingly only signified the absence of disease (Bryant *et al.*, 2002; WHO, 1947). Holistic concepts of 'health' and 'well-being' are now advocated whereby health and well-being represent social, economic, environmental, psychological, and cultural

characteristics of individuals and groups, not merely just the absence of disease (Bryant *et al.*, 2002; WHO, 1947).

While Western biomedical approaches continue to dominate medical theory and practice in North America, Europe and other Western nations, there are many other concepts of health and medicine that play a major role in influencing the health cognitions, health behaviours and preferred medical treatments of individuals and groups (Erwin & Peters, 1999; Brown & Segal, 1997; Gessler *et al.*, 1995). For instance, indigenous approaches to healing in Tanzania are principally concerned with treating illness as the human experience of sickness rather than the biological recognition and treatment of disease (Green, 2004). Many of these indigenous approaches also recognize that categorization of medical traditions does not imply that individual health and medical concepts are, in fact, clear cut, but that individuals and groups may be influenced by, or utilize concepts from, an array of traditional medical theologies, or may be influenced by a mixture of conceptual health theories. Although there are a variety of health and medical traditions that influence human behaviour across the globe (e.g. Chinese, Tibetan, Indian, Aboriginal, Native American etc.), for the purposes of this study, a focus on Western and African concepts of health medicine will be emphasized.

3.2.2 'Western' Concepts of Health and Medicine

The dominant 'Western' view of health and medicine depends on the underpinnings of the Biomedical Disease Model (BDM). The BDM as a theoretical framework has a central philosophy based on the notion of a single cause and effect relationship (Baelum & Lopez, 2004). The BDM is centered on rationality and individualism and focuses on physical processes such as the pathology, physiology and the biochemistry of disease (Engel, 1977). Medical scientists using this model explore causal relationships through observational, testable, and measurable experimental or clinical designs in order to link diseases with specific environmental exposures (Johnson & Sargent, 1990; Engel, 1977). The BDM asserts that sufficient deviation from normal functioning represents disease, triggered by known or unknown natural causes, and that

the elimination of those causes will result in the cure or improvement of individuals (Engel, 1977).

The BDM has its roots in evidence-based medical science, which has been recognized as the prominent approach in Western medicine since the mid-nineteenth century (Loustaunau & Sobo, 1999). Proponents using the BDM have shaped a great deal of the literature and practice relating to medicine, health and health-related policy in Western societies. While the BDM has proven to be extremely effective in the identification, diagnosis and treatment of disease in order to improve the overall health and well being of the population (Baelum & Lopez, 2004). The BDM is not always adequately applicable to all forms of research and investigation with health policy relevance. As Engel points out:

> The historical fact we have to face is that in modern Western society biomedicine not only has provided a basis for the scientific study of disease, it has also become our own culturally specific perspective about disease (our folk model). The biomedical model has thus become a cultural imperative and its limitations have been much overlooked (Engle, 1977. p. 130).

More recently, the BDM has been criticized for being too reductionist as it ignores ideas related to holistic health and well-being as well as the socially constructed nature of health and illness. Health, disease and illness are in many cases multi-causal, combining numerous determinants of health in order to produce an overall state of being (WHO, 1998). The theoretical assumptions of the BDM lead to a model that does not depict the complexity of causal interrelationships between determinants of health for different groups (Baelum & Lopez, 2004). The model tends to undermine the role that culture plays in health and ignores how active cultural traditions affect health behaviours, decisions and processes.

3.2.3 Indigenous African Concepts of Health and Medicine

Indigenous African concepts of health and medicine are quite different from that of the dominant Western focus, as they embrace multiple philosophies that contrast the "all or nothing" philosophical thinking of Western medicine (Airhihenbuwa, 1995). Within the African tradition, health, illness and medicine are more comprehensive

concepts and often represent more than just the absence of disease with a focus on general quality of life including physical, spiritual, emotional and mental well-being. African medical theories emphasize prevention and holistic features while working from a social and religious foundation. This concept differs from Western biomedicine which is generally asocial, irreligious, curative-based and organ-directed (Van der Geest, 1997; Green, 1994). The holistic view of health and medicine in Africa is also represented linguistically as the word 'health' takes on so many meanings within various African cultures (Van der Geest, 1997). For example, the local Swahili (Tanzanian) word for medicine (*dawa)* refers to not only pharmaceutical or biomedical substances that treat illness but a wide variety of health promoting substances and rituals including herbs, remedies, spiritual cleansings and healing ceremonies that are thought to enhance health (Green, 2004).

Within the African medical tradition most indigenous Tanzanian medical theories have a social character. Illness is often explained in terms of social interactions, that is, disease origin, prevention and treatment is often linked to the quality of human relationships (Airhihenbuwa, 1995). As Airhihenbuwa (1995) explains, within the African context, medicine may be any substance that brings about change, anywhere, anyhow. The complexity of the word 'medicine' is apparent as the term does not translate directly into many African languages, but has become a more localized term within communities that are influenced by Western health and medical philosophies and practices (Green, 1988). The link between religion, spirituality and medicine is very apparent in Tanzania where the spiritual function of local healers plays a large role in health and healing. The church also plays a large role in health service delivery for many through its dispensaries and hospitals (Green, 2004).

3.2.4 Combining Western and African Health Concepts

While the indigenous African medical tradition differs quite substantially from the Western biomedical tradition, individuals in many African countries, including Tanzania, often utilize and intermix both traditions (Green, 2004). As health beliefs, practices and behaviours vary from place to place, so too does the degree to which African communities utilize 'Western' concepts of health. Health planning and policy is often

influenced by national level or supranational 'blanket approaches' and the interests, ideas, opinions and perceptions of local populations tend to be ignored. Consequently, it is important to examine cultural perceptions of health and medicine so as to understand health beliefs and practices more completely and to address them appropriately within their particular contexts (Airhihenbuwa, 1995). With an increasing intermixing of biomedical practices and philosophies, indigenous African medical philosophies are now becoming more prominent. Problems and issues that many modern health care systems face seem to suggest that a cooperation of both biomedicine and traditional African medicine will make use of all aspects of health care as this would integrate a more holistic representation of health (Green, 2004:1994; Van der Geest, 1997).

Many Africans have integrated Indigenous and Western concepts and practices to form a commingled philosophy of health (Van der Geest & Van Hardon, 1990). For instance, while home remedies including herbs and other therapeutic substances comprise the bulk of Tanzanian 'medicine', more Western influenced biomedical substances are being used to prevent and treat illness (Feierman & Janzen, 1992). The use of both indigenous African and Western medicines may stem not only from the difficulty some African people have in understanding scientific explanations of disease and illness, but also from the inherent limitations in both philosophical approaches (Van der Geest, 1997; Gessler *et al.*, 1995; Green, 1994). For example, in Tanzania the conceptualization of illness and disease into various social, spiritual and physical dimensions results in the view that the ultimate causes of sickness often originate outside the victim's body, through various social relationships and interactions with other people and ancestral spirits (Green, 2004). Many Tanzanians utilize the assistance of local healers, who are believed to act as communicators or mediums between the living and supernatural world, as they are thought to possess particular spiritual healing powers that are far beyond the capabilities of medical treatment (Green, 2004) Therefore, many Tanzanians believe that they should be treated by local healers who are empowered by external agents (ie. ancestral spirits and supernatural beings) to assist in healing. At the same time, the physical manifestations of the disease may be treated with varying 'Western' medicines (Toit & Abdalla, 1985). These different dimensions of disease are often separately addressed through specifically targeted therapeutic interventions involving the use of

various types of medicine and treatment options including biomedical therapies, 'local' medicines or homeopathy (Green, 2004).

Despite the intermixing of biomedical and traditional African treatment strategies, in Tanzania many local people make a clear distinction between 'local', 'informal' or 'traditional' medicine from hospital (state and missionary) medicine with regard to process, access, convenience, and cost (Green, 2004; Toit & Abdalla, 1985). For example, many Tanzanians perceive state or missionary medicine to be much more expensive; less accessible in terms of cost and location; and many local people prefer to only utilize biomedical/ conventional medicines and treatment for specific illnesses or stages of illness (Green, 2004). Yet both types of medicine are considered by many local people to be of use for health and healing, as it is common for people to go back and forth from local healers to biomedical practitioners until they recover or give up treatment strategies (Green, 2004). As explained by Green (2004), perceptions of the various health care practices in Tanzania have changed with shifting political and economic transformations (such as the implementation of structural adjustment policies and public sector reforms) that have reduced both the quality and availability of health services by reducing social sector allocations and by introducing user fees. Due to the reduced availability and quality of Western medical services, many Tanzanians now question the efficacy of this type of health care approach.

As individual's everyday life circumstances and experiences often vary, so do the perceptions and meanings that they attach to health, illness, medicine and the available treatment options (Vermeire *et al.*, 2001; Erwin & Peters, 1999; Kleinman *et al.*, 1979). It is important within health care and international development to appreciate the diversity in health concepts, meanings and beliefs of different individuals and groups. These perceptions direct health behaviours and health practices including health communication, health maintenance, presentation of symptoms, as well as places and methods of care and responses treatment (Pawluch *et al.*, 2000; Brown & Segal, 1997; Petrie & Weinman, 1997; Kleinman *et al.*, 1979). As such, beliefs, perceptions and health behaviours should be clearly recognized when identifying health care needs and health care strategies.

3.2.5 Perceptions of Health, Illness and Medicine in Context

Illness often begins with personal awareness of a change in the feeling of the body and proceeds with the labelling of the sufferer as 'ill'. Illness experience is an intimate part of social meaning (i.e. perceptions of illness are often influenced at the social level) and the individual beliefs that govern behaviour. The concept of illness is shaped by numerous socio-cultural, political and economic factors that affect health perceptions, experiences and coping strategies. Daily life circumstances affect our explanations of sickness and the systems of meaning that we attach to it. These systems of meaning ultimately influence expectations and perceptions of symptoms, the labeling of illnesses as well as the responses to sickness and disease (Kleinman *et al.*, 1979). This labelling or defining of illness is created through past experience and various entrenched social constructions (Petrie & Weinman, 1997). In most cases of identified 'illness', individuals take personal action to bring about recovery and advice is often sought from members of the extended family or the community as well as professional practitioners (Green, 2004; Kleinman *et al.*, 1979). As people with chronic illnesses such as HIV/AIDS spend most of their time away from medical environments, they must rely on their own personal beliefs, knowledge, judgments and resources for managing their illness (Roberson, 1992). Perceptions, beliefs and meanings of illness and medicines can change over time, as individuals can go through periods of hopefulness, doubt, commitment and scepticism. These perceptions, beliefs, and meanings can also be affected by past experiences and learned values, as well as current levels of energy, states of mind, the presence or absence of social support, access to services, as well as knowledge and beliefs about various medicines (Pawluch *et al.*, 2000).

Those affected by illness must be recognized as active participants in the health care process and their perceptions of illness, medicine and treatment must be considered, since their varying constructions will determine their behaviours and responses, including their adherence to medical regimens (Petrie & Weinman, 1997). Understanding individual's illness and treatment beliefs is important for devising strategies to improve patient outcomes in diverse populations (Vermeire *et al.*, 2000; Brown & Segal, 1997). Although broad concepts of medicine influence health behaviours and practices at a cultural level, individuals make decisions about preferred treatments that centre around

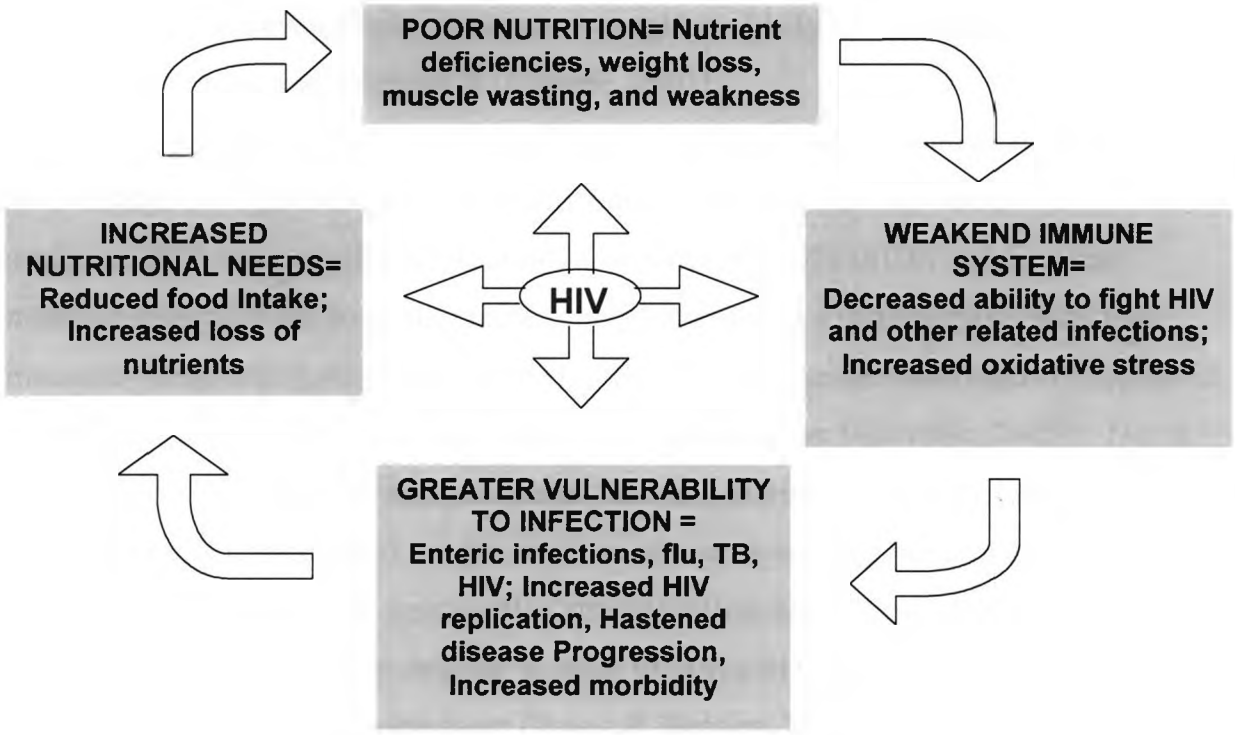
their own beliefs, personal circumstances and experiences (Vermeire *et al.*, 2001; Erwin & Peters, 1999). Understanding illness and treatment perceptions is especially important when investigating chronic illnesses such as HIV/AIDS as these perceptions dramatically affect overall health and well-being.

3.3 Food, Nutrition and HIV/AIDS Therapies

3.3.1 The Vicious Cycle of HIV/AIDS and Malnutrition

HIV/AIDS has had a considerable impact on both individual and community nutrition. At the same time, nutrition plays a key role in HIV transmission and progression. Malnutrition and HIV/AIDS are interrelated disorders and can both initiate or contribute to severe immune suppression (Anabwani & Navario, 2005). Food insecurity and malnutrition hasten the spread of HIV, by escalating people's exposure to the virus and by increasing the risk of infection after exposure. HIV infection, on the other hand, reduces nutritional absorption, leading to further malnutrition (Haddad & Gillespie, 2001). When an individual experiences HIV infection and malnutrition simultaneously, their effect on the immune system is drastic and their interaction can lead to faster disease progression and premature death (Anabwani & Navario, 2005). For example, malnutrition may lead to a greater risk of HIV transmission by lowering immunity and compromising gut and genital microbial and mucosal integrity and may also initiate oxidative stress (Gillespie & Kadiyala, 2005; Anabwani & Navario, 2005; Semba & Tang, 1999). Immune suppression and stress oxidation caused by nutritional deficiencies can also lead to increased HIV replication as well as accelerated disease progression (Gramlich, 1995). Among pregnant and lactating women malnutrition may also increase the chances of mother-to-child transmission (Gillespie & Kadiyala, 2005). *Figure 3* depicts the vicious cycle between HIV/AIDS and malnutrition.

Figure 3: The Vicious Cycle of Malnutrition and HIV/AIDS



Source: Adapted From: (FANTA, 2008)

HIV infected individuals require above average nutritional intake as various types of illness that are a result of the disease bring about inefficiencies in the body's absorption and utilization of many types of needed nutrients (Semba & Tang, 1999). Specifically, HIV infected individuals often require up to 15% more energy intake as well as up to 50% protein intake (Haddad & Gillespie, 2001). Even though HIV infection increases nutrient, protein and carbohydrate requirements, many individuals that are infected with the disease have the tendency to reduce their dietary intake due to loss of appetite or anorexia brought on by the disease, lack of food supplies, and/or lack of nutritious food options. This reduction of nutrients is harmful especially when nutritional requirements are higher (Gramlich, 1995). The interrelationship between nutrition and

HIV/AIDS is particularly significant in regions where infectious and communicable diseases such as tuberculosis, malaria and a number of parasitic diseases may occur concurrently or repeatedly in HIV positive individuals (Anabwani & Navario, 2005). Also, in countries such as Tanzania where the majority of the population is poor, the effects of HIV are even greater since more people are likely to be malnourished subsequent to infection (Haddad & Gillespie, 2001).

Poverty and food insecurity often increase the risk of exposure to HIV/AIDS as food-insecure people are often less able to ensure that they are well-nourished in order to minimize HIV exposure (FANTA, 2008). Consequently, HIV/AIDS and food and nutrition insecurity are becoming increasingly entwined in a vicious cycle, with food insecurity heightening susceptibility to HIV exposure on the one hand, and HIV/AIDS in turn heightening vulnerability to food insecurity on the other (Gillespie, 2005). Not only does HIV/AIDS perpetuate and exacerbate food and nutrition insecurity but the spread of the virus is accelerated when people, because of their worsening poverty, are forced to adopt ever more risky food provisioning strategies (Semba & Tang, 1999). For example, individuals may be forced to migrate in order to earn a livelihood, which increases the likelihood of risky sexual behaviours (Piwoz & Bentley, 2005). Women may also be forced to resort to transactional sex in order to feed their families (Gillespie & Kadiyala, 2005). Food insecurity, along with poor access to health care and greater exposure to bacterial and viral environments, also leads to increased malnutrition rates (Drain *et al.*, 2007).

3.3.2 *Nutrition, HIV/AIDS and Antiretroviral Therapies*

The link between nutrition, micronutrient supplements, HIV/AIDS and effective therapies such as antiretroviral therapies (ARVs) is very significant in the management and prevention of HIV/AIDS since nutrition plays a key role in the effectiveness and adherence of these treatments. ARVs, on their own, improve immunity, slow disease progression and increase life expectancy of those living with HIV/AIDS (Tomkins, 2005; Hogg *et al.*, 1998). Adequate nutrition is required to maximize the benefits of ARVs in prolonging the lives of people living with HIV/AIDS and for preventing transmission of the virus in some cases such as from mother to child during birth (Tomkins, 2005). There is now clear evidence that, when combined with a well-nourished diet, ARVs have an even greater impact on the health of people living with HIV/AIDS. Well-nourished individuals who utilize ARVs are more likely to live longer than malnourished individuals that also utilize ARVs (Paton *et al.*, 2006; Tomkins, 2005; Hogg *et al.*, 1998). Patients on ARVs often experience a number of nutrition-related side effects, including nausea, dizziness and vomiting which are often cited as reasons for non-adherence and discontinuation of ARVs (Chen *et al.*, 2003). The intensity of these side effects are often greater in food insecure populations as malnourishment increases the likelihood of nausea, dizziness and vomiting. Although undesirable side effects of ARVs occur more frequently in malnourished individuals, they may alleviated by nutritional support, which may ultimately promote adherence (Byron *et al.*, 2006; Marsten & De Cock, 2004). Hence, there have been recent calls (e.g FAO/ WHO) to support people on ARVs in resource poor settings such as Tanzania who often lack access to adequate food and nutrition.

3.3.3 *Perceptions and Adherence to HIV/AIDS Therapies*

The availability of ARVs in Tanzania is relatively recent as they became available in 2001 through various government organizations and non-government organizations (Irunde *et al.*, 2007). The cost of ARVs in Tanzania and around the world has dramatically decreased over the years due to increased funding, competition from generic

manufacturers as well as a political pressure to reduce costs. For instance, in 2000 the cost of ARV treatments for one individual for one year was approximately $10,000-20,000 USD and as of 2004, the cost plummeted to just under $300 USD (UNAIDS, 2004). Many individuals in Tanzania can still not afford to purchase ARV treatments since their cost is equivalent to the average salary for one year. Due to their high cost, the Tanzanian government in partnership with many NGOs (i.e. the Global Fund to Fight AIDS, US President's Emergency Plan for AIDS Relief, the Clinton Foundation, the Swedish International Development Agency) have committed themselves to providing these necessary treatments free of charge to as many individuals as possible (Irunde *et al.*, 2007). The Tanzanian government set an interim goal of placing 44,000 people on ARVs by the end of 2005 but as reported by the National AIDS Control Programme, as of January, 2006, only approximately 25,300 people were receiving treatment. As the scaling up of ARV treatment programs progresses, there is a need to understand the various factors that constrain adherence to these treatments in order to ensure that these programs remain beneficial to as many people as possible (Irunde *et al.*, 2007).

Although the use of antiretroviral therapies (ARVs) has resulted in decreased rates of morbidity and mortality in patients living with HIV/AIDS, it has been frequently documented that intentional non-adherence to ARV treatment regimens is common because some patients sometimes make a reasoned decision to not take their medicines or reject these treatments all together (Kirksey *et al.*, 2002; Erwin & Peters, 1999; Roberson, 1992). It has been reported that rates of adherence to long-term treatments for chronic conditions such as HIV/AIDS are below optimal levels in Tanzania as only one out of three people on ARVs achieve optimal adherence (Hardon *et al.*, 2007).

Patients with a chronic illness who do not comply with their recommended treatments are prone to worsening or deteriorating complicated medical problems and health outcomes (Roberson, 1992). Compliance behaviour, especially adherence to conventional medicines for chronic illness such as ARV therapies, is complex and multidimensional. Individuals are affected by past experiences and beliefs as well as current perceptions about the costs and benefits of taking medicine (Roberson, 1992). Structural factors such as access to transportation, frequency of ARV treatments, cost, user fees and frequent illness that may stem from other diseases or ailments may also

prevent individuals from adhering to therapies (Hardon *et al.,* 2007; Irunde *et al.,* 2007; Harries *et al.,* 2004; Weiser *et al.,* 2003). Although ARV adherence rates in many African countries are higher than in North America, there has been a push to address perceptions of illness and treatment behaviours in countries such as Tanzania as there is much greater portion of the population that is infected with HIV/AIDS (Hardon *et al.,* 2007). Hardon et al. (2007), Weiser et al. (2003) and Venstra et al. (2001) all emphasize, that many people have continued to resist taking their medications in the face of continuous recommendation, advice and intervention. This non-compliance to HIV/AIDS related treatment has brought attention to the need to address perceptions of illness and treatment behaviours.

Patients' own beliefs as well as other constraints (e.g. cost, harsh side-effects, wait times, hunger, transport costs, user fees) that have been cited in the literature (Hardon *et al.,* 2007; Zacharia *et al.,* 2006; Muula, 2004; Weiser *et al.,* 2003) all play a role in determining compliance to physician recommended treatments. Furthermore, social and cultural factors such as attitudes concerning treatments within the community atmosphere (e.g. HIV/AIDS stigma and local treatment preferences) can also affect adherence to medical regimens (Weiser *et al.,* 2003). When patients are presented with a treatment regimen, they arrive with a particular set of beliefs, theories and life experiences about their health, which may affect their adherence or compliance to recommended treatments.

Many factors come into play when individuals choose to adhere to, modify, or reject physician recommended treatments. Some people avoid taking medicine if they believe that they can manage without it. Others also take it upon themselves to experiment with conventional medicine including changing dosage or stopping the medicine in order to observe the effects (Roberson, 1992). Patients can also be confronted with conflicting information from physicians and indigenous healers, as well as others within their community and may not always view advised treatments as necessary for their own benefit (Vermeire *et al.*, 2001). In other cases, HIV positive individuals may not want to discuss or share their treatment options and decisions with others due to HIV/AIDS stigma within the community (Weiser *et al.,* 2003). Beliefs about medicine, concerns about the value or appropriateness of medicines, psychological

issues, confusion and physical difficulties are just some factors that are known to affect adherence to medical therapies (Pawluch *et al,* 2000). These same beliefs about medicine as well as negative experiences in taking particular therapies such as ARV treatments also lead some individuals to seek complementary or alternative therapies to either to enhance the affects and minimize negative outcomes of medications or to all together replace them.

3.3.4 The Use of Complementary and Alternative ARV Treatments

Cuzzolin et al. (2003) define complementary medicine as "any diagnosis, treatment and/ or prevention which complements mainstream [Western, biomedical] medicine or is used in conjunction with mainstream medicine and contributes to a common whole, by satisfying a demand not met by orthodoxy or by diversifying the conceptual frameworks of medicine" (p.824). Bratman & Stevens (1997) define alternative medicine, on the other hand as any healing practice that does not fall within the realm of conventional [Western biomedical] medicine. Complementary or alternative medicine and therapies may be similar in practice. But the difference between the two lies in whether or not the therapies are used in conjunction with Western biomedical medicine or are used as a replacement or substitute for biomedical treatments. The use of complementary medicines can be rooted in a biomedical understanding of disease as a way to enhance or prolong life. The use of these therapies can be used along side Western therapies in order to minimize side effects or to compensate for shortcomings of Western medicine. On the other hand, alternative therapies can be used instead of or to replace Western therapies that are viewed as inadequate (Pawluch *et al.*, 2000).

