

## 1. Introduction

Maternal mortality remains high, particularly in developing countries where 99% of the deaths occur. Each year more than half a million women die from treatable or preventable complications during childbirth. Little progress has been made in saving women's lives between 1990 and 2005. Globally maternal mortality has decreased by less than 1 percent per year during this period. Although other regions such as Northern Africa, Latin America, and the Caribbean as well as South-East Asia managed to reduce their maternal mortality ratio by one third, in Sub-Saharan Africa, the region with the highest level of maternal mortality, progress made was negligible. The fact that maternal deaths are due to multiple causes— hemorrhages, hypertensive disorders, infections, obstructed labor, anemia, abortions, and other causes— no single intervention can address maternal problems unless well planned surveys come up with location-specific findings. Although reproductive health care services— prenatal, antenatal, and postnatal health care services as well as attendance at delivery by health personnel— could indeed prevent most of these deaths, other causes, which constitute 25% of the causes of maternal deaths, should be given attention.

Improving women's nutritional status, especially during their childbearing years, is an important element of reproductive health (UN, 2007; UN 2008; Mackay, 2000). Among others, efforts to improve maternal health and nutrition should include the prevention and treatment of parasitic infections, in addition to the improvement of dietary intake throughout the life cycle and the elimination of micronutrient deficiencies. Micronutrient deficiencies, especially of iron, vitamin A, and iodine, are the most common forms of malnutrition problems worldwide caused by insufficient dietary intake. Globally, more than two billion people are suffering from micronutrient malnutrition, whereby women and children are at a high risk (WHO/UNICEF, 1995; WHO/UNICEF/ICCDD, 1994; WHO, 1992).

Inadequate maternal nutrition contributes to low pregnancy weight gain, low fetal growth, and an increased risk for low birth weight (Rush, 1988; Rush, 1980). About 16% of all live births worldwide have low birth weight; more than 90% of these are in low

income countries, particularly, in Asia and Sub-Saharan countries (Pojda, 2000). More than two-third of births in many parts of these countries are not reported, because many of the deliveries occur in homes or small health clinics. Thus, data for the examination of low birth weight trends in these countries are limited and of questionable quality when available. This may be caused by faulty or unadjusted scales as well as others coming for measurement several days after the delivery. This may therefore result in an underestimation of the actual prevalence of low birth weight, since people with lower income, who are at higher risk, may less likely be included in a hospital or urban-based data set (Ramakrishnan, 2004).

Although since the late 1980s maternal health and reduction of maternal mortality has been one of the key issues discussed in several international conferences, including the United Nations Millennium Summit involving about 200 United Nations members and more than 20 international organizations held in 2000, it has remained high, especially in Sub-Saharan and Southern Asian countries, where most deaths occur. Maternal malnutrition continues to be a major contributor to adverse reproductive outcomes. Poor nutrition is known to be one of the major causes of low birth weight, especially in developing countries. The ratio of a woman's risk of dying from treatable or preventable complications during pregnancy and childbirth over the course of her lifetime in Africa is 332 times higher compared to developed regions; 1 in 22 and 1 in 7,300, respectively (UN, 2006; UN 2008). Maternal nutrition factors both before and during pregnancy account for more than 50% of the causes of low birth weight in developing countries (Kramer, 1987). Many other non-nutritional factors such as infections and poor housing quality are also known to account for low birth weight. Nevertheless, at the moment little is known about the interaction of these factors with nutrition during pregnancy, despite the awareness of the role of the interaction between nutrition and infection in human health (Ramakrishnan 2001).

Tanzania has set and applied different policies in trying to reduce maternal and child mortality. The Tanzanian health and nutrition policy aims to improve the health and well-being of all people in need with emphasis on the most vulnerable groups – women and children – by providing adequate maternal and child health services, promoting

adequate nutrition, and controlling communicable diseases in urban as well as rural areas (Tanzania national Website, 2009). Nutrition policy seeks to enable all people not only to produce but also to consume foods that adequately meet their nutritional needs by strengthening the supply of foods from the market to the household level and hence improving the nutritional status of the whole country, especially of women and children. The policy also includes the formulation and development of research which facilitates solving these kinds of problems (Arvidson, 2006; Ministry of Health Tanzania, 2003).