Both complementary and alternative medicines are often used as a broader strategy to maintain health and ensure long-term survival including staying symptom-free for as long as possible and to prolong life (Vermeire *et al.*, 2001). Reasons for seeking out complementary or alternative therapies include pragmatic reasons (people need effective solutions for their health problems) or ideological reasons (people are informed by a set of beliefs about health, illness and healing) (Pawluch *et al.*, 2000). There are various forms and categories of complementary and alternative therapies including healing therapies that require physical action or consumption of oral agents (vitamins,

herbal remedies, message, chiropractics, nutritional supplements (such as probiotic yogurt), acupuncture, energy healing, homeopathy and folk remedies) and psychological therapies that involve mental process (relaxation, self-help groups, spiritual and religious methods, imagery and hypnosis) (Riska *et al.*, 2002).

Individuals react to treatment in terms of apparent effects on health and seek treatment options that are the most manageable, tolerable, and that are perceived to be the most effective (Vermeire *et al.*, 2001). People living with HIV/AIDS use a variety of holistic methods to manage their disease and treatment-related symptoms. The use of informal medical treatments or alternative or complementary treatments to either supplement or substitute formal medical treatments is quite common; HIV/AIDS patients often take it into their own hands to manage chronic illness (Brown & Segal, 1997). It has been estimated that more than 60% of the population of Tanzania depends on traditional medicine for the treatment and management of HIV/AIDS (Kisangau, 2007).

People with HIV/AIDS often experience adverse treatment-related side effects from ARVs which tend to affect their quality of life. Therefore, many individuals incorporate and some replace their ARV treatments with nutritional or natural alternative therapies to keep the immune system healthy (Riska *et al.,* 2002; Pawluch *et al.*, 2000).

HIV/AIDS therapies, for some, consist of anything that helps them feel better, anything that helps them cope (Pawluch *et al.*, 2000). Patients with non-curative diseases tend to use whatever means necessary to improve their quality of life (Duggan *et al.*, 2001). People with chronic illnesses are often so desperate that they will pay anything, meet any condition, pray to any god to find a cure for the incurable (Pawluch *et al.*, 2000; Brown & Segal, 1997). As Erwin & Peters (1999) explain, some African people living with HIV/AIDS have the attitude that if a treatment, medicine or procedure makes them feel better or minimize symptoms then it is the best therapy for them, regardless of biological markers that may indicate otherwise (Erwin & Peters, 1999).

In Tanzania, Western medicine is sometimes viewed as dangerous, powerful, and toxic, in contrast to alternative therapies that are seen as gentle, harmless, less invasive and non-toxic (Pawluch *et al.*, 2000; Brown & Segal, 1997). Some individuals hold negative perceptions of medicines such as ARVs and may perceive them as being more damaging, harmful and unnatural than helpful. Some individuals have suspicions about

and distrust for medicine and some are worried about the toxicity of Western treatments. Others are skeptical about the efficacy of ARVs and avoid taking them all together (Pawluch *et al.*, 2000; Britten, 1994). Some people avoid Western medicine and sometimes use it as a last resort as they prefer alternative medicines and will use them for as long as their health issues can be managed through other means (Pawluch *et al.*, 2000; Green, 1994).

Some people perceive ARV treatments as being worse than dealing with the symptoms of HIV/AIDS (Britten, 1994). Quality of life limiting side-effects, the necessity to adhere indefinitely to rigid and complex ARV regimens, stigma associated with having HIV/AIDS, interference with social roles and daily activities and concerns regarding long-term efficacy and unknown toxicities have contributed towards negative perceptions of ARV therapy (Laws *et al.*, 2000; Pawluch *et al.*, 2000; Erwin & Peters, 1999; Britten, 1994). Some people choose to reject ARV therapies as some individuals are more oriented towards day-to-day responsibilities than long-term survival (Pawluch *et al.*, 2000).

ARVs call for strict adherence to the prescribed regimen to remain effective. (Erwin & Peters, 1999). These strict treatment regimes can interfere with daily life and create life restrictions for people living with HIV/AIDS as timing of treatments may interfere with career or social events and routines (Pawluch *et al.*, 2000). Although some people choose to reject ARV therapies that interfere with daily life, many individuals often turn to alternative therapies because they usually have flexible treatment schedules as well as little to no side effects (Pawluch *et al.*, 2000).

Many individuals often choose less intrusive therapies such as alternative medicines, especially in resource-poor countries such as Tanzania where undernourishment is common as ARVs may trigger sever side-effects or even death (Weiser *et al.*, 2003). In some cases, people may compromise their long-term survival by rejecting Western drug therapies (such as ARVs) that may produce debilitating side effects and restricting themselves to complementary therapies in order to enhance quality of life (Duggan *et al.*, 2001; Vermeire *et al.*, 2001). Patients often evaluate their health on how they are feeling and will stop taking physician recommended treatments if they symptomatically feel better. Some question why they should be taking medicines if they

are "doing well" (Pawluch *et al.*, 2000). The desire for some people to maintain a certain quality of life or to continue functioning "normally" are just a few of the reasons why individuals fail to adhere to ARVs and choose to switch to alternative therapies (Riska *et al.*, 2002). Symptom management for people living with HIV/AIDS has been an extremely important component of care management. The use of complementary and alternative medicines often improves quality of life with fewer reports of pain and side effects (Duggan *et al*, 2001).

3.3.5 Nutritional Supplements as Complementary or Alternative Therapies

A number of studies (e.g. Foster, 2007; Namulemia *et al.,* 2007; Reid, 1999) have acknowledged the applicability of nutritional and microbial supplements as complementary therapies for ARV treatments. The recognition of the importance of nutrition in both the transmission, treatment and progression of the HIV virus, led to the recommendation that those infected with HIV consume adequate amounts of foods that are high in vitamins (especially Vitamin A) and micronutrients that can help boost the immune system (Haddad & Gillespie, 2001). Micronutrient deficiencies are common in HIV-infected persons and may accelerate progression of HIV disease, which in turn leads to worsened nutritional status (Drain *et al.*, 2007; Anabwani & Navario, 2005; Haddad & Gillespie, 2001; Coutsoudis *et al.*, 1999; Baum *et al.*, 1995; Bogden *et al.*, 1990). Deficiencies in micronutrients such as thiamine, zinc, selenium, and vitamins A, B-3, B-6, B-12, C, D and E prompt decreases in body mass as well as wasting in advanced HIV patients. The absence of these micronutrients often triggers gastrointestinal malabsorption and increased metabolic demand (Drain *et al.*, 2007). These micronutrient deficiencies are also independently linked to low CD4 (Cluster of Differentiation 4) cell counts (immune cell counts), advanced HIV-related diseases, faster disease progression, and HIV-related mortality (Drain *et al.*, 2007; Nerad *et al.*, 2003; Bogden *et al.* 1990).

It has been shown that through supplementary restoration of depleted micronutrient stocks, cellular and metabolic complications can be minimized and clinical benefits can occur in individuals who are HIV-positive (Drain *et al.*, 2007; Nerad *et al.*, 2003; Baum *et al.*, 1995). Since nutrition plays such a key role in the health and well-being of individuals living with HIV/AIDS, it is imperative that more studies, programs

and specific nutrition interventions are developed in order to assist in the transformation and management of the HIV/AIDS epidemic, especially in contexts where malnutrition and high or rising HIV prevalence coexist (Tomkins, 2005; Marsten & De Cock, 2004).

3.3.6 *Probiotic Yogurt as a Means to Health and Well-Being*

Probiotics and micronutrients have been used by some as complementary or alternative HIV/AIDS therapies. Along with nutritional supplementation, it is recognized that microbial supplements can also assist in lessening morbidity and mortality. Microbial supplements (specifically probiotics) are known to produce a number of recognized health benefits (Drain *et al.*, 2007; FAO/WHO, 2006; Reid, 2003; WHO, 2002; Rolfe, 2000). Furthermore, these microbial supplements are easily accessible, low-cost goods that can be used to improve the health and well-being of individuals, especially populations at high risk of morbidity and mortality (FAO, 2006; Reid, 2003; WHO, 2002).

The FAO/WHO has identified probiotic foods as substances with a strong potential to provide health benefits, especially to food insecure populations and those at high risk for infectious diseases (FAO, 2006; WHO, 2002; Reid, 2003). The concept of using probiotics and other forms of microbiota as a form of therapeutic treatment has been around for centuries and studies now demonstrate the various health effects relating to its consumption (Lenoir-Wijnkoop *et al.*, 2007; Rolfe, 2000; WHO, 2002; Isolauri *et al.*, 2001; Van de Water *et al.*, 1999). Probiotic bacteria found in various foods such as yogurt are a low cost way of improving quality of life within areas with high incidence of disease and malnutrition (Lenoir-Wijnkoop *et al.*, 2007; Rolfe, 2000; WHO, 2002;). Probiotic bacteria has the potential to destroy HIV in vitro and reduce the risk of bacterial vaginosis, a condition that predisposes women to sexually transmitted diseases such as HIV/AIDS and increases the risk of mother-to-child transmission of the disease (Lenoir-Wijnkoop *et al.*, 2007; Hodgens, 2003; WHO, 2002; Fuller, 1991). Consequently, probiotics have been used in many ways, therapeutically, to boost immunity, prevent certain cancers, lower cholesterol, lessen lactose intolerance, treat rheumatoid arthritis, and prevent or reduce the effects of Crohn's disease, diarrhoea, and constipation as well as urinary tract infections (UTIs) (Reid, 1999). For example, numerous clinical trials

have shown that certain probiotic strains can improve the outcome of intestinal infections by reducing the severity and extent of diarrhoea (Reid, 2003; Hodgens, 2003; WHO, 2002; Roos & Katan, 2000; Rolfe, 2000). Moreover, probiotics can prevent infection because they compete with pathogenic viruses or bacteria for binding sites on epithelial cells (Roos & Katan, 2000). Intestinal probiotic strains are also thought to decrease the risk of gastrointestinal cancers and colonic cancer through the inhibition of bacterial intestinal carcinogenic enzymes (Lenoir-Wijnkoop *et al.*, 2007; Hodgens, 2003; Rolfe, 2000; WHO, 2002).

3.3.7 Yogurt as a Delivery Medium for Probiotics

Although probiotics may be administered in various forms such as capsules, powders, enriched yogurts, yogurt-like products, and milks, yogurt was chosen as the delivery medium for the probiotic bacterium for the WHE project as there has been a long history of fermented foods in Africa (Oyewole, 1997). In addition to their nutritional value, fermented dairy products offer a natural way to administer probiotics (such as lactobacilli and bifidobacteria) directly to the intestinal tract (Rajiv & Nagendra, 1997). Yogurt is also widely accepted as a treatment for gastrointestinal pain or disorders (Van de Water *et al.*, 1999). Additionally, yogurt is relatively easy to produce and it also helps with nutritional deficiencies and promotes weight gain (Lenoir-Wijnkoop *et al.*, 2007; Lourens-Hattingh & Viljoen, 2002; Roos & Katan, 2000; Oyewole, 1997;WHE, 2007). Yogurt is a "coagulated milk product that it is produced by lactic acid fermentation and the presence of beneficial, health-promoting bacteria in milk" (Van de Water *et al.*, 1999, p. 1493). There are several health benefits that are associated with the consumption of yogurt. Firstly, from a nutritional standpoint, yogurt is a good source of protein, calcium, magnesium, riboflavin, thiamine, as well as vitamins A, B-6, B-12, C, D and E (Van de Water *et al.*, 1999; Rajiv & Nagendra, 1997).

Since the benefits of probiotic yogurt supplementation are widely recognized for improving health of populations, programs and interventions that focus on such nutritional and microbial supplementation are essential in the process of alleviating the devastating effects of malnutrition and communicable diseases, especially in high-risk populations. As the production of such beneficial nutritional aids is relatively inexpensive

and the replication of microbial cultures is relatively simple, the implementation of health projects that utilize these beneficial products are a low-cost way of improving health and well-being in resource poor settings. This is in line with the drive by the World Health Organization, since the 1970s, to encourage more collaboration between biomedical forms of health care and treatment and traditional, herbal, therapeutic and nutritional forms of advancing well-being (Van der Geest, 1997; WHO, 2002).

3.4 HIV/AIDS Stigma

Some individuals choose to consume complementary and alternative therapies such as probiotics because they are afraid of others noticing their consumption of ARVs and are worried about the stigma associated with being identified as HIV positive. Stigmatization can be thought of as a dynamic process that arises from the belief that there has been a violation of a set of shared attitudes, beliefs, and values (Brown *et al.*, 2001). These perceptions can eventually lead to prejudicial thoughts, behaviors, and/or actions on the part of governments, communities, and individuals (Malcolm *et al.*, 1998). Stigmatization at the societal level may be in the form of rules, laws policies or procedures (e.g. compulsory screening, prohibition of those infected from particular occupations, restrictions on travel). At the community level HIV/AIDS stigma may be in the form of collective discrimination whereby individuals or groups who are HIV positive may be segregated or experience harassment (e.g. verbal abuse) or scapegoating (e.g. physical violence). At the level of the individual stigmatization may be affected by commonly held perceptions, beliefs and views that are entrenched at the societal level (Brown *et al.*, 2001).

Ogden & Nyblade (2005) describe HIV/AIDS stigma as, "a process of devaluation of people either living with or associated with HIV and AIDS". This devaluation often plays out in the workings of everyday life as individuals are treated as the 'other'. HIV/AIDS stigma is a powerful means of social control that is enacted by excluding, marginalizing or harassing individuals who are HIV positive (Parker *et al.*, 2002). This process of stigmatization or "othering" often serves as a protective function by producing feelings of comfort and security in situations of perceived vulnerability to threats and dangers that might otherwise appear overwhelming (Petros *et al.*, 2006;

Ogden & Nyblade, 2005; Brown *et al.,* 2001; Malcolm *et al.,*1998). As much of the general population within Tanzania lacks access to knowledge and accurate information on HIV/AIDS, misunderstandings and inaccurate assumptions are easily produced and are often at the root of issues with HIV/AIDS stigma (Ogden, & Nyblade, 2005).

As noted by Malcolm et al. (1998) and UNAIDS (2000) stigma and discrimination relating to HIV/AIDS often undermines public health efforts and oppresses individuals who suffer from the disease. Ignorance, fear, denial, and lack of education and knowledge are also associated with HIV/AIDS stigma and often undermine the ability of individuals to access treatments, services and support while at the same time making it difficult for prevention efforts to take place (Aggleton, 2000). Stigma remains one of the most significant challenges in Tanzania since it is deeply entrenched within the social fabric of society and is centered on personal views, beliefs, fears and taboos concerning sex and death (Nyblade *et al.*, 2003; Henry, 1990). HIV/AIDS stigma increases vulnerability to the virus; prevents people from disclosing their status; negatively affects preventive and treatment behaviours such as condom use; prevents people from changing their behaviour to prevent infection; prevents people from accessing HIV/AIDS services; lowers adherence to HIV/AIDS therapies; and intensifies the pain and suffering of those infected, their caregivers and families (Nyblade *et al.,* 2003; Malcolm *et al.,* 1998; UNAIDS, 2000).

Beliefs and moral judgments relating to HIV/AIDS stigma, particularly concerning sexual deviance, shape how individuals and communities view and react to people living with HIV/AIDS (Henry, 1990). In Tanzania, the contraction of HIV is often associated with deviant behaviour that goes against social norms and religious teachings; therefore people living with HIV/AIDS are often regarded as adulterers, prostitutes and immoral or shameful people (Nyblade *et al.,* 2003). Those living with HIV/AIDS are also often viewed by the community as the 'walking dead' having no future or hope and are often dismissed as they are no longer considered productive members of society (Omangi, 1997). Stigma and discrimination continue to persist within countries such as Tanzania. As stigma is a complex phenomenon that is deeply entangled in the social fabric of communities, it is important to examine its contextual nature as individual and community beliefs, views, fears, reactions and ways of dealing

with HIV/AIDS may differ substantially. Perceptions, beliefs and opinions of health, illness (e.g. HIV/AIDS) and medicine (e.g. probiotics and ARVs) are important in understanding health behaviours at the individual level but also at the level of the community.

3.5 Public Health at the Community Level

3.5.1 Defining Community

Within the academic literature, the definition of community has remained ambiguous; there remains a distinct lack of consensus about the meaning of 'community' and it is evident that no single definition serves all interests, purposes and situations (Hampshire *et al.*, 2005; Paronen & Oja, 1998). Some define community as a psychological bond or association that unites individuals with common experiences (Fawcett *et al.*, 1995; Rifkin *et al.*, 1988). Others characterize communities in a geographical sense, as a bound (but also permeable) space or place that is somehow related to the physical environment (Paronen & Oja, 1998). There are also a number of other elements that have been used to characterize communities such as: sense of identity and belonging; common language, rituals and traditions; shared norms, values and beliefs; shared needs and shared resources; emotional connection; as well as shared historical, political and cultural experiences (Edwards *et al.*, 2000). No matter how 'community' is described, defined or characterized, as Edwards et al. (2000) emphasize, communities are always somehow geographically bound as all experiences are in some way intertwined with the physical aspects of 'place'. It is also apparent that the dynamics and intensity of social and environmental barriers can seriously affect community programs and the capacity of the community to effect change (Fawcett *et al.*, 1995).

As communities are changing entities that may be defined in various ways, it is always important to specify the intended definition as a lack of a definition can result in the formation of contradictory or mismatched assumptions about the context of a particular 'community'. For the purposes of this study, a community is defined as a geographic 'place' with a particular boundary in which those residing in this specific location share: a similar sense of identity and belonging; a common language, similar

rituals and traditions; similar norms, values and beliefs; needs and resources; as well as similar historical, political and cultural experiences. The above definition is reinforced by the concepts of 'space' and 'place' within the geography of health.

3.5.2 'Space' and 'Place' in Health Geography

Since geographical location and social functioning are so closely encapsulated by the term 'community' it is important to investigate community health with specific recognition of the concepts of 'space' and 'place'. 'Space' can be viewed as both the means and product of social relations, meaning that space has a dimension of social significance and is itself socially constructed (Kearns & Joseph, 1993). The concept of 'place' is even more specific and distinct than that of 'space'. A 'place' is more of a location with particular social and physical attributes, where various social and economic processes merge (Curtis & Jones, 1998). These processes may be specific to the place but are also influenced by the conditions and aspects of the particular locality. A 'place', in geographical terms, is considered to be a portion of space with discrete or indiscrete boundaries (Eyles, 1993). Place can be described as both an objective location that has distinct characteristics or certain similarities with other places; or it may be considered a subjective social construct that carries with it specific meanings and symbols (Eyles, 1993). Eyles (1989) indicates that the patterns, meanings of, and reason, for human actions are structured into the communities (places) in which people live. Thus, 'place' is not just an arena for daily life, but can be viewed as a hub of felt value that is embodied in the experience and ambitions of people. This felt value and embodiment of experiences ultimately influences health behaviours and overall well-being. To be attached to a place, particularity a home or a community, is often referred to as a fundamental human need, which transforms into the configuration of ourselves and our identities. In fact, place has been described as being and 'essential part of human identity' (Kearns, 1993).

Dear and Wolch (1989), suggest that patterns of human territoriality result from the interaction between economic, political, and social processes which can constitute, constrain and mediate the role of space. Further, they argue that a single geographical location can serve multiple functions, simultaneously producing the enacting, confining,

and mediating dimensions of our lives. Thus, life within any locale is a "seamless fabric of macro- and micro- scale influences representing the localized interactions of structure, institutions, and human agency" (Dear and Wolch, 1989. p. 10). This recognition of the multiple influences that can operate at different scales, how social life structures territory and the way territory structures social life gave a renewed attention to the role of space and place in health geography.

Cultural meanings, values and norms also permeate particular places and influence health concepts, views and practices (Kearns & Joseph, 1993). Furthermore, the material infrastructure of places and the nature of collective functioning in places are related to health. Consequently, health is conceptualized as being defined by both the people who reside in particular locales (composition) and by factors reflecting the wider nature of the environment with which people live (context) (Macintyre *et al.*, 2002). For instance, social and physical structures and environments affect health, including: available human and social services (education, health care, transportation, policing); healthy environments such as decent housing and safe working spaces; and essential resources such as clean air and drinking water (Macintyre *et al.*, 2002).

It is also important to recognize that 'space' and 'place' may not always be conceptualized in a fixed or discrete manner and may not be associated with one particular local. Space and place are often conceptualized and experienced through the development spatial interactions, including place linkages through which change is transmitted (Brown, 1991). Individual or population movements and migration must be considered when addressing conceptualizations of space and place. Particularily in the African context, it must be acknowleged that there may be differences in local characteristics such as employment opportunities, wages and amenities that may prompt greater movement between locals which may alter or affect the social and organizational functioning of communities. For example, in many African countries it is common for individuals (mostly males) to migrate to different areas ('places') primarily in response to employment opportunities and wage incentives, creating migration flows between urban and rural areas (Gupta & Furguson, 1992).

3.5.3 Contextual and Compositional Aspects of 'Place'

Contextual factors that affect health are, as Veenstra (2002) explains, "'physical' aspects of place that can be conceptualized and measured in a straightforward manner". For example, available drinking water, buildings and building materials, equipment, electricity, housing, transportation, and access to health and social services such as health care and education, are all contextual aspects of 'place'. Policy makers and donors are often concerned with allocating these physical resources effectively and efficiently so when communities are involved in outlining their own available resources and program needs, stakeholders are able to budget properly and to create reasonable future plans of action (Fawcett *et al.*, 1995). It is recognized that some minimum quantity of social, financial and technical resources is needed to be successful in rallying a community around a specific issue or to support a specific program (Beeker *et al.*, 1998). The assessment of community needs and resource availability is essential because a substantial amount of resources are often spent implementing community-based health programs and when feasibility of sustainability is not assessed it can often lead to discontinuation soon after initial funding ends (Shediac-Rizkallah & Bone, 1998).

Compositional determinants of health, which are often under-explored in public health research, include the nature of collective social functioning, including political, cultural and economic aspects of place or community (Veenstra, 2002). Examples of compositional factors include socio-cultural and historical features of communities such as shared norms, values, beliefs and interests, traditions, religious, ethnic, political and economic histories; social networks and community support; as well as empowerment and efficacy (Macintyre *et al.*, 2002).

Community climate is a critical dimension to be considered when investigating the likely impact of a proposed health and development project. For example, community leaders and residence must support all program objectives and must be willing to cooperate towards project initiatives (Jumper-Thurman *et al.*, 2001). Effective and sustainable community programs must involve multiple systems of local support and must utilize within-community resources and strengths as much as possible. As indicated by Brown & Ashman (1996) and Veenstra (2005) 'social capital' or various networks of association and relationships, mutual trust, and norms of reciprocity as well as

cooperative efforts are also important in developing effective and sustainable community health projects.

Project objectives and efforts must consider historical issues, be culturally relevant and be accepted as long term in nature (Edwards *et al.*, 2000). At the same time, project initiatives, objectives and goals must take into consideration existing community roles and relationships in order to understand the complexity of community dynamics to best relate them to project implementation. Factors such as low education, low income, and lack of access to essential social and health services are often themselves a product of the place where people live and varying place-based processes ('places make people') (Subramanian *et al.*, 2003; Macintyre & Ellaway, 2000). Some socio-economic and socio-cultural aspects that affect health and place include: social dynamics (trust, reciprocity and social networking); overall community wealth and equality; distribution of incomes; norms, values and beliefs; as well as overall political positionality (Veenstra, 2002). An exploration of the contextual aspects of community can lead to a greater understanding of how individual actions are a part of socially conditioned, culturally entrenched, economically constrained ways of living (Beeker *et al.*, 1998). Although contextual and compositional factors are often discussed separately, it is important to recognize that the two are interrelated and not mutually exclusive (Subramanian *et al.*, 2003).

3.5.4 Community Participation

Since facilitating health programs at the community level is so widely advocated, it makes sense that community participation should also play a significant role in the development of effective community health programs. Community members are a valuable source of knowledge about their community and are often committed to expending energy, time and resources to improve quality of life within their neighborhoods. The concept of community participation in the development process is multi-dimensional and may take on different meanings. The WHO (2002) defines community participation as the "process by which people are enabled to become actively and genuinely involved in defining issues of concern to them, in making decisions about factors that affect their lives, and in formulating and implementing policies, in planning,

developing and delivering services and in taking action to achieve change. As Rifkin et al. (1988) explain, "community participation is a social process whereby specific groups with shared needs, living in a defined geographic area, actively pursue identification of their needs, make decisions and establish mechanisms to meet these needs." Nydiaye (1999) sees community participation as, "an active process whereby beneficiaries influence the direction and execution of development projects rather than merely receiving a share of the benefits." Regardless of its definition, community participation is quite entrenched in the international development discourse. Although there are many definitions of community development, when public health professionals wish to implement programs that address health issues in a particular community, tapping into the community's expertise and enthusiasm is often an essential matter (Jacobs & Price, 2003).

Although community participation is often a widely praised concept, the notion of community participation has been criticized as there are ideological and practical issues with this concept. There are also often major disparities between community participation ideologies and policies and how these policies are transformed into reality. These discrepancies arise sometimes from practical difficulties involving the contextual nature of communities and sometimes through ideological and institutional tendencies to label development initiatives and policies as participatory when in fact, community-sensitive, democratic processes are ignored (Tosun, 2000; Zakus, & Lysack, 1998). There has been a tendency for this label to be misapplied or misused in order to support development projects since the proposal of a development strategy that lacks community participation is quite often reactionary (Tosun, 2000).

Community participation may take on different forms ranging between full and coherent citizen cooperation that meets community needs to blatant manipulation of the term to mask development projects that are actually quite inegalitarian and undemocratic or ignore the needs and suggestions of the community (Tosun, 2000). As Midgley (1986) explains, the concept of community participation is "deeply ideological and reflects beliefs derived from social and political theories about how societies should be organized and how development should take place". (p. 4). There also may be political and bureaucratic unwillingness to encourage widespread community participation (in the

egalitarian sense) since it may be perceived as a threat to established hegemonic power and gender relations (Marks, 2001). Community Participation has also been critiqued for applying a 'bandaid' approach as it fails to address structural inequalities which occur at the global level (Cooke & Koyhari, 2001).

Additionally, community participation may place an added burden on already disadvantaged groups including women who are often already overburdened as they uphold traditional care giving and reproductive roles on top of other socially sanctioned duties (Zakus & Lysack, 1998). Community participation requires considerable time, money and skills to organize and sustain participation but what is not often considered are the personal costs of time and sometimes income loss associated with participation that are incurred on local community groups.

Although there are a number of criticisms of the community participation approach, the literature overwhelmingly supports the link between community participation and health program continuation as it has been shown that there is positive relationship between community participation and community health project sustainability (Bracht & Kingsbury, 1990; Flynn, 1995; Shediac-Rizkallah & Bone, 1998). Because of this positive relationship, the community health participatory research framework is being increasingly adopted in health- related research (Hampshire *et al.*, 2005).

Since community involvement in health prevention, diagnosis and care has been a long-standing aspect of public health, it is important for community members to collectively assess their health needs and problems and to organize and develop their own approaches for implementing, maintaining and monitoring health programs (Jacobs & Price, 2003; Beeker *et al.*, 1998). Community participation is also a well-established approach to addressing health care issues and has been long utilized in the development of HIV/AIDS such as home based care and other related health issues (Beeker *et al.*, 1998). As Hampshire et al. (2005) emphasize, no other development concept has been more thoroughly, consistently advocated than that of 'community participation'. Many health professionals agree that the best way to promote health is through the encouragement of individuals to take control of their own health, of communities to decide how best to enhance their quality of life and of the marginalized to identify their

own needs (Beeker *et al.*, 1998). Experience has demonstrated that when people organize themselves to solve their own public health issues and other concerns in partnership with government and non-governmental organizations this yields the best health promoting results (Macfarlane *et al.*, 2002; Shediac-Rizkallah & Bone, 1998; Altman, 1995).

Community development and participation enhances community cohesion and confidence which may ultimately increase community ability to identify, evaluate and prioritize situational needs and may prompt community members to better organize the resources to meet these needs (Purdey *et al.*, 1994). Thus, active participation enables people to increase control over and to improve their own health by contributing to the development of more relevant health programs and policies, while at the same time, creating 'healthy' environments that encourage healthy behaviors, self-esteem and empowerment (Purdey *et al.*, 1994).

Community participation may also lead to increased project effectiveness as objectives that are achieved benefit the community and as the inclusion of beneficiaries enhances project design and implementation through the creation of project services that are designed to meet the specific needs of the community (Macfarlane *et al.*, 2002; Kaye, 2001; Altman, 1995). This approach also forces researchers to view the community from the perspective of those who live in it, promoting a more contextual view (Macfarlane *et al.*, 2002; Kaye, 2001; Altman, 1995). Furthermore, if costs are shared with the community and those involved invest time, money and resources into a project, the increased sense of ownership and responsibility often increases project efficiency and sustainability (Samuel, 1999).

In order to be sustainable, programs must be designed with local capability and capacities in mind (Shediac-Rizkallah & Bone, 1998). High-quality public-health programs encourage individuals and communities to take part in decisions about their own health as they work from where the people are, where they work, live and play to promote health and efficiency through a collaborative community effort (Beeker *et al.*, 1998; Macfarlane *et al.*, 2002). Community health programs seek to effect community wide transformations in health related behaviors by mobilizing communities to identify their own health issues and needs, to define the determinants of health problems and to

engage in effective action to satisfy health needs and altar multiple determinants of health (Beeker *et al.*, 1998).

Since overall community participation in public health programs is imperative for creating more culturally relevant and sustainable projects, there is a strong need to direct programs that that increase community capacity and overall local participation. There is also a strong need to expand community participation in HIV/AIDS research and to increase community capacity to develop and sustain culturally sensitive HIV prevention programs (Beeker *et al.*, 1998). Thus, this study utilizes a research framework that incorporates local views, suggestions and opinions in the development of a community health program in order to understand how particular aspects of 'place' or community relate to the sustainability of community health programs. Communities vary greatly in their interest and willingness to try new programs and interventions so it is imperative to investigate community attitudes, opinions and perceptions of project implementation. In particular, this study incorporates local participation in the development process of a probiotic yogurt community health project in the Mahina community of Mwanza, Tanzania. This study also takes a gendered perspective whereby the participation of women and the gendered roles and relationships that are socially entrenched in the Mahina community are also taken into consideration.

3.6 Gender and Development

3.6.1 Women in Development

Over the past 30 years, international development organizations have acknowledged the importance of gender equality as a fundamental development goal. In response to pressure from women's movements, various United Nations mandates, national and international development agencies along with governments and non-governmental organizations have adopted a variety of guidelines, strategies and policies in order to promote women's rights, equality and advancement (Momsen, 2004; Visvanathan *et al.*, 1997; Razavi & Miller, 1995). The theoretical approach of 'woman in development' (WID) also surfaced in the feminist development field as a result of advocacy by women's groups, national organizations as well as international

organizations to integrate policies and guidelines that would further involve women in development processes. WID emerged as a movement in which both men and women sought to acquire social justice and equity for women through the process of development. The WID concept is based on an acknowledgment of the importance of the status and women and the recognition of women as important players in the development process who deserve equal opportunities. The WID framework challenges the existing 'trickle down' theories of development as it acknowledges that modernization and economic liberalization affect men and women differently (Cornwall *et al., 2004;* Harrison, 1997). The goal of integrating women into national economies through a focus on women's access to education, training and resources was set in order to improve women's status and assist in creating equal social, economic and political opportunities. With an emphasis on women's institutional and legal rights, WID advocates sought to gain improvements in educational and employment opportunities; equality in political, social and economic participation; as well as increased access to health and other social welfare services (Momsen, 2004; Razavi & Miller, 1995; Tinker, 1990). WID advocates placed emphasis on women's productive roles, as well as processes to overcome women's subordination within existing economic frameworks (Kevane, 2004; Razavi & Miller, 1995). Another aim of the WID approach was to offer a rationale for directing limited development resources to include women. Building upon the work of Boserup (1970) and others, WID advocates claimed that failure to acknowledge and develop women's productive roles within and beyond the household was leading to the inefficient use of resources which had the potential to hamper development (Tinker, 1990).

The WID approach of integration, based on the belief that women could be brought into existing models of development without a major restructuring of economic, social and political systems, proved to be quite problematic. Although WID theories reflected integrationist approaches in response to the subordinate status assigned to women, the effect on improving women's rights and status within the development process appeared to be minimal, as inequality between men and women in some contexts continued to grow, with more and more women joining the ranks of the world's poor (Visvanathan, 1997; Momsen, 1991; Momsen, 2004). Invariably, while a WID approach provided economic opportunities that may have not be offered in the past, it tended to

marginalize women's concerns by focusing on individual rights and ignoring the structural inequalities that they face each day. The WID approach tends to ignore the impact of embedded structural inequalities on individual, household and community relations and interactions. For example, in Tanzania and many other poor countries, men often control household resources including income generated by their wives so that even when women are integrated 'in development' gendered imbalances still persist (Creighton & Omari, 2000; Vuorela, 1987). Also, while more and more women were entering the paid work force, many women continue to be allocated low paying, unskilled or lesser skilled work in both the formal and the informal sectors of the money economy (Razavi & Miller, 1995). The subordination of women and prevailing processes of male domination (patriarchy) continue to persist within the development field since the WID approach has frequently been reduced to 'adding women on' or referring only to women rather than addressing deeper issues relating to mainstream conceptions and constructions of gender and the related operational processes and relationships that are associated with these culturally and institutionally entrenched norms (Kevane, 2004; Momsen, 1995; Kardam, 1997). The WID approach also failed to acknowledge the importance of women's reproductive roles alongside their position within the productive labour force. The WID approach tended to ignore the extra burden of placing 'women in development' or within the productive labour force as it ignored commitments by women to carry out reproductive tasks and care for a family at home.

Within the 'Decade for Women' (1975-1985), data from around the world indicated that gender inequalities in access to and control over productive resources (e.g. land, capital, information, education, training, technology etc.) still placed women at a socio-economic disadvantage (Momsen, 2004; Visvanathan, 1997; Jahan, 1995; Momsen, 1991). As Koczberski (1998), points out, many studies of the Third World in the 1990s indicate that in general women have become more impoverished, their work burdens have grown substantially, and their status, relative to men, has been declining. Thus, the anti-poverty approach associated with WID, particularly within developing countries, fell short of its overreaching goals of equality as most income-generating projects were only marginally successful.

The dismissal of the structural and socio-cultural factors within which gender inequalities are entrenched, produced and reproduced within the WID framework was a major driving force behind the creation of new theories of development that included a gendered view rather than a focus on women alone (Momsen, 2004; Visvanathan *et al.,* 1997; Razavi & Miller, 1995). Also, the narrow focus of the WID on the sexual equality of women as a homogenous group dismisses the contextual differences of women's lives and the interconnections between class, age, marital status, sexuality, race, ethnicity and dis(ability) and other formed identities. Furthermore, feminist critiques of the WID development approach challenged this focus on women's productive roles and advocated for acknowledgement of the inter-linkages between production and reproduction (Razavi & Miller, 1995; Momsen, 1991). The recognition of these shortfalls within the WID framework signaled a need for change.

3.6.2. From WID to GAD

With the realization of the shortfalls of the WID approach, many feminist scholars and advocates began to develop and transform the concepts of WID to address gender and development (GAD) in a more holistic fashion, whereby historical, political as well as socio-economic influences on gender are recognized (Agarwal, 1997; Baden & Gotex, 1997; Connell, 1987). The GAD approach focuses more on gender as a multi-faceted set of relations and characteristics that include social meanings, positions and relationships to others, which are contstructed and interpreted through social interactions and vary across time, space and culture rather than the mere biological sex of a group. GAD also acknowledges the importance of gender relations (the socially acquired pattern of relations between men and women) in the formation of the development process as well as how development influences, shapes and reshapes these power relations. GAD approaches to development recognize the importance of restructuring and redistributing power relations to enable women to partake equally in the development process (Momsen, 2004; Goetz, 1997). In sum, GAD theories are concerned with investigating the social classification of masculinity and femininity; analyzing, explaining, and challenging unequal gendered power relations (the subordination of women in particular); and relating these unequal power relations to the broader structure of patriarchal societies

which includes social, cultural, political, historical and economic dimensions (Moser, 1993; Momsen & Kinnaird, 1993).

Dissatisfaction with the concept of the sole integration of women in development led many development agencies to shift to a new concept "gender mainstreaming" whereby gender sensitivity and accountability are brought into development activities. (Momsen, 2004; Jahan, 1997). Gender mainstreaming resulted in a push towards systematic procedures and mechanisms within organizations (particularly government and public institutions) for explicitly taking account of gender issues at all stages of policy making and program design and implementation (Baden & Gotez, 1997). Within the conceptualization of GAD, gender mainstreaming focuses on intrahousehold gender relations, women's multiple roles and gendered violence in the analysis of gender sensitive programs. The goal is to draw attention to the consequences and implications of these socially constructed divisions and differences for program development and project design (Gotez, 1997). This conceptualization enables policy makers, planners and researchers to highlight the motivations and constraints under which men and women work in order to tailor projects so that they will maximize productivity (Kavane, 2004). Mainstreaming gender recognizes that development initiatives, objectives and goals must always take into consideration existing gender norms, relationships and roles that exist within communities and households. In Tanzania, for instance, patriarchy and age seniority influence social relations at the household, community and national levels (Creighton & Omari, 2000; 1995). An important conceptual starting point is that households are not homogeneous social units but are composed of individual social beings with different interests, needs, desires and roles that are linked to socially constructed notions of gender, and with different levels of control and access to household resources (Cornwall *et al.,* 2007; Creighton & Omari, 2000; Dwyer & Bruce, 1988; Beneria & Sen, 1981). Although the concept of unitary households is a convenient policy tool, households are not always unitary entities as there may be internal conflicts, inequities and imbalances in power relations including the presence of a single overriding decision maker (Dwyer & Bruce, 1993). For example, although many development policies assume that households act as unified economically rational units, in many African countries men are often responsible for providing lodging, children's tuition and

other educational costs but women are ultimately responsible for fulfilling children's food needs (Momsen, 2004). At the same time, men have the right to personal spending money while women are expected to use extra finances for the collective needs of the family (Dwyer & Bruce, 1993).

In many countries in SSA, it is common within households for women and children to be excluded or marginalized from decision-making processes, especially those relating to the allocation of resources (Creighton & Omari, 2000; Sender & Smith, 1990; Vuorela, 1987). With varying types of household compositions (nuclear, extended, monogamous, polygamous, single-parent etc), there exist varying divisions of labour within households which often involves men and women undertaking different activities and also includes a complex and changing system of cooperation and exchange (Razavi & Miller, 1995). Despite varying types of households, in most cases there is an unequal division of labour between men and women whereby women take on the majority of household duties and have much less control over household decision making and assets (Dwyer & Bruce, 1993; Kavance, 2004; Turshen, 1984). The way in which roles and responsibilities are assigned within a household unit and the process and outcomes of the distribution of resources accumulated from the labour of family members are key factors that influence relations between members of households (Momsen, 2004). These roles and responsibilities are in part influenced by the wider socio-cultural and sociopolitical context of interactions as well as the more local context within the community and the household itself. As Creighton & Omari (2000) explain, in Tanzania individual household members' control and access to economic resources are defined by the norms of the wider cultural community.

In many African countries, the household unit plays a major role in determining women's roles in economic development (Hackl *et al.*, 1997; Santow, 1995; Momsen, 1991). Reproductive duties are a major determinant of women's position in the labour market, the sexual division of labour within and outside of the household as well as the general subordination of women (Kevane, 2004; Creighton & Omari, 2000). Women perform the majority of reproductive tasks. Reproduction refers to not only biological reproduction (childbearing, early nurturing of infants and children) but also the social reproduction of the family (care and maintenance of the household including housework,

food production, caring for the sick) as well as reproduction of the labour force (by assuming responsibility for the health, education and socialization of children) (Momsen & Kinnaird, 1993; Moser, 1993; Beneria & Sen, 1982). Reproductive tasks extend beyond the household to the wider community, as many women participate in social management which includes the development and maintenance of kinship linkages, neighbourhood networks, as well as religious, ceremonial and other social obligations in the community (Momsen, 2004; Shelton, 1996). Laslett & Brenner (1989) define reproduction as "the activities and attitudes, behaviours and emotions, responsibilities and relationships directly involved in the maintenance of life on a daily basis and intergenerationally" (p.383). Production, on the other hand, as Turshen (1984) describes, may be thought of as work that produces material commodities or services for monetary exchange. Reproduction may be distinguished from production on the basis of socially constructed forms of 'value'. Reproductive labour has use-value (it intrinsically satisfies a human need or want) and provides family subsistence needs, while productive labour generates exchange-value (price or value on the market) which is usually in the form of monetary income. Although it is useful to make the distinction between productive and reproductive labour and value when considering household division of labour, in reality women's roles are not so clear cut as some tasks may include both use and exchange values (Hackl *et al.*, 1997; Santow, 1995; Momsen, 1991). For example, women may earn a wage working in the agricultural sector but may do so carrying their baby on their back. Many scholars have recognized that women's increasing involvement in the wage economy has not ended their subordination but has been accompanied by the transfer of patriarchal attitudes from the household to the working world with an ever-increasing workload (Momsen, 2004; Visvanathan *et al.*, 1997; Shelton, 1996; Goetz, 1997).

In many countries women's labour is often viewed as less valuable and the taxing burden of reproductive and domestic work are not always taken into consideration or recognized as being of inherent value (Kavane, 2004; Young *et al.*, 1984; Buvinic *et al.*, 1983). In many African countries women's socially constructed roles often place them in a situation where they are responsible for numerous laborious tasks including gathering fuel wood, fetching water, food preparation, carrying out household chores and duties, childcare and other family care giving duties, as well as much of the agricultural labour

and food crop production (Momsen, 2004; UNDP, 1995; Beneria & Sen, 1981). In Tanzania, women spend an estimated four hours or more a day on collecting firewood and water, childcare and preparing food; this is in addition to the time that they spend on agriculture, craftwork or trading (Creighton & Omari, 2000; Momsen, 1991; Vuorela, 1987). On top of the long list of daily reproductive and domestic tasks, more women are taking on additional responsibility as they are being integrated into the formal wage economy. To the extent that women are also engaged in productive activities outside of the household, they are often burdened with multiple duties or 'double days' (Hackl *et al.*, 1997; Santow, 1995; Beneria & Sen, 1981). Women's participation in the productive labour force has inevitably affected the time and energy burden of their reproductive work as well as the power relations between household members. Women's burden of reproductive work acts as a constraint on their ability to engage in productive activities and therefore affects the development process (Momsen, 1991; Beneria & Sen, 1981).

3.6.3 Development and Gender in Tanzania

Within Tanzania, the government and many development agencies have made women's equality and empowerment a key policy issue and have made efforts to restructure and reform discriminatory legislation (Creighton & Omari, 1995). Nevertheless, women continue to experience disadvantages relative to men in terms of economic, political and social power that significantly impacts their socio-economic progress (Gonzalez-Brenes, 2003; Creighton & Omari, 2000; Razavi & Miller, 1995). As a result of limiting cultural and social norms, values and traditions or discriminatory laws; impoverished circumstances; as well as broad structural influences, girls and women are often limited in their opportunities to access health care; go to school; enter certain professions; inherit property; obtain credit; achieve positions of political power; avoid abuse and violence, or otherwise participate as full and equal partners in society (Kevane, 2004; Razavi & Miller, 1995; Momsen, 1991).

The health and nutritional status of women (and often their children) is often much lower than that of men as their access to health resources is limited (Turshen, 1984). For example, a study done by the Tanzanian Gender Networking Program (2007) indicated that barriers in accessing health care are most acutely felt by women. These

barriers include getting money for treatment; distance to the health facility; transportation issues; and not wanting to go alone (TGNP, 2007; PHDR, 2005). These same barriers that women face also pertain to barriers in accessing ARV treatments as discussed in the section relating to ARV adherence above. Furthermore, as Baylies & Bujra (2000) emphasize, customary practices and current societal norms of male dominance and patriarchy place women in a position where they are at high risk for contracting infectious diseases such as HIV/AIDS as it is much more common for men to have extra marital sex and for them to infect their female partners. With limited options stemming from gender inequalities, women often face severe economic hardship and may turn to sex work, which, in turn, puts them at higher risk for contracting sexually transmitted diseases (Baylies & Bujra, 2000; PHDR, 2005).

Women in Tanzania have fewer educational opportunities and are, in general, less educated than men. The literacy rates for the population over 15 years of age are quite different for women (66.2%) and men (77.5%) (World Bank, 2007). One out of every three women (33%) has never attended school compared to 25% of men. Among the poorest households, boys are twice as likely to attend secondary school as girls (TGNP, 2007).

Additionally, women in Tanzania are less likely to hold political and economic positions of power such as managerial or leadership positions and their wages are often much lower. In Tanzania, women hold only 4% of managerial positions and are only represented by a small percentage (16%) within parliament (JICO, 1999; World Bank, 1993). Moreover, as few women obtain higher positions within the political and economic spheres, women's wages remain at 88% of men's (TGNP, 2007). The tendency for women to acquire low paying, lesser skilled jobs is common in Tanzania where many development projects have focused on promoting businesses or roles for women that tend reproduce stereotypical gender roles whereby women often partake in the production and sale of handicrafts, clothing or food products (Creighton & Omari, 2000; JICO, 1999). Despite the fact that women account for approximately 50% of the labour force in Tanzania, only 27% of women workers are employed in the formal sector (World Bank, 2007; JICO, 1999).

Women are also disadvantaged when it comes to owning land and obtaining land rights. In Tanzania, both customary laws and policies as well as current laws and policies either restrict women from accessing land or fail to recognize the complexity of women's relationship with the land and inadvertently exclude them from accessing land (Manji, 1998; Sender & Smith, 1990). Customary law protects against the alienation of land outside of the clan and this can prevent women from inheriting land if there are male heirs (Rwebangir & Afrikaninstituet, 1996). As Manji (1998) notes, although current land policies within Tanzania address gender on the surface, they fail to address gender issues at depth and ignore the complexity of women's interactions with land and how this relates to their status within society. The 2005 Poverty and Human Development Report (2005) reports that only 19% of females own land or have customary rights to land within Tanzania. It is also noted that when women do own land or have rights to the land, their plots are often less than half of the size of men's (World Bank, 2007; PHDR, 2005).

Culturally-sanctioned and structurally-reinforced gender roles tend to foster power imbalances that ultimately increase women's risks of spousal violence, which is very common in Tanzania (Creighton & Omari, 2000). When the hegemony of men appears to be challenged, expressions of power may escalate and violence may be used as a form of redistribution of power as men may use their physical strength to reinforce their dominance over women (Gonzalez-Brenes, 2003; Connell, 1987). Violence against women has been explored by studies in Tanzania where it is acknowledged that men's abusive behaviour is often a response to the fear of loss of control and dominance over women (Baylies & Bujra, 2000). Gender disparities and the structure of societal patriarchal institutions enhance the extent of men's license to use violence against their partners. Unfortunately, social and cultural traditions and customs are often solely used to explain social behaviour such as violence and abuse (Razavi & Miller, 1995). The social and cultural customs of Tanzanian society coupled with the patriarchal nature of the socio-political and economic structures create a sense of entitlement such that men often use violence as a means of punishing their wives for failing to fulfill their roles that are structured around fertility as well as productive and reproductive tasks (Gonzalez-Brenes, 2003). The WHO report on Women's Health and Domestic Violence (2004) highlights that rates of domestic violence against women are quite high in Tanzania

despite existing laws (e.g. the Marriage Act of 1971). Although the Marriage Act of 1971 makes a declaration against spousal battery, violence against women is not directly prohibited and there are no stated terms for punishment (McColskey *et al.,* 2005). While policies and laws exist that are meant to eliminate inequalities and violence against women, in practice, women are often denied these rights because violence against women socially accepted. For example, it is considered acceptable by many community leaders, residents and even law enforcement officers for husbands to beat their wives as punishment for disobeying them or for not carrying out their expected household and domestic duties (Gonzalez-Brenes, 2003). This type of violence occurs at all levels of society and a large number of women are killed each year by their husbands as a result of domestic abuse and battery (McColskey *et al.,* 2005).

In many countries, gender relations are also influenced by structural forces, with the tendency of increasing women's burden of work. Tanzania's historical political-economic shifts have had serious effects on gender relations and the status of women. For instance, the penetration of capitalism under colonial rule has lowered women's standard of living by exploiting them within the capital market; it has imposed notions of women's inferiority; it has decreased their access to education and training; and has reduced the importance of women's work by emphasizing and substituting cash crops for food as the valued commodity (Turshen, 1984).

Another political shift that has affected women's work and positionality in society is the implementation of structural adjustment policies (SAPs). SAPs have worsened gender-based inequalities by cutting social sector expenditure in the health sector, education and other social welfare sectors and have shifted more care responsibilities from the state onto the household (Baylies & Bujra, 2000; Creighton & Omari, 1995; Shelton, 1996; Collier, 1989). Tanzania has experienced a severe economic crisis as a result of the imposed structural adjustment plans, requiring reduction and privatization of social welfare services, the introduction of user fees; and externally controlled planning policies that have severely affected the social sector (Baylies & Bujra, 2000). Because women are the primary providers of home-based care, this has increased their burden of unpaid work (Creighton & Omari, 2000). Women therefore take on multiple roles that span across four major dimensions of labour as producers, household managers, mothers

and community organizers which increases demands on their health and time (Collier, 1989). For development processes it is important to examine the local household and community dynamics that exist between men and women, and cast these against the backdrop of economic strain, political instability and disease (McColskey *et al.*, 2005; Turshen, 1984).

3.7 Chapter Summary

This chapter has outlined the conceptual and theoretical background that has formed the foundation for this research that investigates perceptions of the likely impacts of a proposed probiotic yogurt project on gender relations and health in the Mahina community. This chapter has outlined concepts of health, particularly within the Western and African context in order to acknowledge the fundamental perceptions and meanings that individuals and groups may attach to health, illness and medicine. In this case, these perceptions are directly related to the implementation of a probiotic yogurt project as individuals and groups will perceive health in general, the health properties of the probiotic yogurt and other related treatments differently.

The next section of this chapter explained the link between food, nutrition and HIV/AIDS therapies. This section provided background information on the link between HIV/AIDS and nutritional supplements such as probiotics and discusses the use of complementary and alternative therapies in treating the disease. What is also discussed is the relationship between nutritional and microbial supplements such as probiotic yogurt and effective treatments such as ARVs. In relation to this discussion and the previous discussion on concepts of health, it is acknowledged that individuals and groups have different perceptions and conceptions of HIV/AIDS treatments which influence the type of preferred treatment and adherence to these treatments.

The next section described how structural, community and individual perceptions of health and disease may negatively influence community relationships through such forms as HIV/AIDS stigma.

The following section described the importance of studying health at the community level and outlined various community concepts. These concepts include the geographical conceptualization of 'space' and 'place'; the importance of compositional

and contextual aspects of 'place'; as well as the role of community participation in the development of community health projects such as the WHE/ Tukwamunae probiotic yogurt project.