Despite the policy set and efforts made to achieve high rates of coverage in antenatal care (78%), 1-year-old children immunization (90%), and full coverage of free vitamin A supplements for under-five children (95%), the general health and nutritional status of the population of Tanzania remains poor. Maternal and child malnutrition has been unacceptably high for more than two decades. The percentage of women delivering under assistance of skilled health workers has been low and stagnated at 43% since 1990. Maternal mortality and low birth weight have not significantly improved, remaining high at 580/10,000 live births and 10% respectively, also since 1999. Though infant and under-five mortality rates have shown a decreasing trend from 102 to 74 and 161 to 118 between 1990 and 2006 respectively, Tanzania is not on track to meet the Millennium Development Goals (MDGs) of reducing infant and under-five mortality rate by two-thirds by the year 2015 (UN 2008; UNICEF 2009).

Unless adequate, urgent, multi-sectored actions take place to address and improve all components of the causes of maternal malnutrition, good maternal nutrition will remain a challenge, especially in the rural areas of Tanzania where the number of people using improved drinking water sources, using adequate sanitation facilities, receiving adequate antenatal and postnatal health care services, receiving full coverage of immunization and supplementation, and where deliveries attended by skilled health workers are still low compared to their urban counterparts (UN 2008; UNICEF 2009).

This study investigates problems facing women of childbearing age in rural areas of Tanzania, and thence outlines special needs for possible interventions that are feasible, sustainable, and implementable to improve maternal health and nutrition.

## **Justification and objective of the study**

The current understandings and experiences with the strategies of reducing maternal malnutrition have shown that no single approach can be effective in all settings. Since malnutrition is due to multiple causes, an appropriate solution to this problem requires multi-disciplinary actions involving various sectors. Therefore assessment of the characteristics of the women of reproductive age in rural areas – demographic and socioeconomic structure, nutritional deficiencies, and health needs – is crucial for understanding the special needs and possible interventions that could be implemented for women of childbearing age in rural areas of Tanzania. Thus this study was conducted to map the current health and nutritional status of the women of reproductive age in the Iringa Rural district, Tanzania in order to develop feasible and sustainable strategies for maternal nutrition interventions suitable for rural populations in Tanzania.

### **Overall Objective**

The overall objective of this study was to explore needs and possibilities for improving maternal nutrition of populations in rural areas of Tanzania.

### **Specific Objectives**

Specific objectives of this study focused on the determinants of nutritional status among women of reproductive age (women aged between 15 and 44 years) in Iringa Rural district, Tanzania:

1. To assess food availability, food consumption and nutrient intake of the women
2. To study the women's knowledge, awareness and perception towards the importance of micronutrients for pregnant women and birth outcomes.
3. To assess availability, accessibility and utilization of health care services among women in the study area.

## **Background of the study area**

### **Economy**

Tanzania is one of the Least Developed Countries (LDC) with a per capita gross national income (GNI) of \$ 340, and a 5.9% average annual inflation rate. The population of people living below \$ 1 a day in Tanzania is estimated at 58% (Tanzania national Website, 2009; Tanzania National Website, 2007). Agricultural activities have been the major source of the country's economy, accounting for about 50% of the nation's income, and providing up to 80% of the country's employment. The country's annual gross domestic product (GDP) per capita and real GDP growth rate is estimated at 6.8% (DFAT, 2007). However with the average annual population growth rate of more than 2%, the annual per capita growth rate may adjust to a lower value (Tanzania National Website, 2007a).