The final section of this chapter describes the importance of investigating gender, especially within the development process as development projects have an impact on gender relations and may be influenced by existing gender norms within a community. This section also outlines gender imbalances that currently exist in Tanzania

Participant's perceptions, beliefs and understandings of the impacts of a probiotic yogurt community health project may stem in part or more fully from the various topics that were discussed herein. The following chapter outlines the methods used in this study.

CHAPTER FOUR

Methods

4.1 Introduction

This chapter describes the methods I used to conduct this research. The first section describes the process of study initiation. Next I discuss the qualitative research approach that I used in my data collection. Next I go on to discuss the selection process of the study community. In the third section of this chapter, I describe the mode of participant selection and the sampling strategy used for this study (the snowball sampling technique). I go on to describe the research instrument that was used for data collection (the semi-structured interview). Further, I describe the process of analysis which includes an inductive, line-by line and paragraph by paragraph coding approach. Next I discuss my prolonged engagement with the Mahina community and the relevance of community engagement in data collection. The concluding section focuses on dissemination of the findings and how I will share the information that this research has produced.

4.2 Study Initiation

This study was initiated after meetings and informal discussion with local government officials, members from the current Tukwamunae Probiotic yogurt Project and the WHE research and steering committee as well as Kivulini (a participating local organization). As there are recognized social, economic and health benefits of the WHE/ Tukwamunae probiotic yogurt project, it was discussed that it will be beneficial to expand the efforts of this project into other communities both within and outside of the Mwanza area. It was acknowledged that before project expansion efforts could take place, an investigation of local perceptions of project implementation should be conducted in order to get a better contextual understanding of the possible impact that this project will have on communities. In this meeting it was discussed that it is necessary to assess the social, economic and cultural context of a study community, and

evaluate the community's ability to take on such a project before a sustainable and effective local project is initiated. Another meeting was held with the aforementioned groups as well as the community that was chosen for this study (the Mahina community).

The rationale for community site selection will be discussed in a later section. Later discussions with the chairperson from the Mahina community revealed that there is an interest in Mahina to have their own probiotic yogurt project, as there is high prevalence of HIV/AIDS and other related illnesses that exist in the community. Therefore, this study was set up to investigate project needs and project facilitators relating to probiotic yogurt project implementation in the specific context of the Mahina community. Based on the fact that in-depth information concerning Mahina community members' perceptions of the likely impacts of a proposed probiotic yogurt project on gender relations and health was required, we employed a qualitative, interpretative methodology for this research. Ethical approval for the study was obtained from The University of Western Ontario Research Ethics Board and can be seen in *Appendix A.* Before describing the details of the fieldwork, the rationale for a qualitative methodology is reviewed.

4.3 Qualitative Research

Qualitative research is a well-established approach that focuses on in-depth understanding of human phenomena including human behaviours, opinions, perceptions and ideas. As Merriam (1996) explains, "qualitative research is an umbrella concept covering several forms of inquiry that help us understand and explain the meaning of social phenomena in its natural setting" (p.24). Qualitative research involves exploring issues and understanding phenomena through the exploration of people's values, beliefs, attitudes, behaviours, concerns, motivations cultures and lifestyles (Kvale, 1996; Folch-Serra, 1989). Qualitative research is a descriptive, inductive, interactive process that addresses the complexity of social phenomena with a strong orientation towards the understanding of everyday experiences (Flick *et al.*, 2000; Pickles, 1986).

Historically, research orientated in the social sciences was often based on positivist principles of quantitative research that was concerned with investigating phenomena in an 'objective' and 'value-free' manner that could observed and measured. This type of research was preferred over the 'subjective' nature of qualitative research that is based upon the humanist concepts that was said to be 'value-laden', 'soft' and 'unscientific' (Willig, 2001; Entrikin, 1976). By the late 1970s, positivism itself and the legitimacy of social research based on the 'scientific method' drew concerns as it made false claims of 'objectivity' and being 'value free' and disregarded the meanings and purposes of human behaviour that are essential in the holistic understanding of phenomena. (Ritchie & Lewis, 2003).

Qualitative research assists in answering the 'why' and 'how' questions that cannot be answered using other research approaches such as the positivist approach. This research is guided by a humanist approach since it emphasizes the study of meanings, values, and goals of human subjects and is consistent with a qualitative approach (Entrikin, 1976). Humanist geographers recognize the importance of place as a center of meaning and a focus of emotional meaning and attachment (Pickles, 1986; Entrikin, 1976).

It is now recognized that both quantitative and qualitative research represent useful and valid forms of information gathering as they are fundamentally different paradigms that rely on very different assumptions about the nature of knowledge and the appropriate means of gathering knowledge. The usefulness of qualitative research is thus recognized as a means of overcoming the limitations of quantitative research as it yields rich, complex data and is flexible enough to allow for new insights to explore new areas of inquiry into human behaviours and ways of thinking (Whittemore *et al.*, 2001). This study utilizes this qualitative research technique in order to gather rich and detailed, contextual data relating to project implementation. While this research is a case study it does not take on a structural approach but rather remains context specific.

Semi-structured interviews were chosen as the research instrument within this qualitative framework, as apposed to other forms of qualitative data collection such as focus groups, participant observation or discourse analysis, as they encourage a focused, conversational, two-way form of communication that is flexible enough to elicit in-

depth information while at the same time allowing the discussion of sensitive or personal issues. As the goal of this study is to investigate perceptions of the possible impacts of a probiotic yogurt project on this community, semi-structured interviews were the best option for eliciting detailed- in-depth information on the necessary study objectives.

4.4 Selection of Study Site

Study site selection was based upon community need for the implementation of a probiotic yogurt community health program as this study may contribute information that could be directly applicable to the WHE/Tukwamunae probiotic yogurt project. Although this study may also contribute theoretically to the literature concerning the implementation of community health projects, the specific applicability of this study to the WHE/ Tukwamunae is emphasized.

Since this study is more applied than other studies, study selection relied on the assistance of a local participating organization (Kivulini) rather than random community selection. This reliance on a local organization to assist with study site selection created an additional level of rapport as Kivulini is well known throughout Mwanza including the Mahina community.

Kivulini is a Mwanza based women's and children's rights organization that assisted with the initial partnering between WHE and the Tukwamunae Women's Group as well as the implementation of the current probiotic yogurt kitchen in the Mabatini community. Kivulini continues to work with WHE and Tukwamunae in the areas of education, advocacy and research related to women's and children's issues.

As a collaborative partner to the larger WHE project, Kivulini was approached to assist in identifying a possible exploratory study community. Members of Kivulini were asked to identify a community 'in need' (e.g. high rates of HIV/AIDS prevalence and malnutrition) within the Mwanza area that could be a possible expansion site for a WHE probiotic yogurt kitchen.

The Mahina community was identified by Kivulini as a community with high rates of HIV/AIDS prevalence as well as high rates of malnutrition. Although actual prevalence rates were not provided, it is estimated that the HIV/AIDS prevalence within

this community is approximately 18-45%, which is two to three times higher than the average rate of 9-15% in Mwanza compared to the overall national HIV/AIDS prevalence rate of 8.8% (NWURT,2008).

Once the community was identified, I arranged a meeting with the Chairperson and elders of the Mahina community to discuss study goals and to secure the support and approval of these individuals. The Chairperson and the elders agreed to and gave the go ahead for the study in their community. This community buy-in was essential for establishing trust within the community and to build rapport between community members and the researcher. Support from the Chairperson and the community elders is a key step in building rapport within the community as community leaders and elders' opinions are held high within the community and since the Chairperson and elders are considered gatekeepers to the community.

At this time, it was also explained to the Mahina Chairperson and the elders that although this research may be applied to the WHE/Tukwamunae probiotic yogurt project, this research would not directly determine whether or not a probiotic yogurt project would be implemented in Mahina. It was also emphasized that community members who would be participating in this study should feel free to discuss the related study topics openly as their answers would not hinder or promote their chances of having a probiotic yogurt project implemented in their community, but will instead provide valuable information relating to the impacts of such a project on this community.

4.5 Participant Selection and Sampling Strategy

A sample (n=26) comprised of both men (10) and women (16), 18 years and over, who are permanent residents of the Mahina community located in the Nyakato district of Mwanza, Tanzania were selected to participate using a modified snowball technique in this study. There is a slight gender bias in this sample. The higher number of women in this study occurred, since, asmentioned by community leaders and demonstrated by the NBST (2008) statistics in Chapter 2, there are more women living in the Mahina community than men, and hence more women than men consented to

participate in the study. Participants ranged in age from 21 years to 63 years with an average age of 35 years. This age range is comparable to that of the Mahina community as there are few elders over the age of 60 (average life expectancy sits at 51 years) and the medium age of the Tanzanian population is 33.7 (USDOC, 1995). 20 out of the 26 (77%) of the participants that were interviewed revealed that they are HIV positive which suggests another bias in the sample as the estimated HIV/AIDS prevalence rate in Mahina is between 18-45%. Since this research is a case study, this sample size is not meant to be a statistical representation of the Mahina population but is meant to provide contextual, in-depth information about the Mahina community using individual accounts and perceptions (Hesse-Biber & Leavy, 2004).

A smaller sample size was used rather than a larger random sample as the goal of this study was to elicit in-depth information that delves into the 'how' and 'why' of phenomena rather than focusing on a breadth of information that may not produce such information- rich and detailed data. Various contextual information, accounts and circumstances from case studies create the knowledge-base for theory development and are extremely important in providing perspectives that will assist in prioritizing local needs by unlocking concerns, opportunities and challenges that are context specific (Parkes *et al.,* 2003).

A modified snowball sampling technique was used to contact participants as it has a long and successful history in community readiness and needs assessment (Edwards *et al.*, 2000; Oetting *et al.*, 2001; Beebe *et al.*, 2001). This method of data collection enables the researcher to contact hard-to-reach respondents that are willing to discuss sensitive issues. In this case, sensitive topics that are rather taboo within the Mahina community were discussed such as HIV/AIDS. Snowball sampling addresses issues of rapport as participants are introduced to the study through other community members.

Community 'gatekeepers' were contacted through Kivulini Women's Rights Organization, the WHE/Tukwanmuane Probiotic Yogurt Project (specifically, the 'Yogurt Mamas'), the National Institute of Medical Research (NIMR) and professionals from Bugando Hospital that have regular contact with people in this community. The gatekeepers then contacted members of the community who were over the age of 18 and asked those who were interested to attend a study briefing concerning the likely impacts

of a probiotic yogurt project on community relations and health. The community 'gatekeepers' were asked to describe that this study would be conducted by a Masters student from The University of Western Ontario, Canada and will be used to produce her Masters thesis. The basic premise of this study was also described and the research question was disclosed to potential participants. Those contacted were then asked to suggest others who would be interested and were asked to invite them to the study briefing as well. Those who attended the study briefing were informed in groups or individually by the researcher and members of the participating organizations of the purpose of the study (to explore the perceptions of the likely impacts of a proposed probiotic yogurt project on community relations and health) and were informed that they had to be over 18 years old and a permanent resident of Mahina to participate. At this point in time, it was also mentioned that this research would not determine whether or not a probiotic yogurt project would be implemented in the Mahina community. Those who attended the study briefing were also asked if they had any questions pertaining to the study. Afterwards, the community members were asked if they would be willing to participate in the study. Those who were willing were asked to provide their contact information so that I could later contact them to arrange the interviews.

All participants were informed that no monetary compensation would be received for participating in the study. Monetary compensation was not provided as this may have interfered with participant selection (e.g. there may have been conflict over who was participating) and may have created 'unfair' advantages for those participating in the study. Also, not providing monetary compensation increased the likelihood that participants who volunteered to take part in this study were interested in the issues at hand, rather than a monetary reward. The participants were also informed that their participation in the study would assist in contributing to the literature on the impacts community health project development in Sub-Saharan Africa on community relations and health.

The participants were continually reminded that this was academic/student research and that their contributions to the study would not mean that a probiotic yogurt kitchen would be built in their community or that any other form of funding would be provided. Even though the information from this study could trigger the possibility of

project implementation (e.g. the collection of information about this community may flag this community as a community in need of a probiotic yogurt kitchen and may therefore place it on the list for possible expansion sites), if this were to happen, it would be in the context of other factors decided upon by WHE/ Tukwamunae. Participants were encouraged to speak freely and to raise any concerns that were relevant.

Prior to the interviews, participants were informed (in their local language of Swahili) that their participation was voluntary and they may withdraw from the interview at anytime. Participants were told that, to the best of my ability, their confidentiality or anonymity would not be breached. They were also informed that any identifying information would not be included in the results, and that all of the interview data would be reported in the aggregate form. In addition, appropriate pseudonyms would be used wherever quotations are made in order to protect the anonymity of the respondents. They were also told that all the research materials would be stored in a locked cabinet by the principal investigator and would be destroyed when the final reports of the project were completed. The participants were told that if, at anytime they wished to withdraw from that the study, the data collected from their interview would be deleted. None of the participants withdrew from the study once interviews commenced and all interviews were completed. Although none of the participants withdrew from the study once interviews were arranged, a small number of potential participants who attended the study briefing (3) decided not to participate once I contacted them. Reasons for not participating included not having enough time to participate in an interview (2) and one participant explained that there had been a recent death in the family and she was not feeling up to doing an interview. Prior to interviews, each participant was asked if they had any questions concerning the interview and each participant signed a consent form (See *Appendix B*).

4.6 Semi-Structured Interviews

Semi-structured interviews were selected for this study as the goal of this study was to understand the perceptions, opinions and meanings that the participants associate with health, probiotics, community dynamics and the implementation of a community health program. Semi-structured interviews allowed us the freedom to discuss probiotic

yogurt, program need, project facilitators, project barriers and community dynamics freely. This gave the participants the flexibility to more openly express their own opinions using their own words as this study seeks to discover and investigate individual perceptions and understandings of project implementation, an in-depth approach is most appropriate (Miller & Crabtree, 2004). The flexibility of the interview instrument enabled us to broaden our knowledge base to include responses and new questions that are unpredicted and/or not yet included in other literature.

The interviews were guided by the interview checklist (*Appendix C).* The interview guide consisted of some biographical and identifying questions as well as a number of open ended 'grand tour' questions with associated prompts and probes that expanded and elicited in-depth discussion relating to the study objectives.

To ensure that the interview checklist was culturally and contextually appropriate, WHE researchers and members of Kivulini who have significant knowledge of the community reviewed the interview guide prior to making contact with the interview participants. The interview checklist was also tested (i.e. mock interviews were conducted) with members of the Mabatini community (where the current probiotic yogurt project is located) to ensure that the questions would be acceptable the community. All feedback from test participants was taken into account and the necessary changes were made to the interview instrument.

Our in-depth approach was guided by the overarching themes of knowledge and perceptions of probiotic yogurt (Reid *et al.*, 1999 & 2003; Oyewole, 1997; Lenoir-Wijnkoop *et al.*, 2007; Lourens-Hattingh & Viljoen 2002) , availability and accesses to resources, community interest and support, community relationships and dynamics (Hampshire *et al.*, 2005; Mansyur *et al.*, 2008; Poortinga, 2005), gender roles and relationships (Momsen, 2004; Cornwall, 2003; Hackl, 1997; Stall & Stoecker, 1998; Visvanathan *et al.,* 1997; Razavi & Miller, 1995) and barriers to project implementation (Muriithi & Crawford, 2003; Sabbat, 2002; Shediac- Rizkallah & Bone, 1998) but was flexible enough to follow the lead of the participant. For example, it was not expected that abuse and abandonment, HIV/AIDS stigma and hunger and malnutrition would emerge as such central topics. Although the major topic list within the checklist was

never modified, discussion of such topics led to the progression of new probes or subsections within the larger checklist.

Face-to-face interviews were used in order to maintain a relationship of trust and respect as this is essential in the practice of social and cultural norms of the community. Face-to-face interviews enable participants to feel more comfortable and promote more honest and open responses. As noted by Kaye (2001) face-to-face interviews are known to assist in breaking down barriers and suspicions between the researcher and the participant. In this case, this relationship building was reinforced by my prolonged engagement with the community (as discussed in a later section).

All of the interviews were conducted between the months of May and August of 2007. The interviews, on average, lasted for approximately 45 minutes and were translated by the assistant from English to Swahili and back to English. A qualified assistant who was fluent in both Swahili and English translated the interviews, while the researcher asked the questions. This assistant was specifically trained at St. Augustine University in Mwanza, Tanzania with a focus on qualitative interview technique and translation. As the researcher, I also spent time with the assistant going through the preferred procedure of interviewing and the interview checklist itself. The researcher was engaged in each interview in order to assess the quality and accuracy of interviewing rapport. The researcher also wrote field notes during all interviews that included observations about the respondent, surroundings, and the interview itself in order to enhance the interpretation of the data (Miller & Crabtree, 2004). Interviews were conducted at either the local community centre or at the participants homes in order to ensure the comfort of all participants.

During the interviews, the participants seemed to be quite forthcoming with information and appeared to be quite comfortable answering the questions that were asked. For example, most participants went into great detail when answering questions and some even discussed their personal life histories. A few participants displayed that they were even comfortable enough to ask the researcher (myself) some questions as well. Some participants were so comfortable with the interview process that they invited me to their homes and to some community events following the interviews.

All interviews were tape-recorded for later transcription and analysis. The original interview tapes contained interview conversation in English and Swahili as the researcher asked questions in English which were translated into Swahili for the participants and then the answers were translated back into English for the researcher. The original interview tapes were listened to several times by three different research assistants who were fluent in both English and Swahili in order to assure complete accuracy of translation. Each assistant listened to the interview recordings individually and translated the Swahili parts of the original recording into English on another tape recorder. The assistants were also asked to acknowledge (in writing) any questioned translations. Each interview was later transcribed word for word using the agreed upon final translation tape.

4.7 Analysis

The mode of analysis for the interviews was guided by the literature on conceptions and perceptions of health (Green, 2004; Bryant, 2000; Van der Geest, 1997; Airhihenbuwa, 1995; Engle, 1977); gender roles and relations (Kevane, 2004; Visvanathan *et al.,* 1997; Razavi & Miller, 1995; Boserup, 1970); community participation (Edwards *et al.*, 2000; Jumper-Thurman *et al.*, 2001; Findholt, 2007; Chilenski & Greenburg, 2007) as well as current themes concerning factors related to health project implementation including program need, program facilitators and program barriers (Paronen & Oja, 1998; Shediac- Rizkallah & Bone, L, 1998; Loustaunau & Sobo, 1997). An extensive topic list was also prepared using the transcribed interviews. This list progressed and was modified as the transcripts were read and re-read several times in detail.

The purpose of this analysis was to obtain descriptive information on community perceptions of the likely impacts of a proposed probiotic yogurt project on community relations and health. Each transcript was examined line-by-line and paragraph-by-paragraph using QSR NVivo qualitative software and each line and paragraph of text was thematically coded using categories of responses to the questions that were developed prior to coding. Emerging theme codes were also added as they appeared. Immediately following each interview, an interview summary document was completed

to record emerging themes that were relevant to each interview category. While most of the emerging themes fit within the original categorized topics, some new thematic codes had to be created as detailed analysis of the transcripts progressed. For example, the broad theme category of 'Community Challenges' was created in order to encompass topics discussed such as HIV/AIDS stigma, abuse and abandonment as well as hunger and malnutrition that may not have fit within the existing broad categories of analysis. A hierarchical code structure (i.e. using 'tree' nodes) was developed using QSR NVivo in order to provide more detailed organization within the original categorized topics. For example, under the broad theme of 'Barriers to Accessing Probiotic Yogurt' there existed numerous sub-categories of coding that were originally predicted such as 'Cost', 'Lack of Awareness' and 'Time'. Following a more in-depth analysis of the transcripts, the subcategories of 'Women's Multiple Roles' and 'Disease and Illness' were added as emergent sub-categories. The transcribed interviews as well as the field notes were coded using an interim 'start list' of codes based on the research objectives. As the process of analysis continued, the code list was continually evaluated and modified to account for any new information. Major theme categories were reviewed numerous times to ensure that classification was precise. Thematic coding allowed the researcher to interpret and analyze the data from the ground up. Significance of categorization was based upon qualitative connections, relationships, word association and modeling. This inductive approach was used in order to allow the data to direct the progression of the intended and emergent themes including perceptions of probiotic yogurt, access to probiotic yogurt, availability of resources, barriers and facilitators to project implementation, community relationships, community challenges and dynamics as well as gender roles and relationships.

In each segment of the data representation there will be excerpts (quotations) provided from the actual raw data. The participant's name, represented by a pseudonym, their gender and age-range will be placed at the end of each quotation. Participant's exact ages were not provided as to ensure anonymity of the participants within a relatively small community.

The selected excerpts of the transcribed interviews are comprised of direct quotations from the participants. Generally, the quotations that are utilized in the results

chapter were chosen in order to represent views from a broad range of participants. At the same time, quotations that were the most articulate and descriptive were used. While frequently discussed issues, concerns and opinions were highlighted and included, any excerpts of text that were 'different', 'extreme' or 'out of the ordinary' were also included and clearly identified in the findings.

4.8 Prolonged Engagement

Prolonged engagement is the process of spending sufficient time in the field in order to familiarize with or understand the culture, social setting, or phenomenon of interest (Creswell & Miller, 2000). Prior to interviews, a great deal of time was spent with community leaders, community 'gatekeepers', as well as local residents to ensure a sense of trust between the primary researcher and the community. According to Baxter & Eyles (1997), prolonged engagement entails spending adequate time in a community in order to better understand the 'culture' and contextual factors of the people, to build trust and rapport with the participants and to be able to acknowledge potential misinformation or distortions brought about by participant's responses.

I was informed by community leaders in Mahina that spending time in the community would be essential in obtaining interview data that was 'real', since the residents of the community needed to know me and trust me before they would 'open up'. Prior to the first interview, I had been living in the Mwanza community for approximately 60 days and spent many hours in the Mahina community familiarizing myself with residents, visiting the homes of elders and visiting local shops and businesses. This process of face-to-face trust-building is known to be an important aspect of community acceptance of 'outsider' research, especially within Sub-Saharan Africa as community members and community leaders can gain insights into researcher intentions (Kaye, 2001). Also, being seen in the community increases perceived credibility of the researcher (Kaye, 2001). By participating in the daily life and practices of the Mahina community and by creating meaningful relationships along the way, I felt that I created a better sense of trust between myself and the participants and I believe that this was reflected in their willingness to share information in the interviews. There are a number

of limitations in utilizing qualitative, semi-structured interviews which will be discussed in Chapter 6 alongside other study limiations.

4.9 Dissemination of Information

During the interviews it became apparent that not only were the participants providing meaningful and informative responses but a number of them had specific questions for me concerning various related topics such as probiotics, HIV/AIDS and female condoms. After realizing that many of the participants were interested in receiving information on these topics, before I left Tanzania, I decided to put together information pamphlets with the help of two local organizations (the National Institute of Medical Research and Kivulini) on the varying suggested topics for the community. I felt that it was my responsibility to share my knowledge with this community as they had so openly shared theirs with me. The pamphlets were originally written in English and then translated into Swahili so that local community members could read them. In addition, I also organized a meeting in the Mahina community with a few other volunteers and a translator where we presented the information in the pamphlets for those who can not read and for those who had additional questions about probiotics, HIV/AIDS and female condoms. As all interviews were completed, it was assured that this additional community interaction did not interfere with the results of the study but assisted in the further progression of the community's knowledge as they were able to better understand some of the topics and issues discussed in the study.

Due to the difficulty of translating such a lengthy document into Swahili, a copy of this thesis written in English will be given to a participating organization (Kivulini) where most of its members are fluent in both English and Swahili and may pass on any information to those in the Mahina community. Also, as I will be returning to Mwanza Tanzania, I will be visiting the Mahina community once again and will arrange a community meeting with a translator where I may present the results of this thesis and answer any questions that the community has regarding this study.

4.10 Chapter summary

This chapter outlines the methods used to conduct this research including study site selection, participant selection (a modified snowball sampling technique) and sampling techniques, as well as the data collection tool (qualitative semi-structured interviews). This chapter also describes the analysis techniques used in order create the findings chapter. The following chapter presents the results of this study.

CHAPTER FIVE

Results

5.1. Introduction

The following chapter will present the findings from the study. Following a description of the study sample characteristics, the findings are divided into sections according to the primary objectives of the study; and are presented based on the themes which emerged from the interviews. The first section presents participant knowledge and perceptions of probiotic yogurt including the perception of probiotic yogurt as an alternative therapy. The second section presents the perceived availability and accesses to resources within the Mahina community. Perceptions of community dynamics, interest and support is then explored in the third section. The fourth section highlights perceived gender roles and relationships within the community; barriers to project implementation; as well as community challenges. Direct quotations from the transcribed interviews are used to illustrate these emergent themes, and serve to frame and categorize the respondent's thoughts and opinions according to the thematic framework of the study. The results present accounts of the participants own perceptions and experiences concerning probiotics and the determinants of probiotic yogurt project implementation.

5.2 Sample Characteristics

As noted earlier, participants for this study (n=26: 10 men and 16 women) were recruited using a snowball sampling technique. The sample characteristics (age, marital status and number of children) of the participants can be viewed in *Table 1.* Although some participants revealed their HIV/AIDS status, for ethical reasons, their HIV/AIDS status has not been listed in *Table 1.* Nevertheless, 20 out of the 26 (77%) of the participants that were interviewed revealed that they are HIV positive. As mentioned in the following chapter, there is also a slight gender bias in this sample as there are more women living in the Mahina community and more women consented to participate in

the study. As also mentioned in the preceding chapter, the average age of participants was 35 as they ranged in age from 21 years to 63 years. The marital status and number of children of each participant are also displayed. As *Table 1* depicts, the majority of participants were married, and all of the participants had children. The average number of children per family within the study sample is approximately 4 and is comparable to the overall national rate of 5.11 (Olenick, 1998). Since this sample was not randomized within the Mahina community, it will not be possible to make broad generalizations from the study findings.

All quotations will be followed by a description of the participant in order to enhance the context of the comments made. The appropriate pseudonym, age range, marital status and number of children will be identified as follows (i.e. Sarah, Female, mid-20s, single, 2C).

Table 1- Sample Characteristics

Participant (Pseudonym)	**Sex**	**Age**	**Marital Status**	**Number of Children (If any)**
Latifa	Female	Late 50s	Widowed	9
Beatrice	Female	Early 60s	Widowed	7
Adhara	Female	Mid 40s	Married	4
Fahima	Female	Early 40s	Widowed	6
Nadia	Female	Mid 20s	Separated	6
Sadiki	Female	Mid 50s	Widowed	3
Mwaka	Male	Late 30s	Married	7
Afifa	Female	Late 30s	Widowed	4
Durha	Female	Early 30s	Married	3
Shamim	Male	Early 30s	Married	5
Karama	Female	Mid 30s	Separated	4
Betoto	Male	Late 20s	Married	4
Silham	Female	Late 20s	Married	3
Abasi	Male	Mid 30s	Married	6
Stephan	Male	Late 20s	Married	3
Malia	Female	Late 20s	Married	3
Aziza	Female	Early 20s	Single	2
Lumbwi	Male	Early 30s	Married	5
Bahati	Male	Late 20s	Married	4
Bahari	Male	Mid 20s	Married	2
Mosi	Male	Mid 30s	Married	3
Safi	Male	Early 40s	Married	4
Bahiya	Female	Mid 20s	Married	4
Siri	Female	Mid 20s	Married	4
Rabina	Female	Late 30s	Widowed	5
Aaliya	Female	Mid 40s	Widowed	5
Average		**35.6**		**4**
Count	**16F:10M**		**16M: 7W: 2 Separated: 1 Single**	

5.3 Conceptions and Misconceptions of Probiotic Yogurt

5.3.1 Knowledge of WHE and Probiotics

The participants were asked about their current knowledge of the WHE/ Tukwamunae Probiotic Yogurt Kitchen. Many of the participants (23 out of 26) were familiar with the current WHE/ Tukwamunae Probiotic Yogurt Community Health Project that is currently located in the Mabatini community in Mwanza. It was surprising to hear that 21 out of the 26 participants (81%) have actually eaten the probiotic yogurt and have either heard about probiotics or have some knowledge about the health benefits of probiotic yogurt. It was also revealed 17 out of the 26 participants (65%) consume the probiotic yogurt at least 3 times per week; 13 of whom have any knowledge of what probiotics are or know something about their related health benefits.

Participants were also asked about their knowledge and beliefs about proboitics and their related health affects. As knowledge relates to specific information about the nature of a particular illness, treatment, or health service facility that offers treatment, beliefs may entail the mental acceptance and conviction of truth in the actuality or validity of a particular understandings. While it is important to distinguish between knowledge and beliefs, they are often commingled as individuals may believe that they have knowledge relating to illnesses, treatments and health facilities when their apparent 'knowledge' may in fact be mistaken perceptions. By investigating both knowledge and beliefs about illness, treatment and related health services of individuals in the Mahina community, a 'bigger picture' of how these understandings and perceptions related to project implementation and maintenance may be revealed.

Overall, participants indicated that their knowledge and understandings of probiotics came from a variety of lay and professional informational sources that included medical professionals such as doctors, nurses, and ARV clinic staff; local organizations and non-profit organizations such as Kivulini and the Tanzanian AIDS Commission (TACAIDS); community leaders including the chairperson and elders; members of the existing probiotic yogurt kitchen (Yogurt Mamas); existing probiotic yogurt customers; as well as other community members in Mahina.

In the following statement, a participant explains that she consumes the probiotic yogurt on a regular basis but does not know anything about the special properties of the yogurt:

> ...I take the [probiotic] yogurt about 4 or 5 times a week. I like the taste of it. But I must tell you, I don't know what is in the yogurt that is good for us. I was told that I could register to get it [the probiotic yogurt] for free because I have HIV...it makes me feel so much better...but I don't know why this yogurt is so good for me...I just do not know what is put in there that helps...I can make cooked milk at home that is like this but it does not help me feel better (Aailyah, Female, mid-40s, widowed, 5C).

5.3.2 Perceived Health Benefits of Probiotic Yogurt Consumption

Participants described their perceived health affects of probiotics in a number of ways. Many of the perceptions of probiotics and probiotic yogurt including the related affects were consistent with information in the current literature concerning probiotic food supplements (Drain *et al.*, 2007; FAO/WHO, 2006; Reid, 2003; WHO, 2002; Rolfe, 2000). For example, some participants (9 in total) recognized that probioitcs are a type of bacteria that benefit health. Although the word 'bacteria' (bakteria in Swahili) stems from the English meaning of the word, participants expressed that this term has been adopted into the Swahili language is used quite frequently by locals. The following quote describes one woman's perception of the probiotic bacteria:

> I don't know everything [about the probiotic yogurt] but I do know that it has good bacteria in it and that makes you healthy. The doctor at the clinic said something about how bacteria is not always bad and this stuff has the good bacteria in it that makes us healthy (Adhra, Female, mid- 40s, married, 4C).

Another participant reported that probiotic yogurt consumption boosts his energy and makes him feel "stronger":

> It [the probiotic yogurt] makes me feel stronger and gives me energy. Before I noticed that I was feeling so tired and I did not want to do anything but after taking the yogurt I noticed that this energy is back...I feel strong again (Bahari, Male, mid-20s, married, 2C).

Other participants (10) mentioned the health benefits of probiotics for people living with HIV/AIDS by indicating that probiotics "are especially good for people living with HIV" (PLWAs). The health benefits for PLWAs that were described included references to their compatibility with ARVs as well as descriptions of increased immunity including the acknowledgement of increased CD4 (Cluster of Differentiation 4) counts:

> People with HIV are supposed to take it. People without HIV can take it too because it is good for everyone but for people like me with HIV, it really helps. It makes the immune system work better and has made my CD4 counts go up. I take ARVs and these help too but with the [probiotic] yogurt it works better (Silham, Female, late-20s, married, 3C).

> I was told that it would be beneficial for me to take the yogurt with my ARVs, especially when I am feeling sick. You see the ARVs, they make me feel very sick sometimes and the yogurt helps stop this...it makes me feel better. It is good for people with HIV. It increases our CD4 counts and it makes us fit and healthy. I know that it makes the ARVs work better too...that is why I take it (Bahati, Male, late-20s, married, 4C).

Other participants noted that consuming the probiotic causes needed weight gain as the HIV virus causes unhealthy weight loss:

> It makes people fatter in a good way...My friend who eats the yogurt a lot she has gotten fatter from eating it which is good because the HIV was making her so skinny. You can see it in her body and face that this is good for her...she looks healthier since she has been taking the yogurt (Karama, Female, mid-30s, separated, 4C).

> I know this is good because I have gained weight...this is what I need because my clothes were starting to fall off of me...the HIV does that to you, it makes you lose weight and this is not good for you (Durah, Female, early-30s, married, 3C).

Other nutritional benefits of the probiotic yogurt were also mentioned:

> I know that the probiotic yogurt is good for our nutrition. There are lots of good things in the yogurt like vitamins and protein that is healthy. It's a healthy food (Fahima, Female, early-40s, widowed, 6C).

Some respondents (9 in total) also talked about the benefits to gastrointestinal health by reporting that the probiotic yogurt prevents stomach upset and relieves stomach pain:

> The [probiotic] yogurt makes our stomachs feel good. Before my stomach would really hurt...especially with the ARVs...my stomach would move around inside there and I would get a terrible pain right here [points to stomach]. Now, this doesn't happen so much because I take the probiotic yogurt (Abasi, Male, mid-30s, married, 6C).

> It [the probiotic yogurt] stops the paining in my stomach...It used to hurt so much...and all of the time, it just didn't feel right. Now, it is a lot better (Bahari, Male, mid-20s, married, 2C).

Others discussed the affects of probiotic yogurt consumption on the reduction of diarrhoea. One participant even noted that she now sees the doctor less often because she doesn't experience as many diarrhoeal episodes:

> This [the consumption of the probiotic yogurt] has helped make my diarrhoea happen less often. I used to have to go to the clinic a lot more because of the diarrhoea and now I only have to go sometimes (Fahima, Female, early 40s, widowed, 6C).

Three participants also mentioned particular health affects of probiotics that have not been previously cited in the literature by indicating that probiotics "clear up skin rashes" and "make your legs stop hurting". The comments below put this into a nuanced perspective:

> Well, I used to have a rash on my skin that would not go away and since I have started taking the probiotic yogurt it has almost all gone away. See this spot of rash here [points to arm]...this used to be all over my body and now it is not. The [probiotic] yogurt has cleared it up (Lumbwi, Male, early 30s, married, 5C).

> The [probiotic] yogurt also clears up the skin. If you have trouble with your skin, like bumps and things like that, it gets rid of it (Mosi, Male, mid-30s, married, 3C).

> For some reason, my legs have stopped hurting as much. I used to get such bad pain in the muscle and joints and now since I eat the [probiotic] yogurt this doesn't happen any more (Silham, Female, late-20s, married, 3C).

Those participants who were unfamiliar with probiotics expressed a strong desire to learn more about this beneficial substance and its related health affects:

> No, this is a problem here. We all want to know what this word means [probiotics] and we do not. I know the yogurt helps people but I would like to know more about this. I can see that everyone is getting healthy from it but why is this yogurt special? I just don't know. It would be better if I understood (Mwaka, Male, late- 30s, married, 7C).

5.3.3 A "Red Flag": Perceptions of Probiotics as 'Medicine'

While the participants identified many perceived health benefits of probiotics and described them in a number of ways, what was of particular interest was the tendency of some respondents to refer to the probiotic yogurt as 'medicine'. In total, seven participants referred to the probiotic yogurt as 'medicine' at one point in time during their interview. In the comment below, the participant refers to the probiotic yogurt as a 'medicine' and uses medical terminology to describe that the probotic yogurt increases CD4 counts and "has no side effects":

> My friend who takes the yogurt medicine, she tells me what it does for her and at the clinic they say her CD4 counts go up and up and up...this medicine could benefit us all (Beatrice, Female, early-60s, widowed, 7C).

The following passages reveal that some community members consider the probiotic yogurt as "medicine for their HIV" suggesting that those who are consuming the probiotic yogurt are mistaking the substance for a medical treatment. These misconceptions are also highlighted as the participants both mention that the probiotic yogurt is a 'medicine' that 'doesn't make you feel bad/ sick when you take it'. The one participant even goes as far to compare the probiotic yogurt to ARV therapy. These descriptions are as follows:

...Now some people here take the yogurt as medicine for their HIV and lots of other things like diarrhea and stuff like that. This medicine is making them feel good so they talk about it. It is something that helps so much but does not make you feel bad when you take it (Shamim, Male, early 30s, married, 5C).

... people take it as medicine... it cures everything. Some people think that it is a miracle medicine. It is just much better than the ARVs because this medicine works too but doesn't make people feel sick, it makes them feel healthy...I would like to know and understand what exactly the probiotic yogurt does for people who are HIV positive...how does it cure people? (Fahima, Female, mid-40s, widowed, 6C).

In the following excerpts, the respondents explain that they have substituted probiotic yogurt in place of ARVs:

...Then I noticed myself, from taking the yogurt, that I felt really good. I had energy that I didn't before and I feel strong. So I know that this probiotic medicine is something that is good for my health. This is why I stopped taking the ARVs. The yogurt is helping me so much that I don't even have to take the ARVs. This is good because they made me feel very sick before and now I have energy. I also like the taste of the yogurt. It is a good meal for me (Latifa, Female, mid-50s, widowed, 9C).

I know that the probiotic is a medicine. I know that this stuff, it increases my immunity, it just makes me feel healthy. I take the yogurt instead of ARVs to help me feel better from the HIV. The ARVs used to make me feel very sick and I don't like them. Also, since I have been taking the yogurt my CD4 counts have gone up and this is why I know that it helps my immune system. My CD4 count has gone from 235 to 315. Because this is helping so much I stopped taking my ARVs about 2 weeks ago. It is simple, the ARVs make me feel sick and the yogurt does not and it tastes good (Durah, Female, early 30s, married, 3C).

As the above quotes have demonstrated, some of the participants have particular misconceptions of probiotic yogurt as a medicine as well as misconceptions about the abilities of probiotic yogurt to directly treat HIV/AIDS. This suggests a need for further exploration of perceptions of 'medicine' within this community as well as a need for additional community education and information on the use of probiotics and their relationship to ARVs.

5.4 Barriers to Accessing and Utilizing Probiotic Yogurt

In order for community members to utilize the probiotic yogurt resource so that maximum health benefits are achieved, they must have reasonable access to it on a regular basis (Reid *et al.*, 2003). Although some of the participants are familiar with the current yogurt kitchen in Mabatini, they are still unable to consume the yogurt on a regular basis. The respondents identified a number of barriers in accessing probiotic yogurt from the current probiotic yogurt community health kitchen.

5.4.1. Lack of Awareness of the Probiotic Yogurt and the Yogurt Kitchen

Some respondents indicated that because they were not familiar with the WHE/ Tukwamunae probiotic yogurt kitchen and the yogurt itself they were unable to access this beneficial product:

> Well, because I didn't know about this probiotic yogurt, I don't take it. If more people knew that this was available, I think that more people would get the yogurt. Now that I hear about it, I would like to find out more about it and take it (Betoto, Male, late-20s, married, 4C)

> I did not even know that this existed. This is why I have never taken this probiotic yogurt that you are talking about. Maybe there should be more information about this and then they could sell more yogurt to other communities in Mwanza. I would like to know more about the yogurt. I do not know anything and I would want to know what it was before I would eat it. I would also have to see if I liked the taste. I know that I like yogurt, I have had it before, but what is this probiotic? (Siri, Female, mid 20s, married, 4C).

These participants also both express a desire to receive more information about the probiotic yogurt project and highlight the possible need for increased project promotion and awareness within Mwanza.

5.4.2 Cost

The views from some respondents are consistent with the notion that even where health care services are available and individuals are aware of beneficial health treatments, the cost of seeking care may delay or prevent poor or marginalized individuals from accessing them. As indicated in the following passages, participants identified cost as a major barrier to accessing the probiotic yogurt:

> My neighbour said that I can buy it [the probiotic yogurt] but I cannot afford it because it costs 250Tsh and I cannot afford to buy food most of the time. I do whatever I can to make money but there are just no jobs, especially for a sick person. The same amount of money can buy me rice and corn flour to make ugali...food that will fill my stomach. I have to think about these things...I have to ration what I do have (Beatrice, Female, early 60s, widowed, 7C).

As stated by this individual, available financial resources are often used to buy essential food products, especially ones that 'will fill your stomach'. Starchy, high caloric foods such as Ugali and rice are often consumed by individuals on a daily basis but have little nutritional content, indicating that there could be certain health and nutritional implications for individual and community nutrition; hence there is a need for nutritious supplements such as probiotic yogurt. Unfortunately, the lack of ability to afford food substances with adequate nutritional content not only worsens malnutrition but also exacerbates individual's inability to afford probiotic yogurt.

Participant's inability to access probiotic yogurt due to financial constraints is articulated by the following comment:

> I have a large family so I do not always have the money to pay for the yogurt. I have to buy so many things with very little money. I work so hard and so does my wife but we do not receive a lot of money for all of the work that we do. So after we buy enough food for the children, and pay for things at the house, we don't have much left. I can't even afford uniforms and books for 3 of my children to go to school so they have to wait a few years before they can go. I just don't have the money to be buying this probiotic yogurt (Mwaka, Male, late-30s, married, 7C).

While recognizing the health benefits of consuming probiotic yogurt, some participants still regard yogurt consumption as a luxury and therefore rightly place this at

the bottom of their priority lists. Furthermore, cost barriers can include not only the cost of the probiotic yogurt itself but also the cost of transportation to retrieve it:

> It is cost. It is money that we do not have. This is a problem for many people here. We just do not have an extra 250Tsh sometimes and then it is an extra 500Tsh to ride the daladala [local transportation]. Most people here have nothing so this is expensive to go so far and then to have to pay for it. It is the cheapest to walk or ride a bicycle but it is a really long way to Mabatini so I don't think that this is the best way to travel. So, you can either walk or bike forever or take the expensive daladala...it is just not easy to get there. I know that some people get it [the probiotic yogurt] for free but they still have to pay to get there or walk for a very long time. This is why we need a program like this in our community, so we don't have to spend money to get it [the probiotic yogurt] (Fahima, Female, early 40s, widowed, 6C).

> The cost prevents me from getting it [the probioitc yogurt]. If it were right here in Mahina, I am sure that many more people would buy the yogurt. It is just too far to walk, especially after working all day. There are lots of people here and in Nyakato and in Mahina that would buy the yogurt if it was here because it would be close and then they would not have to go all of that way. I think some of us could afford the cost of the yogurt, but not the daladala fare (Abasi, Male, mid-30s, married, 6C).

The above excerpts demonstrate that the cost of seeking care may include not only direct costs of care such as price of probioitc yogurt, but also indirect costs such as costs for transportation and allotted time for retrieval of the yogurt. Participants indicate that because of the far proximity of the yogurt kitchen from the Mahina community, community members must either walk the far distance or take the daladala (public transit) which is often unaffordable for them. Also, in some cases, the cost of transportation is twice as much as the cost of a cup of yogurt so community members are sometimes unable or hesitant to spend the money for travel.

5.4.3 Time Constraints

Individuals' access is constrained both by their budget (which includes finances) as well as their time budget, because time spent on accessing beneficial food supplements can be traded off against competing uses of time, both for labour and leisure. Participants frequently discussed time as a constraint to accessing the proboitic yogurt:

> Well, I do not have time even if I had the money to go all the way to Mabatini for yogurt. I have the business to take care of and so many things to do that it takes too long to walk there and it costs too much money to take the daladala (Shamim, Male, early 30s, married, 5C).

> Well sometimes I am too busy to pick up the yogurt. If I am working, sometimes I do not make it in time before the kitchen closes. I try to stop on my way home but then I have to pay again to get on the daladala and it costs too much money. Also, I am so busy with my children that I find it hard to get there (Aziza, Female, mid-20s, single, 2C).

Time constraints due to priorities such as work, family responsibilities and other obligations often lower or inhibit their access to the probiotic yogurt. The findings here show that particular costs such as the distance or travel time to the facility can hinder program usage.

5.4.4 Women's Multiple Roles

Another barrier to accessing probiotic yogurt from the Mabatini community kitchen that was mentioned by participants was women's 'multiple roles' and burdens. Women's household and familial duties are often compounded on top of work outside of the home which is often referred to as 'multiple roles'. The following quotes demonstrate that the burden of women's 'multiple roles' is a barrier to accessing probiotic yogurt:

> Well, I just don't have time to go to the [probiotic] yogurt kitchen because I am just too busy... all day...everyday. I have to take care of my children and our home and then I have to help work my uncle's field because he is old and sick and because we need money for the family. I just don't even think about it because I have so much to do (Malia, Female, late 20s, married, 3C).

> It is just far and I don't have the time to be going all over Mwanza for things. I try to stay around Mahina most of the time so I can get more done in the day. I usually have a lot of chores and washing to do because my family is so large. And the two youngest children are always with me. It is hard to bring them all that way. It would take a long time to get to Mabatini and I have many things to do through out the day. I just don't have the energy...I just get tired. If the [probiotic] yogurt kitchen was here in the community, I would go and get it when

> I went to get the food from the market, but right now, it is too far (Nadia, Female, mid-20s, separated, 6C).

As these participants describe, their multiple responsibilities such as childcare, household duties and agricultural work act as a barrier to accessing probiotic yogurt. The respondents explain that their childcare responsibilities, especially when compounded on top of other daily duties, leave them in a situation where they are "too busy" or "too tired" to retrieve the probiotic yogurt as it is too far away.

5.4.5 Disease and Illness

Infectious diseases and other related illnesses such as HIV/AIDS, tuberculosis, malaria, hepatitis, amoebic and bacterial dysentery, typhoid and cholera represent the most severe and immediate threats to individual and community health in Tanzania (Kavale, 2005; Galvan *et al.*, 2000). The comments below indicate that many people suffering from the symptoms of these infectious diseases encounter issues with accessing beneficial health products such as probiotic yogurt as disease symptoms interfere with daily functioning and well-being:

> Well, when I am sick I can not get the yogurt...especially if I have malaria or diarrhoea from the water. It is a lot of effort for me to go and get the yogurt when I am sick, so I usually don't on a bad day...It would just make me feel worse to go all that way. I do not like to eat anyways when I am feeling sick. I know that I need to eat but when I feel so horrible I have trouble eating (Aailyah, Female, mid-40s, widowed, 5C).

Another respondent reveals illness as a barrier to accessing probioitc yogurt as he describes difficulties with the disease symptoms of HIV:

> It is too far to walk even for a healthy person....and for me, some days I don't even have the energy to walk to get water. This HIV, it eats at your body so that you feel empty. It stops you from being full of life. It takes your whole life away from you so that you can't do anything. Sometimes I just feel so weak and it is hard for me to do anything....I don't even want to leave the home. Getting the yogurt is a problem...I am too weak to go to get it some days. In our community, there are so many people with HIV and other illnesses and they feel just like me and they are so busy so I don't like to ask other people to get it for me. This is

why we need a project here. I could get it if it were closer to me... I am sure that everybody feels this way (Bahari, Male, mid-20s, married, 2C).

The difficulty of participating in regular daily activities including the retrieval of beneficial health supplements such as probiotics is clearly demonstrated in the above passage as the respondent explains how HIV "eats at your body...so that you can't do anything". What is also acknowledged is how common these diseases are throughout the Mahina community, leading this participant to mention that many others are also too ill to go looking for probiotic yogurt.

5.5 Available Resources

The participants were asked to identify available resources that are in their community that they think would be useful for in implementing a probiotic yogurt community health program. The general consensus between participants was that there are few available 'physical' resources ("we don't have much") as Mahina is an impoverished ("poor") community, but the following resources were identified by the respondents: a good transportation route network; cows (milk source); a building or location for the project; as well as volunteer capacity and community support. For instance, 24 out of 26 participants mentioned that there was a suitable location in the community to build a probiotic yogurt kitchen.

5.5.1 Transportation Routes and Networks

Respondents indicated that Mahina has "good" transportation routes and networks that are sufficient for probiotic yogurt equipment and supply delivery. Descriptions of available transportation routes are highlighted in the following passages:

We have very good transportation here. We are right off of the main highway. The daladala [local transportation] station is right up the road there and lots of cars run by there. The highway goes right through Mwanza with daladala stops throughout town and goes through to other towns like Musoma and Shinyanga. I remember one of the ladies from Mabatini telling me that they get the bacteria for the yogurt at NIMR [The National Institute of Medical Research] so this would be good for getting that here. The roads into Mahina are not paved but they are good

wide roads that are good to drive or bike or walk on. So I would say that there is a good transportation system (Nadia, Female, mid-20s, separated, 6C).

Transportation is available here...there are lots of daladalas that stop right at the main road there [points]. There are bicycles and cars...the main road is paved which makes transportation easy and then into the community, the roads are not paved but they are still good roads. The problem here is that the roads are all good but most of us cannot afford cars and can't afford to always ride the daladala...but sometimes we put our money together and one person will go and get it [the probiotic yogurt] for all of us who want it (Rabina, Female, late 30s, widowed, 5C).

Sufficient access to transportation routes is needed for the transportation of probiotic yogurt and cultures as well as project supplies such as milk, yogurt processing equipment, tools, and water. The participants acknowledge that these materials could be easily transported into the community. It should be noted that while the participants describe what seems to be an effective transportation network, the major problem has to do with ability (in terms of cost e.g. 500 Tsh ($0.50 CAD) per ride, time and workload) to travel to probiotic yogurt sources outside of the geographic community.

5.5.2 Cows and Milk Supply

It was acknowledged by respondents that there is an adequate milk supply for the processing of the probioitc yogurt that is available to the Mahina community. Participants explained that:

Some people have cows here but not very many of us...the milk could come from Buswelu though, there are a lot of dairy farmers there and it is so close to us. Milk is available, it is just costly so most of us do not purchase it everyday (Sadiki, Female, mid-50s, widowed 3).

We have access to cows here to buy milk. I know that because we buy milk for drinking and to make food sometimes. There are a few people that you can buy the milk from here in Mahina and if they have none you can go to Buswelu, just over there, down the highway [points]. They have a lot of dairy cows over there (Aailyah, Female, mid-40s, widowed, 5C).

Participants revealed that a reliable milk supply is accessible within the Mahina community or just outside of the community.

5.5.3 Human Capital, Volunteer Capacity and Community Support

Farmer et al. (2001) explain that, in a resource poor setting where physical or financial resources may be lacking, human resources are just as important for community health development. The following quotes describe the various human resources, capacities and support that are available for project implementation in the Mahina community:

> We have plenty of people who want to be involved in this project. Most of us know about it because of the Mabatini project. Some of us are registered to get yogurt and others try to buy it and we all know how this project is good, good for our health and good for the community so we have lots and lots of volunteers. When you have so many poor, sick and unemployed people, you will have lots of volunteers. We want to help our selves. We want to make things better here and we will work hard to do it. I know that every person here would help out if we had this opportunity. We will all do this together because people here, we work together to get things done (Latifa, Female, mid-50s, widowed, 9C).