### **Geography**

Tanzania is located between 29°50' and 45°40' longitudes east and between 1°00' and 11°50' latitudes south. The country borders Kenya, and Uganda to the north; Zambia, Malawi, and Mozambique to the south; Rwanda, Burundi, and the Democratic Republic of Congo to the west; and the Indian Ocean to the east (National Bureau of Statistics, 2005). The country's surface area is about 944,800 km<sup>2</sup> (94.5 million ha), where 99.7% of the area is the mainland, and the remaining 0.3% is the island of Zanzibar. About 40 million ha is rain-fed, arable land of which only 6.2 million ha is actually cultivated, with an increase of about 5% per year. Of the cultivated land, more than 80% is still cultivated by hand hoes.

### **Population**

The population was estimated at 31.2 million in 1998 with an annual growth rate of 2.8 percent (Tanzania National Website, 2007). The population distribution by age and sex indicated by the National Bureau of Statistics in 2005 showed that 47% of the population is below the age of 15. This is said to be due to the high level of fertility in the past, which in turn puts a substantial burden on people between ages 15 and 64 (the economically productive age) to support the younger and older; 47% and 4%,

respectively (Tanzania National Website, 2009). Up until 2005 the population had increased to 37.5 million, with a crude birth rate of 37, a crude death rate of 17, and a life expectancy of 46 years, and reached the current population of 39.3 million, with a 2.1% population growth rate, a birth rate of 36, and a death rate of 13.4 (DFAT, 2007; Tanzania National Website, 2009; CIA, 2007).

## **Education**

Education is one of the key factors affecting lifestyle, health, and nutrition status. Previous studies have shown that among other factors, the level of education has a strong effect on reproductive behavior, attitude, and practice towards family health and hygiene, mortality, and morbidity of infants and children.

The formal education system in Tanzania consists of three levels; basic, secondary, and tertiary. The basic level includes seven years of primary school education. The secondary level covers four years of secondary school education; ordinary level, and two years of advanced level of secondary school. And the tertiary level includes up to three years or more of college or university education.

According to the Tanzanian Demographic and Health Survey 2004/05 (2005), in Tanzania still there is a gap in level of education between males and females. One fourth of males in Tanzania never attends school compared to one third of females. Furthermore, people living in urban centers are more likely to attend school and less likely to drop out compared to people living in the rural areas. The median number of years of schooling among both males and females living in urban centers is estimated at 6.1 years, compared to 2.5 and 1.5 years of schooling for males and females, respectively living in the rural (National Bureau of Statistics, 2005).

## **Health**

According to the 2002/03 report of the ministry of health of the republic of Tanzania, health facilities in Tanzania are divided into seven levels (Tanzania National Website, 2008):

1. Village health services: The lowest levels of health care services; provide preventive services that can be offered in homes.

2. Dispensary services (2,450): Each can provide health care services to 6,000-10,000 people and supervise all village health workers.
3. Health center services (409): Each is expected to provide health care services to 50,000 people (about a population of one administrative division).
4. District hospitals (55): Should be in every district; however this is not the case.
5. Regional hospitals (17): Each provides similar health care services to those at district hospitals, except regional hospitals have specialists in various fields and therefore have the ability to provide additional health care services which are not provided at district hospitals.
6. Referral/consultant hospitals (4): The highest level of health care services in the country. Among other services, they provide major treatments such as operations.
7. Treatment abroad: In the case of some diseases that require special treatments whose facilities and equipments are not available in the country, some patients are sent abroad for treatment.

Among others, the problem of accessing health facilities affects mostly rural women, women with large families, and women who do not work for cash. The percentage of women in rural Tanzania who deliver their babies at home is higher (63%) compared to those in the urban areas; 19% (National Bureau of Statistics, 2005). The total percentage of the country's population using improved drinking water sources estimated in 2005 was 62%, where 85% was in the urban areas and 49% was in the rural areas (Tanzania National Website, 2008). The percentage of the country's population using adequate sanitation facilities was estimated at 47% in total, of which 53% was in the urban areas and 43% was in the rural areas (Tanzania National Website, 2007).