> That is one thing that we have plenty of. So many people do not have jobs and would like to help, like to volunteer. You know most of the people here would rather work but there are no jobs so if there was something to keep them busy they would do it, especially if it was something that would help themselves and other people. Everyone is excited about the [probiotic] yogurt and we all have agreed that we would like to participate...we have discussed this at community meetings and I know that this will be a thing for all of us where we can come together to help our community (Beatrice, Female, early 60s, widowed, 7C).

As indicated by the above statements, the participants believe that there is strong support for the implementation of a probiotic yogurt community health program in the Mahina community as "everyone is excited about the probiotic yogurt".

5.6 What Resources will be Needed?

While there are some resources (both physical and human) that are available in the Mahina community that would help support the implementation and development of a

probiotic yogurt community health project, understandably, there are also many resources that will be needed in such a resource-poor setting. Respondents identified a number of resources they would need in order to implement an efficient and sustainable probiotic yogurt kitchen which included funds; refrigeration and the electricity to run such appliances; kitchen ware and equipment; as well as education and training.

5.6.1 Building Supplies/ Rent

Although participants mentioned that there is a suitable location for a probioitc yogurt kitchen, building materials or money to rent a building were also mentioned as needed resources:

> We either need money to pay for rent in an existing building or we need help with purchasing building supplies and materials. I know that we would pool whatever extra buildings supplies that we have around here but I don't know if that would be enough. We would also do all of the building for free...some of us know how to build...we have built many of the buildings here (Mwaka, Male, mid-30s, married, 7C).

Even though there are many needed materials, as this participant explains, community members would be willing to contribute "whatever supplies [they] have." Also, forms of human capital are mentioned once again as it is indicated by this participant that community members would be willing to provide skilled labour if supplies were available.

5.6.2 A Need for Education and Training

As discussed by the following quotes, respondents articulated the need for education about HIV/AIDS and probitoics as well as probioitic yogurt training before a project were to be implemented in their community:

> We need more education...some of the people here do not know what the yogurt does...we just know that it is good for us. We need to be taught. This is because the people here, we do not know much about the probiotic and how it helps with HIV and what it is. The more that you teach the people here, the more that they will know how to do things themselves. This will help us the most, teaching us. Later on, we will need to be taught about the processing. We also need to

> communicate to the rest of the community. More people need to know about the yogurt and what is going on here. They also need to know more about HIV and AIDS because people think that just by sitting beside someone you can get it and then they treat us like we are a disease, not like we have a disease. This hurts and makes us feel like we should not live anymore (Abasi, Male, mid-30s, married, 6C).

As indicated in the quote, there is also a need for more information based programs and initiatives that are targeted at reducing HIV/AIDS stigma within the community since there are many misconceptions about the disease and how it is transmitted.

Some participants expressed a desire for more general education and training to enhance project success:

> We also need to know more about everything. Education is the thing we need most. Some of us did not have enough money to go to school but if you teach us, we will learn. We all want to know more about the probiotic yogurt and how it is good for us and how it helps with HIV (Aaliya, Female, mid-40s, widowed, 5C).

The desire of community members to seek general education is understandable as education provides a number of opportunities to develop cognitive abilities and expand knowledge and skills that assist in contributing to an individual's well-being, which will ultimately affect then health and well-being of the entire community.

5.6.3 Transport of the Probiotic Yogurt

Some participants recognized that they may not be able to acquire a probiotic yogurt kitchen within their community or that it might take a while to implement. Hence, a number of participants suggested alternatives on how to better access the probiotic yogurt from the current Mabatini community kitchen. The passages below explain some of these alternatives:

> If we can't have a kitchen or if it will take a long time to put together, we need to arrange proper transport of the [probiotic] yogurt from Mabatini to here...maybe

a delivery system or a yogurt dispensary. We need the yogurt here...for all of us and we need some plan to do this (Sadiki, Female, mid-50s, widowed, 3C).

If there is to be no project here, no yogurt kitchen of our own, then we need to find a better way to be the probiotic yogurt here to Mahina from Mabatini. The yogurt kitchen would be the best way but if this is not possible, we need something else. We need to do this by daladala, it is the best way. There is a need for someone there to deliver the yogurt everyday to a spot here instead of us having to go there are get it. It is too expensive for the people here to do this and it would be nice if you could hire someone to bring the yogurt everyday. Then we could have a place to keep it for the day and people could pick it up (Safi, Male, early-40s, married, 4).

Since some participants are familiar with the health benefits of the probiotic yogurt, some of them insist that the yogurt be made more accessible to the community and suggest practical alternatives.

Some of the participants also explained that they currently have an informal system that allows them to collectively pool their resources in order to transport probiotic yogurt to their community. As the participants explain, although this system of cooperation saves them time and money, it is not reliable and accessible to all. It is also explained that those people who are currently designated to retrieve the yogurt are sometimes unable to get to Mabatini due to time and priority conflicts. Another problem that is mentioned arises from lack of refrigeration as once it is picked up there is nowhere to properly store the probiotic yogurt. The following excerpts articulate the concerns with this informal delivery system:

We have tried to do this on our own you know...we pool our money together and send someone on the daladala to get probiotic yogurt for all of us. It works well when [name] can go and get the yogurt at a time when we can all collect it from her. This is a problem though because we all work at different times and have no refrigeration for the yogurt (Bahari, Male, mid-20s, married, 2C).

There is someone who goes and gets the [probiotic] yogurt for us most of the time. This is good because it saves us all money. But you know, she can't get enough [probiotic] yogurt for all of us, that would be way too much and when she is busy or has clinic days and can't go, we don't get the yogurt. This is why we need a formal system of delivery set up so that we always get the yogurt. And we need just one refrigerator to store it for all of us...that would be nice (Latifa, Female, mid-50s, widowed, 7C).

5.7 Participation in Community Activities

5.7.1 Current Participation in Community Activities

The participants were asked to describe current community participation in activities, organizations and local groups. In accessing community participation and cohesiveness, the interviews revealed that all participants (26) acknowledged that there are no other local projects within the community but that there are monthly community meetings as well as a self-created community action group that acts as an organizing structure for group decisions. Only three participants explained that they did not often participate in community meetings or activities and their reasons for not participating in meetings included: being "too ill" to attend meetings, being "too busy" (with work, taking care of children and caring for sick family member/friend) and being "too tired".

One participant mentions that although there are no formal community organizations, some members of the Mahina community have formed a "Community Action Group" to address community issues. The cohesiveness of this community is also revealed by this passage as this participant acknowledges that community members "make decisions" together, "share" with each other and "take care of each other":

> We don't have any community organizations except for a Community Action Group. This group was formed by us and it is just all of us getting together to work on community issues, just like we are now...I always participate in these community meetings. Every time we are together, it is important. We come together to be a group, to make important decisions, to share. We take care of each other and have a good time together (Adhra, Female, mid- 40s, married, 4C).

The inclusion of young people in community participation resonates with issues of project implementation as this participant discusses how his young age brings a different perspective to community discussions:

> I go to the meetings here. I am one of the younger people who go but it is good to know what is going on here too. You know I am at that age where I have to start thinking about marriage and my own family so I need to know what is going on. Sometimes I can even contribute ideas, you know, ones that the others would not think of because I am younger and think differently. People like to hear my

perspective because they want to hear fresh ideas too (Stephan, Male, late 20s, married, 3C).

Although there are no existing formal community organizations, the above comments highlight the existence of informal community initiatives and strong community cohesion among the residents of the Mahina community.

5.7.2 Community Interest in the Probiotic Yogurt Community Health Project

If a probiotic yogurt community health project were to be implemented in the Mahina community, it would be most beneficial if community members supported the project as this would most likely lead to greater project sustainability. Participants were asked if they supported the probiotic yogurt community health project and if they would like to see one implemented in their community. For those who were not familiar with the current probiotic yogurt project, a description of the project was provided. All 26 participants indicated that, if possible, they would like to have a probiotic yogurt project and the respondents also all expressed a desire to implement one in the Mahina community. An example of the enthusiasm for the implementation of a probiotic yogurt program is displayed below:

> This project would be very good for the community. We would like to have this here in Mahina. It would make us all healthier. We know how good this is because we talk to the people in Mabatini. Some of us already eat the yogurt and we have experienced the health benefits. And if we were to have our own kitchen it would let some of us have jobs too. You know, we like to keep busy. I would love to work at the kitchen. It would make me feel useful...like I was doing something good for the other people here (Latifa, Female, mid-50s, widowed, 7C).

Many of the respondents (24) also indicated that they would personally like to participate in the implementation and facilitation of a probiotic yogurt program. Their desires to participate are revealed in the following statements:

> Yes I would participate in this project. It would give me something to do…it would make me feel worth while. I think that this program is very good. We all

> think that this project is very good. Most of us have nothing else to provide us hope so of course people would be interested. I know for me, it would just make me so happy to be able to work and to participate in something that was good for everybody, good for the community (Beatrice, Female, early 60s, widowed, 7C).
>
> Well of course I would volunteer for this...I would do what I could at my age. I have lots of time in the day to do this. If someone showed me how to do everything I would do it...I would like to be a part of this. I could get healthier and help other people feel good and then I would have something to do all day. I know that this would help our community so much. We need something like this here, something that will have a large impact. We know that this project will be good because it has worked so well in Mabatini. We know it works to make people healthier and to provide jobs (Sadiki, Female, mid-50s, widowed, 3C).

There was also consensus among the participants (all 26) that there is sufficient volunteer capacity (enough willing volunteers and enough allotted volunteer hours) between community members to implement and maintain a productive probiotic yogurt kitchen.

This respondent discusses how community members will come together and do whatever it takes to "make it work":

> Yes, I know all of the people here will talk to you and tell you the same thing. We will work together to make sure our community does better and is healthier. I have not talked to one person who doesn't like this project or who won't help out with it. It is just one of those things that I know everyone would pull together and make it work no matter what. Everyone would put in what ever time they could, whatever time was needed (Rabina, Female, late 30s).

5.8 Specific Barriers to Project Implementation and Community Participation

Even though these participants express that there is strong community support for a probotic yogurt community health program, barriers to project implementation and community participation were still expressed. Participants were asked to identify any perceived barriers to project implementation or maintenance, including barriers to community participation. While the previously mentioned barriers relate to access and utilization of the current probiotic yogurt kitchen, these barriers are related to project implementation and participation. The barriers that were expressed by participants

included those that are often cited by the literature (Sabbat, 2002; Shediac- Rizkallah & Bone, 1998), such as cost, time constraints, as well as a number of other barriers such as lack of education, frequent death and disease and women's multiple roles.

Although it was expected that there could be possible tension or conflict with the individuals from the current probiotic yogurt project in Mabatini (Yogurt Mamas) as the set-up of a probiotic yogurt kitchen in Mahina could interfere with the operations in Mabatini, some of the participants explained that the implementation of this project in Mahina was actually suggested by the Yogurt Mamas themselves. It was expressed that since Mahina was a fair distance away from Mabatini, that implementing a project within Mahina would not interfere with current operations or sales at the Mabatini kitchen. These explanations proved to be consistent with the behaviours of the Yogurt Mamas as they were enthusiastic about assisting in participant selection for this study and verbally expressed their support for the implementation of a project in Mahina.

5.8.1 Lack of Education

Participants expressed a need for education and training before a probiotic yogurt project could be implemented as they felt that they were lacking some of skills necessary to run such a project:

> I think that we would all need to be educated and trained before a project could start here. Some of us cannot even do mathematics because we could never afford to go to school or we had other things to do like work. This just won't work unless we are all educated first, especially on things for the yogurt kitchen (Beatrice, Female, early 60s, widowed, 7C).

> I know one thing that makes it hard for us to start up a yogurt project...some of us just don't have the skills. I know some people here are good business people, but so many others have no education, no training and I think this would fall apart if people were not educated properly. A lot of people here are good people but because we haven't had much training, we do not have experience in running a business. We need to learn...we want to learn...If someone will teach us then we will be able to do this (Abasi, Male, mid-30s, married, 6C).

These participants express a need for general education that will give them the skills to better implement and maintain a probiotic yogurt project.

5.8.2 Frequent Death and Disease

As in many HIV/AIDS affected countries, the impact of the epidemic is being felt in many areas including program implementation. The epidemic has left many communities with extreme numbers of ill people which has become a major barrier to community health development, including the implementation of health promoting programs. The comments below signal that eroding social capital due to frequent death and disease in the Mahina community, from HIV/AIDS and other infectious diseases such as malaria, which prevents people from assisting in community projects:

> Well, if people were too sick to do things then they could not help. I know my uncle, he has advanced HIV and he is so weak, so people like him would not be able to help implement a project. And since so many of us have a disease that will kill us, it is hard to say how long we can keep this up for. We are all very supportive of each other here but it is sad to say that people die so often here...they die from AIDS, they die from malaria...lots of diseases. What happens then is that there are less people to help out and less people to work (Shamim, Male, early 30s, married, 5C).

Another respondent also verbalizes her struggle with disease and indicates how this would prevent her from being able to assist project activities:

> When I am feeling ill from the HIV, I feel like I can't do anything. I have had to stop working because I just get too sick to do things. And then, when I get malaria on top of this, like I did a few months ago, I feel like I am dying. So I would like to help with a yogurt project but when I am sick like this, I am afraid I cannot. I know, too that there are others who feel this way (Nadia, Female, mid-20s, separated, 6C).

5.8.3 Women's Multiple Roles

Women's 'multiple roles' as both traditional caregivers and providers not only acts as a barrier to accessing probiotitic yogurt, but also to participation in project implantation and community activities. As discussed below, some of the female participants expressed issues with project participation and conflict with the double burden of care both for children, parents, extended family and friends and other life responsibilities:

> Well, I am so busy with my job and my children that I would not have time even to participate in this [the probiotic yogurt project] unless it was only for an hour every now and then....I feel like I am always taking care of others...I am a busy woman... I will be working to earn money since my husband passed away and then I come home to clean and do everything for the children and I also take care of my sister who is very ill...I get tired trying to do it all, but I do it because somebody needs to (Afifa, Female, late 30s, married 4C).

This participant has a 'triple burden' of working, taking care of her children as well as caring for an ill family member. Her multiple roles as a caregiver and as the primary provider act as a barrier as she is too busy and too tired to participate in a probiotic yogurt community health program.

Another respondent reveals her desire to participate in project implementation but recognizes that she can give little assistance because of her commitment to her job and her various care giving responsibilities. This woman also acknowledges that it is common for many women in her community to have multiple responsibilities:

> If I were too busy with my children, then I could not help with a yogurt project. It is only me... I have no husband so it is hard sometimes. I have to work... harvesting in order to make some money but I also have to take care of my children. There are many women here who have children and families and homes to take care of. If there was a way to keep the amount of work the same and have this project then I know that many women would want to do this (Rabina, Female, late-30s, widowed, 5C).

5.9 Community Relationships and Dynamics

There is a need to address the complex nature of community linkages, relationships and dynamics in order to get a better understanding of how the community operates in relation to each other including its power relationships, interactions, decision-making processes as well as everyday functioning; and how these relationships might affect community health program implementation and development. Therefore, the participants were asked to discuss particular aspects concerning leadership and decision-making processes as well as everyday community interactions that may impact or be impacted by a probiotic yogurt project.

5.9.1 Leadership and Authority of Elders

Communal leadership is often the most common model of leadership within Tanzanian communities, with a leader or 'chief' who is often chosen to report group decisions and to facilitate discussion (Kirk & Shuttle, 2004). Respondents described leadership in their community as follows:

> Well good leadership is very important in a place like this. We need someone to organize us and to make decisions based on what we all think... our community leader does this. A good leader must listen to the people that he is leading. That is what I like about our chairperson. He collects information from as many places as he can, especially from the elders and government people and then tells us and then gets our ideas and feelings about everything and then we make a decision all together. He is good at organizing too. This is what we need, someone who listens and is there to help rather than tell us what to do (Abasi, Male, mid-30s, married, 6C).

As the preceding passages portray, members of the Mahina community emphasize the importance of communal leadership and suggested that "good leadership" within this community consists of someone who takes into consideration the views of the entire community and who is able to access other resources and sources of information.

The following quote also highlights the importance of communal decision making and the role of elders:

> Yes, we have an official Chairman and then the elders like myself are apart of this leadership. Elders are the ones with the most experience and ability to make wise decisions. The younger ones may voice their opinions but the elders are the ones who usually make the decisions and our Chairman, he speaks for all of us (Beatrice, Female, early 60s, widowed, 7C).

5.9.2 Social Networks and Social Capital

As indicated in the health and development literature, (Brown & Ashman, 1996; Coleman, 1990; Putman, 1993), social capital, includes various networks of association and relationships, mutual trust, and norms of reciprocity that can support cooperative efforts in developing effective and sustainable community health projects. Some participants discussed the importance of social capital in their daily lives and how this may translate into community health development:

> We like to work together all of the time. We are all very close and supportive. In this case, we would put all of our resources together and work out our schedules so that we could all participate in creating a probiotic yogurt project that could go on for a very long time. People in this community do this a lot. If one person needs some help, for example, with some food or someone to watch their child so that they can go to work, someone will come to help. My neighbour and I help each other out all of the time. We all share responsibilities (Bahiya, Female, mid-20s, married, 4C).

As this individual explains, cooperation among community members as well as community support and reciprocity are quite common as resources and family responsibilities are often shared between households.

This participant explains how social capital is a means of survival:

> I think that people get along very well here. We always get together and help each other out. This is important in our community because if we did not help each other, we would not survive. We also do it because we care about each other. People are dependent on friends and family to assist with taking care of the children, getting water and running their businesses... we are like a big family in this community. My neighbour's children are like my children and we all help out (Karama, Female, mid-30s, separated, 4C).

As this participant explains, social capital is perceived to be so strong in this community partly out of necessity ("survival") and partly out of traditional strength in social ties ("because we care about each other"). The results show that many participants believe that people within the Mahina community share a strong sense of social capital.

5. 10 Household Dynamics and Familial Roles

Understanding intrahousehold roles, relationships and family dynamics is important for understanding community dynamics as a whole as changes at the household level often have an effect at the community level and vice versa (Adams & Castle, 1994). The participants in this study were asked to discuss their perceptions of the effects of probiotic yogurt project implementation on household dynamics and familial roles. In the statement below, a participant warns about how some family members may not be supportive of her involvement in a probiotic yogurt project:

> For myself, if I worked all day as a house maid and then worked in the kitchen I would have less time to do things at home and then my uncle might be upset. I would have to find someone to take care of the children or something. When you get a new job of any kind, things change at home. I don't think that my Uncle would like to take care of my children...He is too old and doesn't want to spend his time doing this. He is good to them and loves them but he does not cook or anything (Nadia, Female, mid-20s, separated, 6C)

This statement signifies possible conflicts between probiotic yogurt project implementation and gendered household roles and duties. It is also important to note, that these conflicts are consistent with women's multiple roles within the household and community (as discussed earlier).

5.11 Power Relationships and Gender Roles

5.11.1 Gender Imbalances

Some of the female participants highlighted particular gender issues and imbalances within the community that are related to probiotic yogurt project implementation:

> Well, I know that the men are very interested in getting a project here but they want to do it just as much as the women. I heard one man say "Why is it only women working in the Mabatini kitchen? Why can't everybody work there?" Then he said that he thinks that the men could do a better job...and that women are not good at running a business. This is what he said...This is the attitude of some of the men. They think that as women, we can't do it on our own. And then they complain about us not being home enough to take care of the house and the children. But you know, I think women are better at running things because they do so many things in one day. We know how to do it all and run a whole household (Adhara, Female, mid-40s, married, 4C).

> I could see this [women working at the yogurt kitchen] making some husbands angry that the wife is not spending as much time at home. This would take away time with the children and the chores. You know, even if the men don't work they can be all over the place doing whatever they want and there is no problem with that but if their wife is somewhere else, this is a big problem...they just don't like that (Durha, Female, early-30s, married, 3C)

These women highlight the fact that particular gender norms and roles within the community possibly conflict with the principles of women's empowerment that the probiotic yogurt project endorses.

Some of the women made suggestions that there could be issues with project implementation that stem from socially entrenched gender norms; some of the male participants expressed these same notions as they described their own beliefs about the participation of women in this project. This male participant holds the opposite view of Adhara (above) as he explains that women do not have the experience to properly run a project. He also explains how he would not want his wife to participate because it would interfere with her daily domestic duties:

> Well, I know that the women are supposed to run this project. I do not think that this would be the best idea because most of the women do not know how to run a business. I think it would be best if the men were involved. I know that I would not like my wife to be at a yogurt kitchen all day because I know that she has other things to do like take care of the children, make the meals and tidy the house. Maybe she could help when she was done all of this...I just think it should be both men and women, not just women (Mwaka, Male, Mid-30s, married, 7C).

Intrahousehold gender imbalances were also mentioned by some participants in the context of household resource allocation. As this participant explains, her husband controls all of the household finances and questions whether the financial benefits of a probiotic yogurt program would directly benefit women:

> I think that this project would be good for the women here because they would be able to have a job that would help people and they would have [probiotic] yogurt all of the time but I don't know if the money would go to them. I know that when I bring money home, my husband takes it because he is in charge all of it. If I made money I know he would take it and use it to get drunk...But maybe he would use it for food or uniforms for the kids. I don't know.... (Malia, Female, late-20s, married, 3C)

5.11.2 The Involvement of Community Organizations in Gender Relations

While there exists a gendered power imbalance within the Mahina community, there are also organizations that are involved in the community that seem to be slowly changing norms and values as they are challenging traditional power relations through the prevention and of violence against women, the advocacy of women's rights and the promotion of equality. The efforts of such organizations are explained in the following paragraphs:

> People from Kivulini [A local women's and children's rights organization] have come here a few times to talk about women's rights and I think this is important for us here but I do not know if things will change totally. I know that things might get better slowly if they keep coming here. Our men here, they do love us and they do try to take care of us but I don't think that things are not going to be perfect...you don't get that anywhere. My husband and most of the other men believe that they are in charge all of the time. I can not ever disagree with him, especially in front of other people. We do our work together, but the men, they

> stay in charge. I think it would work well but I do think that the men would have a big problem with this if they got to be involved. They want to be involved, they want to run things. I know if I were one of the women running the [probitoic] yogurt kitchen, my husband would still always be trying to tell me what to do. But if we could make them a part of things, this may not be a problem (Durha, Female, early-30s, married, 3C).

This participant is quite doubtful that gender norms and expectations will change anytime soon but she mentions the involvement of a women's and children's rights organization (Kivulini) that is associated with the community and the possibility of gradual change.

One of the male participants holds a different view of the importance of creating gender equality within the community. He expresses his confidence in organizations such as Kivulini in changing gender norms within the Mahina community. He expresses his support for the involvement of women in the implementation of a community health project because he has learned that recognizing gender imbalances and changing the status of women is important for the entire community:

> You know, most of the men here still think like they used to, that women should be treated as though they are below men. But I see things slowly changing here. Kivulini has helped a lot with this. For me, I think differently but Kivulini is helping to change the thinking of the men to realize that if we all work together and are all equal than it is best for the entire community. I know that the women are just as capable and it is important for us all for them to be involved in this project. They are smart you know...the women know what they are doing (Mosi, Male, mid-30s, married, 3C).

5. 12 Community Challenges

5.12.1 Hunger and Malnutrition

Many participants discussed issues with hunger and malnutrition which are common occurrences among poor and marginalized populations. The following passages include respondent's experiences of hunger and malnutrition:

> Sometimes my wife and I don't even eat very much because we give all of our food to the children because they are growing and need the food. So if I don't have the money, I can't eat the yogurt. It is sometimes hard to find it in myself to go and do things because my body, it has nothing to go on...little sleep and little food. My stomach feels hungry and it hurts. I know that this is not good for the HIV as well. The doctor says I need to eat more food...that I don't have enough nutrients, but how can I eat more food when I have no money to buy it? We are always working and make very little money. It is tiring and upsetting (Lumbwi, early-30s, married, 5C).

> It is hard when you have HIV and you are hungry and you can't afford to buy food. The HIV kills your body and you need food to stop this but if you don't have any, what are you to do? It is hard to sit there and know that your child is hungry, so you give them all you have...but the paining in the stomach, it is so bad that you cannot do anything, you can't even walk. How are you supposed to work like this? But you do, you go and work to buy what you can for your family (Bahari, Male, mid-20s, married, 2C).

The preceding passages describe situations of hunger and malnutrition that are caused by a lack of resources to purchase adequate food supplies. Participants describe bouts of hunger that are so severe that they experience physical pain that is associated with this lack of food intake. Both of the participants also discuss the difficulty of being infected with HIV and having inadequate food intake. The physical symptoms of hunger malnutrition, especially when compounded on top of HIV infection can have devastating affects on individual health and well-being. Common hunger and malnutrition within the Mahina community once again highlights the need for an effective health and nutrition program such as the probiotic yogurt project.

5.12.2 Abuse and Abandonment

Throughout the interviews, bouts of conversation would arise that indicated issues with abuse and abandonment. These situations of abuse are expressed as follows:

> I think that some of the men will be frustrated and upset if they are excluded from the [probiotic yogurt] project. Then they might get angry at their wives for being involved...and that is never good. Some of the men have beaten their wives before when they are angry. I hope this does not happen. This is why it is good that Kivulini came to talk about this (Aziza, Female, early 20s, single, 2C).

> Well...I could see some problems like in the Mabatini community with the husbands being angry and jealous that the wives are making money and working together on this special project...You know I heard that some of the women we getting some beatings for standing up to them and arguing about the women working there. I think here, if we get a yogurt project, we should have meetings before to explain to the men that this project is good for everyone. We are all the same, we are all sick and it doesn't matter who is running the kitchen, it will help everyone (Sadiki, Female, mid-50s, widowed, 3C).

A number of women also discussed abusive situations of spousal abandonment that were brought about by HIV/AIDS disclosure. Some of the women's encounters with abandonment are explained below:

> ...this happens with married people...the husband will go and be with other women and get HIV and only the woman gets tested. And then he finds out that she is HIV positive and leaves her even though he is the one who gave her the disease. This is what happened with me. My husband did this to me and left me with nothing but the children...now I am sick and I struggle with that (Karama, Female, mid-30s, separated, 4C).

> My husband, as soon as he found out I had HIV, he beat me and left me. I only see him occasionally but at least he doesn't hurt me anymore. I know that he has girlfriends and they all probably have HIV too. I can't believe that he can just do that...that he can just go around spreading HIV (Nadia, Female, mid-20s, separated, 6C).

In both of these instances, the women's spouses abandoned them upon disclosure of their HIV/AIDS status. In the above passage, the participant also mentions being "beaten" as well as abandoned. Both women also reveal that they believe that they contracted the virus due to their husbands' promiscuity. In the first passage it is clear that loss of economic support stems from abandonment is quite devastating as this woman explains that she was "left with nothing". She explains that she now struggles as she is responsible for the care of her children.

Other women mentioned abuse in situations other than spousal abandonment. This participant explains situations of abuse within the community as follows:

> Sometimes the men can get angry too with their wives if they do something wrong and hit them or something but most of the men here in Mahina are good to the women and know that violence is wrong. Kivulini has been here sometimes to teach the community about violence and how it is not good so things are getting better with that (Aziza, Female, mid-20s, single, 2C).

These women identify potential situations of abuse that could arise from implementing a probiotic yogurt project without local support and discussion of who participates in the project. They mention previous instances of abuse where husbands have taken out their anger in a physical manor in both the Mahina community and in the Mabatini community where the current probiotic yogurt kitchen is located. Again, Kivulini (the women's and children's rights organization) is mentioned as a possible mediator in easing situations of violence, abuse and inequality.

The following description reveals that there are issues of sexual abuse in the Mahina community:

> What we need here are condoms for women...Please try to find some funds to bring us the condoms for women. My husband, he will not wear a condom and it is really scary for me. He won't wear one when I ask. I know that we can not afford to have any more children and I try to explain this to him but he will come home drunk and not listen to me and then...it is not up to me and I do not want any more children. He just comes home at night and ... it is not up to me. He is stronger then me. It is hard for me. I can not take care of more children, I just can't. We are barley surviving now. If I had the female condoms then I could have some control. I could wear it and then even when he did not listen, I would not have to worry about having more children. This is what we need here. I think many of the women need this. We can not afford them here and we do not even know where to get them but I have heard of this and this would save my life. Please try, if nothing else to help with getting us condoms for the women (Silham, Female, late-20s, married, 3C).

This woman describes her personal power struggle with her husband as she explains that she is forced to engage in sexual intercourse with him even when she does not want to. She explains how her only option for preventing pregnancy is for her to wear female condoms which are extremely expensive and quite inaccessible. This woman also indicates that this situation is common in the community as she expresses that other women need female condoms as well.

The existence of abuse and abandonment due to HIV/AIDS stigma within the community suggests a need for further community interventions from such previously mentioned organizations as Kivulini as well as the probiotic yogurt project as these projects and organizations assist in promoting against domestic violence and offer assistance and economic opportunities for communities, especially women who are the ones who are often the victims of abuse. Linked to the issues of abuse and abandonment is the presence of HIV/AIDS stigma.

5.12.3 HIV/AIDS Stigma and Discrimination

HIV/AIDS stigma and discrimination are quite prevalent in the Mahina community as the following statements demonstrate. As indicated by these participants, this kind of stigma and discrimination will have an impact on probiotic yogurt project initiatives and objectives:

> There are people though that have a problem with us and will not come near this part of town because they are afraid of us like we are the disease. We live here and they live there [points] because they don't want to look at us or talk to us. They don't realize that we are people too and that it is hard to transmit HIV by living near someone... probably if we were to start producing yogurt, they won't even buy it... I would like some of them to get to know us and then they would realize that we are just people, nice people with good hearts (Latifa, Female, mid-50s, widowed, 9C).

> Well here, in this community, we are sick, many of us have HIV in this area because the other people will not live with us. I think that the people who are not sick would not participate in this project because they would not like to work with us or help us. They do not want to associate with us...you know they don't even treat us like we are human beings...we are nothing to them. They do not care about us, they are scared of us because they think that we will give them HIV and they will die (Fahima, Female, early 40s, widowed, 6C).

These quotes reveal how many of those living with HIV/AIDS in the Mahina community are socially ostracized. It is explained that there is little to no interaction between those who are perceived to be infected with HIV/AIDS and those who do not. As mentioned, the community is physically (geographically) separated as the people who

are living with HIV/AIDS live in one area of the community and those who are not infected with HIV live in another.

The perceived vulnerabilities that may stem from misconceptions about HIV/AIDS that are highlighted in the statements below:

> If I was to walk outside this door right now and people knew that I had HIV...then you know they will not share anything with me. They just want me to go away and to just die. This place here, this community centre is a place where I can feel safe, where I can be around other people who are sick and they will treat me like a real human being and not like I am some strange animal. That is why we meet too. We get together because no one else will associate with us and we need to be strong together. This is a real problem in this community, people, they do not understand that you can not get HIV from talking to us or living beside us or working with us (Silham, Female, late 20s, married, 3C).

> I think that people just do not understand that they can not contract HIV easily from us, by talking to us or being beside us. They think that if they get too close, they will be sick too. They need more information about this. Maybe if they knew that it is ok to talk to someone with HIV and to sit beside them or shake their hand then they would not think that way...or maybe they still would, I do not know why they think the way they do. I guess they think it is our fault for getting sick and they look badly at us (Safi, Male, early-40s, married, 4C).

The respondents describe that many "healthy" people within the community believe that HIV/AIDS can be contracted though everyday casual contact such as "shaking hands", "talking to someone" or "siting beside someone". These misconceptions are common and create fear for some individuals, which they tend to project in the form of stigma and discrimination.

This respondent explains his experiences with stigma and discusses how social ostracization has created a skewed sense of self as he conceptualizes is own self as the disease:

> You know though, there are so many people who will not work with us, live with us, they are scared of us. Sometimes I feel like I am the disease myself, that I am no longer a person because I am treated like I am evil, like I don't exist...until I am around these other people who are sick too and then we treat each other like people. There are also some people who are not sick and who know about HIV,

> like you, you know that we can't make you sick by talking to you and you are not scared of us. It is really important to us that you are here. It makes us feel like people again. You are so nice and kind to talk to us (Abasi, Male, mid-30s, married, 6C).

This man describes how he is ostracized by others in the community and is treated unfairly because of his HIV/AIDS status. He goes on to explain that this ostracization is so forceful and prevalent that it causes him to lose a sense of self as he feels like he "is the disease".

At one point, this man addresses the interviewer and explains how interaction with those who do not stigmatize, discriminate against or fear those living with HIV/AIDS makes them "feel like people again". As the interviewer, I received many comments such as this where participants expressed a sense of astonishment and thankfulness that someone from outside the community who was not living with HIV/AIDS would even talk to them. The noted surprise of the arrival of a friendly visitor highlights the extent of marginalization and divide within the community. Yet the worry remains about how a probiotic yogurt project may be able to succeed in such a context.

5.12.4 Erosion of Human Capital Due to Disease and Death

The erosion of human capital due to HIV/AIDS not only acts as a barrier to project implementation but is also a constant community challenge. The erosion of human capital has not only resulted in individual costs for those affected, but also significant social costs in terms of lost productivity due to morbidity and the premature death of significant and productive members of the community. These participants explain the affects of human capital erosion in their community:

> Projects like this one [the probiotic yogurt project], they make you feel good about everything. It gives us hope that our people will not die so quickly. It is hard when you hear everyday or every week that someone else has died. In a place like this, people die so frequently from diseases like AIDS and other ones like malaria. We try to all stay together and help each other but people just disappear, they die all of the time. It is especially hard for women who are left behind with nothing...ones with children and with no job...Usually the men who are the ones who make money so they are left with no income...I wonder who

will be here to take care of our children when we all die. Most of us have HIV...where does that leave us? (Bahari, Male, mid-20s, married, 2C).

My mother had malaria really bad and died and my father was in a car accident. This happens a lot here where our people, our loved ones, our friends, they die from diseases...malaria, tuberculosis, HIV, those are the common ones...lots of diseases that can be prevented....or like my father they die in accidents. It is because we have no money to go to the doctor or buy medicine or to even prevent this by buying clean water and getting a vaccine. It is hard sometimes because one day or week or month someone will be in your life and then they are gone so soon. Everybody slowly disappears...these diseases are a big problem to our community...soon we will have no people left to help the children if it continues this way...I know that a [probiotic] yogurt project would help with this though because more people would get the proper nutrition and live longer and not be as sick...we need this here (Fahima, Female, early 40s, widowed, 6C).

It is apparent that frequent death from preventable diseases such as malaria and HIV/AIDS are common in this community. As one participant mentions, most people have HIV/AIDS within the community and most of them will experience premature death. The above passage reveals the eroding of human capital ("everybody slowly disappears"), leaving her questioning the future ("where does that leave us?"). Both participants also question the affect of eroding human capital on other generations ("Who will be here to take care of the children?").

5.13 Positive Community Aspects of the Probiotic Yogurt Project

5.13.1 From Hopelessness to Hope

Hope, despair and hopelessness are known to be important elements of the lives of persons living with HIV/AIDS (Ezzy, 2000). Participants discuss how their terminal illnesses (mainly HIV/AIDS) compounded on top of other disadvantaged circumstances produced feelings of hopelessness. Participants also describe how the existence of a probioitc yogurt program brings hope for those living with HIV/AIDS:

Yes, we all think that this [probiotic yogurt] project is very good. Most of us have nothing else to provide us hope...you know when you are already struggling and then you get sick and know you are going to die you lose feeling for life...you

think that everything is pointless. And then when you get all of these sick people together with HIV in one place we start to feel even more hopeless...only some of us can work and no one wants us around. It makes us feel like we just don't have any point in being here. But if we had something to help us live longer, like this project, than we would be so happy and have the strength to go on... I think that eating the [probiotic] yogurt will also make us live longer and this definitely gives us hope (Durha, Female, early 30s, married, 3C).

The yogurt, it is like medicine and it benefits the whole community. Some of us were losing hope and then when the yogurt came along to make us feel better, we had new hope for survival and a chance at a longer and happier life with our families. For me, I have the energy to work everyday and my stomach does not hurt anymore and my body is feeling good. I have gotten fatter which is good for me and people notice that I feel good. This would bring us even more hope if we could have our own [probiotic] yogurt kitchen...we could then have more jobs too and everyone could get the yogurt (Aziza, Female, mid-20s, single, 2C).

As community members explain, HIV/AIDS combined with circumstances of poverty bring about feelings of hopelessness that may be turned around with opportunities at accessing beneficial health supplements. It was expressed that the current probitoic yogurt health program as well as the prospect for a kitchen in Mabatini provides hope for a number of individuals. The respondents describe how knowledge of or consumption of the probiotic yogurt brings hope to their lives, making them "feel good" as it gives them "strength to go on". The later passage also describes feelings of hope that arise from the prospect of employment opportunities within the community.

5.13.2 Empowerment

Some members of the Mahina community expressed a sense of empowerment that would stem from their possible participation and implementation of a probiotic yogurt project. The following statements explained how community health programs such as the WHE (Tukwamunae) probiotic yogurt project empower individuals:

Well, you see, I know about this project [the current probiotic yogurt project]. I know that it comes right from the people and that the Canadians they just help with funds and with whatever else but I know that decisions are made by the people who live in Mabatini and that all of the work is done by them. This is

what I like. It allows the people to feel good about doing something on their own everyday. They know that they contribute to their community and it makes them feel like they are worth while and that they can go on. Especially the women, they are empowered because they can do something on their own... (Aziza, Female, early-20s, single, 2C).

For me, it [working at a probiotic yogurt kitchen] would get me out of the house a lot more which is good for me to talk to other people more. Being around children all day is good but sometimes you need to talk to other adults. I think that it would make me feel more useful, more important. It would make me feel like I was helping other people in the community. And maybe I could make a little money of my own...that would be nice (Karama, Female, mid-30s, separated, 4C).

These passages describe the empowerment of individuals at the current (Mabatini) probiotic yogurt kitchen and the perceived empowerment that would stem from working at a probiotic yogurt kitchen if it were implemented in the Mahina community. Both women discuss feeling "important" and having a sense of purpose that would make them feel "useful" and "worthwhile". From the participant's point of view, the ability to "do something on their own" and to help others will contribute to their empowerment.

5.14 Chapter Summary

This chapter presents the findings of this study that emerged from the raw qualitative data. Included are direct quotations from the study participants. The results indicate a number of issues and challenges relating to probiotic yogurt project implementation. Some participants are mistaking the probiotic yogurt as a medicine that can be used to replace physician recommended ARV treatments. A number of barriers to accessing and utilizing probiotic yogurt as well as to project implementation were mentioned including lack of awareness of the current probiotic yogurt kitchen, cost, time constraints, women's multiple roles, death, disease and illness, lack of education. Other community challenges that were mentioned included HIV/AIDS stigma, intrahoushold conflict over labour and resources, abuse and abandonment as well as hunger and malnutrition. The following chapter provides a more detailed discussion of the results presented in this chapter with a focus on the research objectives and the supporting literature.

CHAPTER SIX

Discussion, Conclusions, and Future Research

6.1 Discussion and Conclusions

6.1.1 Introduction

The HIV/AIDS pandemic continues to present unique and severe challenges for the global health community, especially in the hardest hit areas such as Sub-Saharan Africa (SSA). Populations in low-income countries such as Tanzania are severely affected by the HIV/AIDS epidemic as the effects of this disease are compounded on top of and exacerbated by other related issues such as poverty, malnutrition and the presence of other infectious diseases. As a consequence of the devastating effects of HIV/AIDS on communities, there exists a need for local level health and nutrition interventions that are best adapted to deal with emerging issues in context. Yet, there are few programs that link nutritional support to HIV/AIDS prevention, treatment and care at the community level, while at the same time taking advantage of local knowledge and resources. The WHE/ Tukwamunae Probiotic Yogurt Project in the Mabatini district of Mwanza, Tanzania offers such a unique locally-based health and nutrition program that focuses on community development and the utilization of local ideas, resources, skills and knowledge to better community health. The social, economic and health benefits of the WHE program have now been widely recognized within the Mwanza region and this has resulted in a growing interest for the project to expand into other communities in the Mwanza area.

In response, this study examines the perceptions of the likely impacts of a proposed probiotic yogurt project on community relations and health in the Mahina community, Mwanza, Tanzania. Specifically, this study explores community perceptions, knowledge, and opinions of the health benefits of probiotic yogurt and the WHE/Tukwamunae Probiotic Community Health Program; examines probiotic yogurt project needs, and project facilitators in context, as they may relate to the sustainability of the project; and explores perceived barriers to project implementation and development in the context of community relations, familial relations and gender roles.

6.1.2 Perceptions and Knowledge of Probiotics and the Current WHE Program

Exploring knowledge and beliefs about of current initiatives and efforts that are related to the proposed community project should be among the first steps in investigating community project development (Edwards *et al.*, 2000). In this study, community members described their personal knowledge and perceptions of probiotic yogurt and the current WHE/ Tukwamunae probiotic yogurt community health program. It was revealed that many of the participants were familiar with the current WHE/ Tukwamunae probiotic yogurt community health program and that a large majority of participants have consumed the probiotic yogurt at one point in time.

Although the majority of respondents were familiar with the current WHE/ Tukwamunae program and many of them have utilized their services, it was surprising to hear that only half of the participants have any knowledge about probiotics and their related health affects (Drain *et al.,* 2007; Reid, 2003, WHO, 2002). This discrepancy suggests a possible knowledge gap between probiotic yogurt consumption and knowledge of the health benefiting properties of the probiotic yogurt, and hence the need for more information sharing and education on probiotics within the community.

Consistent with existing literature (Gurr, 2006; Miller *et al.,*2001; Boelsma *et al.,* 2001), participants who had knowledge of the health benefits of probiotic yogurt mentioned outcomes such as the clearing up of skin rashes and the therapeutic effects on muscle and joint pain. Although these health benefits have been debated in the literature, the nutritional properties of the yogurt as well as the potential effects of probiotics and fermented dairy products on the maintenance of bone and joint health, nerve conduction and muscle contraction have been documented (Gurr, 2006; Miller *et al.,*2001). Also, as Boelsma et al. (2001) explain, nutrition and micronutrients such as probiotics play a large role in skin care and dermatological health.

While acknowledging the perceived health benefits of probiotics the tendency for some respondents to refer to the probiotic yogurt as 'medicine' was quite a disturbing finding. Nevertheless, it is recognized that the use of the term 'medicine' may vary from culture to culture, group to group or person to person with various meanings, that may

differ from the assumed 'Western' biomedical definition. As shown in the results of this study, those who were referring to the probiotic yogurt as 'medicine', may have been using the term in relation to their individual perceptions of health and the cultural constructs of health embedded in context (Green, 2004; Gessler *et al*, 1995; Kleinman *et al.,* 1979). Furthermore, individuals and groups may conceptualize meanings of health from a variety of traditional medical theologies or may be influenced by a mixture of conceptual health theories. Consequently, while some usages of the term 'medicine' in this study as shown in statements such as "some people here take the yogurt as medicine for their HIV" and "people take it as medicine... it cures everything" were similar to Western biomedical concepts of medicine, others' conceptions of the probioitc yogurt as 'medicine' seemed to resemble more of a traditional African meaning of health such as 'it makes you feel good or better'.

The worrying issue here was that some community members who considered the probiotic yogurt as a 'medicine' for HIV/AIDS treatment based on how they feel after eating it for a period of time, have stopped taking their ARVs. Health professionals do not recommend that those living with HIV/AIDS discontinue prescribed ARV therapies, as clinical studies have shown that ARV medications confer powerful and sustained suppression of viral replication which is associated with some degree of immune reconstruction; reduced incidence of opportunistic infections; as well as lower rates of mortality (Haddad & Gillespie, 2001; Tomkins, 2005; Montserra, 2000; Hogg *et al.*, 1998; Gramlich, 1995). Consequently, public health officials continue to stress the need for PLWA to take their ARVs continuously. Yet, some of the participants expressed that they have stopped taking their ARV therapies and have chosen to utilize probiotic yogurt as an alternative HIV/AIDS therapy. The explanations that were provided by participants for using probiotics as an alternative to ARV therapies were symptomatic in nature, with some participants indicating that the probioitc yogurt made them 'feel good' or 'feel healthy' while the ARV treatments made them 'feel bad' or 'feel sick'. According to Green (2004) this tendency to focus on treating illness as the human experience of sickness rather than the biological recognition and treatment of disease is common in Tanzanian communities.

The fact that some probiotic yogurt consumers are rejecting their ARV treatments and are taking the probiotic yogurt instead suggests that the WHE/Tukwamunae probiotic yogurt project may be inadvertently influencing these negative health behaviours. The misconceptions about probiotics and their effective properties relating to HIV/AIDS are leading to negative health behaviours with serious public health implications that may become a major impediment in the attempt to make probiotics available through community health and nutrition projects. With no direct scientific evidence that suggests that probiotics will work as effectively as other treatments for HIV/AIDS (i.e. ARVs), this emerging substitution needs some urgent attention as the acknowledged health benefits of probiotic yogurt (Drain *et al.*, 2007; FAO/WHO, 2006; Reid, 2003; WHO, 2002; Rolfe, 2000) suggest that it should be widely utilized among needy populations.

Although the direct beneficial treatment of HIV/AIDS with probiotics and other nutritional supplements (e.g. Foster, 2007; Namulemia *et al.,* 2007) remains equivocal, a number of studies suggest that the combination of ARVs with probiotics is, in fact, beneficial to the patient due to the numerous therapeutic and nutritional properties of the probiotic yogurt (Drain *et al.*, 2007; FAO/WHO, 2006; Reid, 2003; WHO, 2002; Rolfe, 2000). The argument here is that, while useful, ARVs can often kill off beneficial intestinal flora, allowing the overgrowth of harmful bacteria that cause diarrhoea; and it has been shown that such side effects from taking the ARVs can be reversed or reduced by consuming yogurt with live probiotic cultures. Hence, the acknowledgment of a combination therapy of ARVs and probiotic yogurt may be useful. It has never been recommended that ARV therapy be replaced with probiotic yogurt as treatment and this needs to be made clear to the populations utilizing this beneficial micronutrient product.

6.1.3 Community Participation and Support

Citizen participation in community organizations has been viewed as a major method for improving the quality of the physical environment, enhancing services, and improving social conditions (Cattell, 2001; Gittell & Vidal, 1998; Paronen & Oja, 1998; Fawcett *et al.,* 1995; Chavis & Wandersman, 1990). As Edwards et al. (2000) explain, in order for a community health program to be sustainable, there must be strong community support and enough community interest and capacity to continually drive program

initiatives. All of the respondents in this study indicated their support for the probiotic yogurt project initiatives and that they would like to have a project within their community. Also, most of the participants expressed a desire to be involved in the planning, implementation and maintenance of the project if necessary. From the enthusiasm that was forthcoming during the interviews, it was fair to say that there is significant capacity in the community to support a productive probiotic yogurt kitchen.

The participants invoked notions of strong social capital within their community defined in terms of relationships that are grounded in structures of voluntary associations, norms of reciprocity and cooperation, and attitudes of social trust and respect. Participants acknowledged that strong social capital will be an optimal starting point if such a project were to be implemented in their community. Goodman et al. (1998) and Macintyre et al. (2002) explain that community capacity and support for one another including the ability to generate trust, confidence, and cooperation within and outside of the community is extremely important in successful health program implementation. Also, Poortinga (2005) and Veenstra (2005) suggest that in any setting, strong social capital is necessary for both social and economic development and safe and productive neighbourhoods that are ale to better support mobilization and change through community development. Nonetheless, the effectiveness of mobilizing social capital is indirectly influenced by availability of resources in a particular community.

Cooperation and community cohesiveness is a strong and necessary feature for project implementation (Farmer *et al.,* 2001; Boats & Ashman, 2000). Beneficial human resources are important to have within a community and can lead to community mobilization, which can enhance the development of an effective and relevant probiotic yogurt program. Participants emphasized that there are 'plenty of people who want to be involved in this project'. One participant explains that there is high unemployment and few opportunities for income generation within the Mahina community and that a project such as the WHE/Tukwamunae probiotic yogurt project would assist in providing such beneficial opportunities. While the participants boasted of available human capital, as expected, there was a clear lack of several physical resources that would enable the implementation of a probiotic yogurt project.

6.1.4 Community Resources

A community based health and nutrition project is more likely to be culturally appropriate and therefore more sustainable if community resources are identified, tapped and utilized (Edwards *et al.,* 2000). Although resources in the Mahina community are few, a number of participants mentioned that they would contribute whatever resources they have in order to support a sustainable probiotic yogurt program. Local contribution with regards to resources are extremely important as they make for more sustainable health projects since efforts can be locally maintained and driven (Edwards *et al.,* 2000; Chavis & Wandersman, 1990).

Consistent with the literature (Veenstra, 2002; Macintyre *et al.,* 2002; Farmer *et al.*, 2001; Boats & Ashman, 2000; Chavis & Wandersman, 1990) the participants generally explained that despite the lack of many physical resources, there is a recognized strength in human capital as well as strong community cohesiveness and cooperation between residents that can be tapped and mobilized for community health development.

6.1.5 Barriers to Project Implementation and Access to Probiotic Yogurt

The combination of malnutrition and HIV/AIDS makes probiotic yogurt supplementation for poor settings such as the Mahina community all the more important. As discussed earlier, many complications may arise when those who are infected with HIV/AIDS have poor nutritional intake (Gillespie & Kadiyala, 2005; Anabwani & Navario, 2005; Semba & Tang, 1999). In order for community members to utilize the probiotic yogurt resource so that it benefits their health, they must have reasonable access to it on a regular basis. Yet, the results of this study demonstrate clear barriers that are preventing people in the Mahina community from accessing probiotic yogurt from the current Mabatini probiotic yogurt kitchen. Furthermore, these barriers do not always occur independently in preventing individuals from accessing health services, but are often compounded on top of one another. For example, time, cost, disease, illness, lack of education and training and women's multiple role functions may all act as a barrier to both project implementation and probiotic yogurt access.

Consistent with the literature (e.g. Momsen, 2001:1991; Hackl *et al.*, 1997; Santow, 1995; Beneria & Sen, 1982) some female participants discussed the multiple

roles that may hinder participation in this project, such as women being 'too busy taking care of the children' and 'the home', 'doing chores' as well as taking care of ill or elderly family members to participate in a probiotic yogurt project or to even access the current supply of probiotic yogurt in Mabatini. Consequently, the majority of the participants supported the view that if a probiotic yogurt kitchen were located in their community it would ease some of the barriers in accessing probiotic yogurt.

Probiotic yogurt has been linked with the reduction of diarrheal diseases. Hence, it is important that children are able to reach this beneficial health supplement as they are often malnourished (44% in Tanzania) and drastically affected by such diseases. Inevitably, the added challenge whereby women are unable to access probiotic yogurt implies that children are also unlikely to do so since women are often the primary caregivers (Kavane, 2004; Young *et al.*, 1984).

One is tempted to say that although the success of any community health and nutrition project is dependent on the role that women will play in the project, their multiple roles within the context of the HIV/AIDS epidemic as caregivers, child care providers and labourers means that they may continue to be hampered in their attempt to access probiotic yogurt and in taking part in the implementation of this project. This suggests that there is a need to specifically and continually address women's issues in this and similar programs in order to maintain program sustainability. It is also important to understand both the structural and contextual gender roles and relations that are involved in the development process in order to create more socially equitable and sustainable projects.

Another emerging issue that must be addressed is the lack of education and training that is required for such a project. As Edwards et al. (2000) and Ensor & Cooper (2004) explain, barriers to education and information lower people's abilities to efficiently and effectively participate in health project implementation. The need for education and information is especially relevant in this case considering the misconceptions that some of the participants have about probiotic yogurt. It is imperative that for the success of complementary therapies, such as probiotic yogurt, this must always go alongside education to increase knowledge and awareness and to help alleviate misconceptions.

As in many HIV/AIDS affected countries, the impact of the epidemic is being felt in many areas. The epidemic has left extreme numbers of ill people together with frequent deaths, and this has become a major barrier to community health development, including the implementation of health promoting programs. The acknowledged erosion of social capital within the study community due to frequent deaths and high rates of morbidity must be recognized if the probiotic yogurt project will be implemented.

6.1.6 Community and Familial Roles and Relationships

As in many parts of Tanzania (Boon, 2008), the Mahina participants boast of good communal leadership which is necessary for any development project to successful anywhere. However, the acknowledged presence of good leadership in the community was contrasted by the participants' views that intra-household and family dynamics may be affected by the implementation probiotic yogurt project. Some participants were concerned about the negative impact on intra-household and family dynamics as well as other relationships that the project might affect. The findings are consistent with the literature on community dynamics (Adams & Castle, 1994; Weisman, 2000) that indicate the importance of understanding the changes that may take place at the household level, and how these may affect community relationships.

The fact that Tanzanian women are generally disadvantaged relative to men in terms of economic, political and social power affects their role in the development process (Gonzalez-Brenes, 2003; Creighton & Omari, 2000; Razavi & Miller, 1995). The reported unequal division of labour between men and women at the household level, whereby women absorb the majority of labourous activities while they have much less control over decision making and assets (Dwyer & Bruce, 1993; Kavane, 2004; Turshen, 1984), has a tendency to influence the implementation and sustainability of a probiotic yogurt project. Some participants articulated that some husbands have control over labour and resources and are 'in charge of all the money', leaving their wives with nothing. These gender based inequalities are linked to restricted access to appropriate array of information, services and support and often designate community power structures in participation in community organizations and other social change institutions (Beeker *et al*, 1998). Also, these imbalances within the household also

indicate particular implications for overall project outcomes and may interfere with project objectives aimed at supporting women's access to health and economic resources.

Although the mentioned gendered norms within the Mahina community that suggest that women should not be in positions of power and should be "taking care of the children, making meals and tidying the house", some female participants disagreed with this assumption and expressed that women are "better at running things" because they are used to juggling multiple responsibilities. The prevailing gender imbalances in context resulted in the worry that there may be potential gender related issues that may emerge if a probiotic yogurt kitchen is implemented as the men want to "run things". It is important to note that male duties were not discussed by any of these participants but there was frequent mention of conflict with household roles that are assigned to women in the community.

While there exists a gendered power imbalance within the Mahina community, it was interesting to see that, as indicated by participants, there are also organizations, such as Kivulini Women's and Children's Rights Organization, that are involved in the community that are assisting in slowly changing norms and values that subordinate women and put them in positions of disadvantage. Already existing relationships and partnerships such as the one with Kivulini could produce future opportunities for collaboration. Although a few participants are doubtful that gender norms and expectations will change rapidly, many participants recognized the contributions of such community enhancing efforts to change power imbalances within the community. Even though these conflicts may exist, partnerships and participation from other local gender-based organizations such as Kivulini may ease difficulties with power struggles and embedded gender norms.

6.1.7. Other Community Challenges

Hunger and malnutrition are rampant throughout SSA and are linked in a complicated web of many factors including food insecurity, HIV/AIDS, poverty, conflict, uneven distribution of resources, trade and climate change (Graham, 2001). As such, it was not surprising when participants discussed how hunger affected their daily ability to function and often explained the difficulties of being infected with HIV and having

inadequate food intake. The physical symptoms of malnutrition, especially when compounded on top of HIV infection can have devastating affects on individual health and well-being. Consistent with the literature on HIV/AIDS and nutrition, many complications may arise when those who are infected with HIV/AIDS have poor nutritional intake (Gillespie & Kadiyala, 2005; Anabwani, & Navario, 2005; Semba & Tang, 1999). The experiences of hunger that are described by participants highlight the need for an effective health and nutrition program such as the probiotic yogurt project in Mahina in order to supplement residents' nutrient-poor diets, which make it difficult for them to sustain the powerful effects of ARVs. The availability of food in the form of probiotic yogurt should be a driving force that would prompt consumers to take their ARVs. Yet, as mentioned earlier, the fact that the probiotic yogurt now seems to be doing the exact opposite among those taking the yogurt, highlights the fact that information about ARVs and probiotics must be emphasized in the form of education programs.

Another problem that was identified by mostly female participants was the issue of spousal abuse and abandonment. Abuse was discussed by some of the participants in direct relation to the WHE/Tukwamunae probiotic yogurt project as is was mentioned that some men 'get angry at their wives for being involved' and that, in some cases, men in Mabatini have 'beaten their wives' for being involved. Although these comments could be considered hearsay, the possibility of the implementation of a probiotic yogurt project promoting spousal violence is seems to exist.

HIV/AIDS stigma and discrimination also emerged in this study as quite prevalent in the Mahina community. In fact, the level of stigma within the Mahina is so high that those living with HIV/AIDS are physically (geographically) separated from those who are not living with the virus. The participants' descriptions of HIV/AIDS stigma within the community also suggest that there is a tendency towards 'othering' within this community. For example, the use of opposing terms ('sick'/'healthy' and 'us'/'them') were used quite frequently to describe those living with and those living without HIV/AIDS. This process of stigmatization or "othering" often serves as a protective function by producing feelings of comfort and security in situations of

perceived vulnerability to threats and dangers that might otherwise appear overwhelming (Petros *et al.*, 2006).

The implication of this stigma on the probiotic yogurt project can not be ignored. Since those living with HIV/AIDS are often socially ostracized, their involvement in the project may also have negative economic impacts and may interfere with the sustainability of the project. Yet the fear of people living with HIV/AIDS stems from misconceptions about the casual transmission of the virus (e.g. Ogden & Nyblade, 2005; Brown *et al.*, 2001; Malcolm *et al.*, 1998). Stigma and discrimination are related to health project implementation as they interfere with community dynamics and undermine community cooperation and cohesiveness including project objectives. As the current probiotic yogurt project aims to assist all community members, especially those living with HIV/AIDS, segregation and fear of those living with HIV/AIDS could pose a problem to project intentions which focus on community collectiveness. This reinforces the need for more HIV/AIDS education within the community and surrounding area to assist in easing the tension of HIV/AIDS stigma.

The eroding human capital within the Mahina community mostly due to HIV/AIDS death and disease can have an effect on community health program development as valuable skills and resources that could be utilized for program implementation and maintenance may be lost. Also, as HIV/AIDS and other life-threatening diseases are rampant throughout the community (Changalucha *et al.*, 2002), the human resource base that was previously described may be eroded as there may not be enough functioning (healthy) individuals to participate in such a project.

Amidst the challenges in the community, the participants suggested that the implementation of probiotic yogurt community health project might create specific economic opportunities for women and their families that may bring about some relief to issues related to "proper nutrition", allowing people to "live longer" and "not be as sick".

6.1.8 From Hopelessness to Hope

Hope, despair and hopelessness are known to be important elements of the lives of persons living with HIV/AIDS (Ezzy, 2000). Feelings of hopelessness are common when living with a terminal disease but are often more intense when compounded on top of other devastating circumstances such as situations of poverty, frequent hunger and malnutrition as well as disease (Ezzy, 2000). These thoughts of hopelessness severely impact individuals as they can lead to severe depression and even suicide (Klama, 2005).

As community members explain, HIV/AIDS combined with circumstances of poverty bring about feelings of hopelessness that may be alleviated with the existence of a beneficial health program such as the probiotic yogurt project. Participants expressed that the current probitoic yogurt health program as well as the prospect for a kitchen in Mahina provides hope for a number of individuals. Some respondents emphasized how the knowledge of or consumption of the probiotic yogurt is "bringing hope to their lives", making them "feel good" as it giving them "strength to go on". These discussions of hope are in line with Kylma's (2005) argument that hope is important in facing the prospect of a chronic illness such as HIV/AIDS. Harris & Larson (2008) also agree that hope is a significant internal resource that can assist individuals in experiencing well-being which may ultimately prolong their survival.

Some of the respondents also expressed an anticipated sense of empowerment that would stem from their possible participation and implementation of a probiotic yogurt project, and recognized how empowerment has played out with the implementation of the current probiotic yogurt program in Mabatini. As Wallerstein (1992) explains, empowerment can be demonstrated as an important promoter of health which is important when addressing community health.

6.2 Study Limitations

Like all approaches, a qualitative interview-based study has limitations. As the purpose of the study was to produce rich, detailed information about this community in context, sample size was not as important as conceptual clarity. The extent to which these concepts may be applied beyond the 26 residents who participated in this study is

strictly speaking unknown. Therefore, the information that is gathered should not be generalized since the sample size (n=26) is not statistically representative of the community (n=2740). Although generalizability is not the goal of qualitative research, it is possible that this study information may be transferable to other similar contexts as long as the contextuality of the results are kept in mind. As this study describes the context of this community in detail including study assumptions and limitations, it is hoped that this research can be applied to other similar contexts.

As with any sampling technique, there are some limitations in using a snowball sampling technique. Considering the logistical barriers to this study (i.e. time, cost and participant accessibility, researcher language barriers), this form of sample selection was the best and most viable option for this study. Although a snowball sampling technique is an economical, efficient and effective technique for selecting willing study participants, there are a number of biases that are present. For example, utilizing the snowball sampling technique reduces the likelihood that the sample will represent an accurate cross section of the general population. Although attempts were made to represent the adult population fairly (e.g. accounting for age representation- see results section) there were some biases in this sample. For example, for ethical reasons, the community 'gatekeepers' first contacted potential participants. The final distribution of the sample with regards to HIV/AIDS whereby 20 out of the 26 participants indicated that they are HIV positive seemed to suggest that there may have been a sample selection or recruitment bias. Also, a large portion of the sample participants (17= 65%) consume probioitc yogurt on a regular basis (more than 3 times per week) while it was indicated by Kivulini that only a small percentage (exact percentage unknown) of residents from the Mahina community consume probiotic yogurt more than 3 times per week. This suggests that there were a greater percentage of people who have been utilizing the services of the current probiotic yogurt kitchen in this sample than in the rest of the Mahina community.

There is a possibility that interview responses were distorted by personal biases, political motivations or emotional states. As some of the interview questions focused on the discussion of sensitive issues and highly stigmatized topics such as HIV/AIDS and gender roles and relationships, participants may have been hesitant to disclose certain information. It is also possible given the nature of the topic of project implementation

that responses were made out to be self-serving. For instance, it is possible that participants over exaggerated or downplayed certain issues because they thought that it would have some impact on whether or not a probiotic yogurt kitchen would be implemented in their community. For example, accounts of abuse and violence are frequently underreported and this may have occurred during the interviews (Farmer *et al.*, 2001). Although these biases are possible, the participants seemed to freely discuss sensitive issues without hesitation and were often quite forthcoming when explaining community issues or challenges.

The participant's accounts may also have been influenced by the fact that, as the interviewer, I am an 'outsider'. As Baxter & Eyles (1997) emphasize, it is important for the researcher to be reflexive in that they recognize themselves as a 'positioned subject'. My positionality as an outsider may have elicited particular reactions and affected participants responses. As a young, white, 'Western' female, I was visually, culturally and socially considered an 'outsider'. My positionality as a 'Westerner' carries with it a number of implications including assumptions about my education and training and my wealth. Also, there may have been a higher level of scepticism about my research intentions and other issues with trust as I was seen as 'outsider'. I also found that my interactions with elders and men were quite different from that of my interactions with women my age as there are certain entrenched power structures within the community that create unequal power relations. I felt that the elders and some of the male participants made it clear that as a white, young female, I hold a subordinate position to them. For example, prior to one of the interviews, a male participant expressed that he felt it was strange that 'such a young woman was taking on such a study'. Also, one of the elders mentioned that I 'looked too young to be doing such important research'.

Furthermore, my association with WHE/Tukwamunae may also have affected participants' perceptions since they may link me to the decision making powers in terms of implementing a probiotic yogurt kitchen. The process of prolonged engagement, facilitated my ability to work in collaboration with the community which assisted to avoid such assumptions, stereotypes and postulations, and to make sure that the participants felt comfortable with me as an 'outsider'.

There were also limitations that stemmed from cultural and language barriers. For example, it would have been beneficial to fully understand the significance and meanings of some words as they may entail different meanings in the English context compared to the Swahili context of the word. As I did not speak the native language of the local population very fluently, an interpreter translated all of the questions into Swahili and the answers back into English. This process of translation could have possible implications for the interview data as some meanings, perceptions or phrases could have been lost in translation. To avoid any mistakes or misinterpretations in translation, the interviews were tape recorded and later assessed by three assistants who are fluent in both Swahili and English. Interpretations were then compared and checked for validity by three different assistants.

6.3 Conclusions

The results from this study are of particular relevance to an increasing number of health and nutrition projects in the context of HIV/AIDS. As such, there is an abundance of information that may be extracted from this thesis that may be used in a practical manner in order to improve the effectiveness and efficacy of such projects. More specifically, since the local government in Mwanza has indicated a strong support for the expansion of the WHE (Tukwamunae) Probiotic Yogurt Program into the Mahina and other communities in the Mwanza region, the information gathered herein will be of particular relevance. Project expansion is widely supported within the Mwanza area as there have been recognized beneficial impacts of the current probiotic yogurt kitchen in Mabatini community. As noted by some of the participants in this study, there is strong support for the implementation of a probiotic yogurt project in the Mahina community. Participants indicated that the probiotic yogurt project brings about hope and practical solutions to communities suffering from high rates of malnutrition and disease. Meanwhile, the findings suggest that there are some challenges and barriers that must be addressed when implementing such projects. The mentioned community barriers to project implementation and probiotic yogurt access as well as community challenges suggest that there is a need to further investigate these along with possible resolutions to these issues. Emerging from this study are possible interferences with physician

recommended ARV therapy regimens, possible increases in abusive situations as well as possible increases in gender specific intrahousehold conflict over labour and resources. The problem of possible conflict between people living with HIV/AIDS and 'healthy' people also emerged as a potential impediment to project sustainability. These particular findings are significant and may be directly utilized by the growing number of health and nutrition projects to inform new policies and procedures that are better suited to local needs. Such projects may have to focus more on community education relating to the health benefits of using nutritional supplements and the importance of utilizing ARVs and probiotic yogurt in combination. There is also a need to integrate and explore gendered values, norms and relationships and to expand efforts to understand the division of labour and resources within communities that are engaged in using nutritional supplements to minimize the impact of HIV/AIDS. The relevance of HIV/AIDS stigma in the development of community projects is also highlighted by this study and may promt a greater focus on reducing HIV/AIDS stigma in affected areas. As these issues pose serious problems for residents, particularly women, within the Mahina community, it is recommended that these issues be further acknowledged and addressed by health and nutrition projects before any expansion work can be carried out. Furthermore, there is a need for education and training concerning various issues related to project implementation (about probioitcs, HIV/AIDS and processing), including community challenges such as HIV/AIDS stigma be provided before any initiation of project implementation.

As indicated, there are few available resources within this community, but there exists a human drive for success as there is strong community support, volunteer capacity and human capital that would allow for a sustainable and cohesive project. The implementation of a probiotic yogurt program has the potential to improve the situation of hunger and malnutrition, frequent morbidity and mortality in the community.

6.4 Future Research

As knowledge is self-generating, there were a number of questions that were produced from this study that would suggest that further research is needed. For example, research that investigates perceptions, beliefs and meanings of the term 'medicine' would

be useful in this context as it is unclear whether the participants view the probiotic yogurt as 'medicine' in the biomedical context or in a different context that represents the healing properties of the probiotic yogurt which may ultimately affect health behaviours. With the demonstration of a number of misconceptions relating to the health benefits of probiotics and their effects on HIV/AIDS, further research will be needed to critically examine ways to educate communities that are trying to set up probiotic yogurt kitchens, emphasizing that probiotics are not to replace ARVs. Other strategies ensuring that people living with HIV/AIDS do not abandon their ARV treatments when taking the yogurt will need to be addressed. It is suggested that these misconceptions are preceded by intense community wide education on the benefits of ARVs and probitoics in a comprehensible, culturally sensitive manner. These misconceptions also suggest that it would be beneficial to investigate perceptions and knowledge of nutritional supplements such as probiotics within other communities as those who consume these supplements may also have particular misconceptions about the impact of these substances on their health and well-being.

In relation to the number of community challenges and barriers that were identified in this study, future research will need to continue to examine the possible remedies to these situations. Sexual abuse, physical abuse and spousal abandonment continues to exist within this community and may be affected by or affect probiotic yogurt project implementation. Thus, it is suggested that more research into the structural causes and workings of these issues and their relationship to the development process be examined. The influence of HIV/AIDS on community health development remains an outstanding issue, hence more work is needed to tackle HIV/AIDS stigma, especially as it relates to the workplace and project development in poor resource settings.

I will suggest that before a probiotic yogurt program is implemented in this community, further geographical (locational) analysis focusing on the potential economic issues be undertaken. This may be done using theoretical perspectives from economic geography since of the principal goals of this and similar projects are to benefit communities both nutritionally and economically. With the goal of helping women to earn an income, the marketing plans of this project also need to be examined.

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Appendix A
Ethics Approval

Office of Research Ethics

The University of Western Ontario
Room 00045 Dental Sciences Building, London, ON, Canada N6A 5C1
Telephone: (519) 661-3036 Fax: (519) 850-2466 Email: ethics@uwo.ca
Website: www.uwo.ca/research/ethics

Use of Human Subjects - Ethics Approval Notice

Principal Investigator: Dr. I. Luginaah
Review Number: 13238S **Review Level:** Expedited
Review Date: April 13, 2007
Protocol Title: The Western Heads East Probiotic Community Health Program: Assessing the Determinants of project implementation Using the Community Readiness Theoretical Model in the Isamilo District in Mwanza Tanzania
Department and Institution: Geography, University of Western Ontario
Sponsor:
Ethics Approval Date: May 28, 2007 **Expiry Date:** December 31, 2008
Documents Reviewed and Approved: UWO Protocol, Letter of Information and Consent and Interview Instrument.
Documents Received for Information:

This is to notify you that The University of Western Ontario Research Ethics Board for Health Sciences Research Involving Human Subjects (HSREB) which is organized and operates according to the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans and the Health Canada/ICH Good Clinical Practice Practices: Consolidated Guidelines; and the applicable laws and regulations of Ontario has reviewed and granted approval to the above referenced study on the approval date noted above. The membership of this REB also complies with the membership requirements for REB's as defined in Division 5 of the Food and Drug Regulations.

The ethics approval for this study shall remain valid until the expiry date noted above assuming timely and acceptable responses to the HSREB's periodic requests for surveillance and monitoring information. If you require an updated approval notice prior to that time you must request it using the UWO Updated Approval Request Form.

During the course of the research, no deviations from, or changes to, the protocol or consent form may be initiated without prior written approval from the HSREB except when necessary to eliminate immediate hazards to the subject or when the change(s) involve only logistical or administrative aspects of the study (e.g. change of monitor, telephone number). Expedited review of minor change(s) in ongoing studies will be considered. Subjects must receive a copy of the signed information/consent documentation.

Investigators must promptly also report to the HSREB:

a) changes increasing the risk to the participant(s) and/or affecting significantly the conduct of the study;
b) all adverse and unexpected experiences or events that are both serious and unexpected;
c) new information that may adversely affect the safety of the subjects or the conduct of the study.

If these changes/adverse events require a change to the information/consent documentation, and/or recruitment advertisement, the newly revised information/consent documentation, and/or advertisement, must be submitted to this office for approval.

Members of the HSREB who are named as investigators in research studies, or declare a conflict of interest, do not participate in discussion related to, nor vote on, such studies when they are presented to the HSREB.

Chair of HSREB: Dr. John W. McDonald
Deputy Chair: Susan Hoddinott

Ethics Officer to Contact for Further Information		
☐ Jennifer McEwen (jmcewen4@uwo.ca)	☑ Denise Grafton (dgrafton@uwo.ca)	☐ Ethics Officer (ethics@uwo.ca)

cc: ORE File

This is an official document. Please retain the original in your files.

Appendix B

Consent Form

UWO Letter Head

Name Date
Address
City
Postal code

ASSESSING COMMUNITY PERCEPTIONS OF A PROBIOTIIC YOGURT PROJECT FOR HEALTH AND NUTRITION IN MAHINA DISTRICT, MWANZA, TANZANIA

Dear Sir/Madam:

I am a student in the Department of Geography at the University of Western Ontario. I am conducting interviews and focus group discussions on how the Western Heads East probiotic yogurt project can be expanded into other communities in Mwanza. I will be investigating community needs for possible project implementation in your area.

The purpose of this letter is to invite you to participate in a research interview and to provide you with the information you require to make an informed decision on participating in the study. Should you choose to participate in the study, the topics that will be discussed include: community perceptions, understandings and opinions of probiotic yogurt and health; perceptions of availability and access to resources that will contribute to the project; the extent of interest in community participation, including amount of time community members are willing and able to contribute to the project; to investigate potential barriers to project involvement and development in the context of changing family relations and gender roles. The interviews will be audio taped and transcribed into written format. The interviews will take place at the community centre or, if you prefer at your own home.

Risks and discomforts to you if you participate in this study:

- Since the study is focused on perceptions of community needs for project implementation, the nature of some of the questions asked may be personal and you may find them uncomfortable to respond to. You are reminded that during the

interview and/or focus group discussion it is not mandatory to answer any of the questions if you do not wish to.

Participation and Withdrawal:

- Participation in this study is voluntary.
- You may refuse to participate, refuse to answer any questions or withdraw from the study at any time.

Specific things you should know about confidentiality:

- All the information collected for the study will be kept strictly confidential. Your research records will be stored in the following manner: locked in a cabinet in a secure office; only the principle investigator (myself) will listen to the audio tapes and they will be destroyed after the study is completed.

- If the results of the study are published, your name will not be used and no information that discloses your identity will be released or published without your specific consent to the disclosure.

Contact persons:

- If you have any questions about this study please contact Melissa Whaling (Email: mwhaling@uwo.ca) or Dr. Isaac Luginaah (Email: iluginaa@uwo.ca).

Other pertinent information:

- You will not be compensated for your participation in this study.
- You do not waive any legal rights by signing the consent form.
- If the results of the study are published, your name will not be used.
- If you would like to receive a copy of the overall results of this study please put your name and address on a blank piece of paper and give it to the interviewer (myself).

Thank you for considering participation in this study.

Sincerely,

Melissa Whaling
Department of Geography
University of Western Ontario

CONSENT STATEMENT

I have read the Letter of Information, and I agree to participate in the study. All questions have been answered to my satisfaction.

Research Participant:

Name: _____

Address: _____

Signature: _____

Date: _____

Interviewer obtaining informed consent:

Name: _____

Signature: _____

Date: _____

Appendix C

Interview Guide

TOPIC	QUESTIONS	PROBES
Background	Where were you born?	
	How long have you lived in this community?	
	How old are you?	
	Do you have family members that live here in the community? Outside the community?	
	What do you do for a living? What do your family members do?	
	How often do you participate in community activities?	Eg. Meetings, gatherings etc.
Perceptions and Knowledge of Probiotics	Have you ever heard of the Tukamunane probiotic yogurt community health program? (if so) how did you hear about it?	Heard of Yogurt Mamas, bought or eaten any yogurt, familiar with the yogurt kitchen, see others purchasing or eating yogurt
	Are there any other community projects in your community that you know about?	
	Do you know what probiotics are? If so, what do you know about probiotics?	Health Benefits, relation to HIV/AIDS, Misconceptions???
	(If so) Where did you acquire this information?	Kivulini, Tukamuane, media, word of mouth, read about it
	Have you heard of probiotic yogurt?	
	Is yogurt a traditional food in your community?	
	What kinds of fermented foods do you	

	eat?	
	Is there anything that would prevent you from consuming probiotic yogurt?	
	Have you ever eaten probiotic yogurt?	
Availability and access to resources	What kinds of resources are in our community that will support a probiotic yogurt project?	Cows, burners, refrigeration, electricity, transportation networks, location site, proximity and access to water
	What do you think the community will need that you do not have right now that will help support a probiotic yogurt health project?	Cows, burners, refrigeration, electricity, transportation networks, location site, proximity and access to water
	Do you think that there would be a suitable location for a yogurt kitchen in your community? (if so) where would this be?	
	What would be the most efficient mode of transportation to transport probiotic yogurt?	
Interest in the Project	Would you consider participating in the probiotic yogurt project?	
	What would prevent you from participating in the project?	
	What interests you about the project?	
	Do you think that there will be an interest in your community regarding direct participation in the project?	
	What would prevent people from participating in the yogurt project?	
	How much time do you think people in your community would like to contribute to the project (ie. Hours per day)	

	Would you have any concerns about interacting and cooperating with persons living with HIV/AIDS?	
	How would you recommend communicating to your community about project initiation and awareness?	
	Do you anticipate any barriers to project implementation?	Resources, community relations, volunteer capacity, gender relations and roles
	Do you think that this project would interfere with family relationships at all?	
Conclusion	Do you have anything more to add?	