CARE PRACTICES FOR CHILDREN LIVING IN ORPHANAGE CENTRES IN MOROGORO AND DAR ES SALAAM REGIONS

BY

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A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN HUMAN NUTRITION OF SOKOINE UNIVERSITY OF AGRICULTURE.

MOROGORO, TANZANIA.

2013

ABSTRACT

Currently, there is a growing trend towards gathering children at orphanage centres (OCs) due to societal changes. This leaves many unanswered questions related to the quality of care offered to children living in OCs. This study aimed to examine care practices and support provided to children living in orphanage centers in Morogoro and Dar es Salaam regions. A cross sectional study design using a questionnaire, observations, anthropometric and biochemical measurements was used to collect the needed information. A total of 13 orphanage centers with 386 children were involved in the study. Both the supervisors of the OCs and children aged 5-18 years old were interviewed. Ninety five percent of children felt safe living in the OCs. However, 48.7% of the children were anaemic and 87.3% had excess iodine in the urine. Significant differences (P=0.003) were observed in the mean haemoglobin between males (12.0 mg/dl) and females (11.6 mg/dl). Furthermore, the prevalence of stunting was high (23.8%) with more male children (30%) being stunted than female children (18%). Morbidity level was high whereby 50.3% of the children reported to have been sick one month prior to this study. Foods most consumed were cereals (rice and stiff porridge) and pulses (beans). Also, the general consumption of vegetables and fruits was rare. Overall, living conditions in most of surveyed orphanages were poor and health-care inadequate in some orphanages, there were indications that access to foods was limited and quality of care was of substandard due to limited financial resources, lack of supervision, and minimal awareness of child development issues. Government and Non Governmental Organizations owned orphanage centres performed poor in care practices compared to Faith Based Organizations. Furthermore, regions wise orphanage centres located in Dar es Salaam performed poor in care practices compared to orphanage centres located in Morogoro region.

DECLARATION

I, **Walbert Mgeni,** do hereby declare to the Senate of the Sokoine University of Agriculture that the work presented here is my own original work, and has neither been submitted nor being concurrently submitted for a higher degree at any other institution.

_____ _____

Walbert Mgeni, **Date**

(M.Sc. Candidate)

The above declaration confirmed

_____ _____

Professor J. Kinabo **Date**

(Supervisor)

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ACKNOWLEDGEMENTS

This dissertation concludes my two-year M.Sc. Human Nutrition study at SUA. The completion of this work was due to the cooperation, help and support of a number of people and institutions not possible to mention all of them. Firstly, I would like to extend my heartfelt gratitude to the Ministry of Health and Social Welfare through the Tanzania Food and Nutrition Centre for granting me sponsorship and study leave without which my studies at SUA would have been impossible. I am very grateful to my supervisor, Prof. J. Kinabo of the Department of Food Science and Technology for her consistent comments, and encouragement towards quality work that have led to successful completion of this study. I would also like to thank Mr. Julius Ntwenya of SUA, and Dr. Precksedisi Ndomba of the University of Dar es Salaam and the staff at Tanzania Food and Nutrition Centre for the support they extended to me, making the completion of my field research work, data analysis and report writing possible.

This study could not have been possible without the generous time and cooperation of all that were interviewed, from selected orphanage centers in Dar es Salaam and Morogoro regions. Special thanks should go to District Executive Directors and social welfare officers from all districts for allowing me to conduct the study and their moral and material support during data collection. I am greatly indebted to all who assisted me in the data collection process.

I am especially grateful to my beloved wife for her encouragement, patience, and tolerance and for taking care of our children during my absence for this study. My children Faith and Yuliana missed me so much during the time of my absence. I thank them very much for their tolerance to the hardships they faced while I was away. I thank my LORD, the Almighty GOD, for granting me life, strength and blessings.

DEDICATION

This work is dedicated to God, through his begotten son, Jesus Christ for giving me strength and blessings, my late father Balthazary Mgeni who laid the foundation of my education with a lot of sacrifice and support and all orphan children.

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ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immuno Deficiency Syndrome
COBET	Complementary Basic Education in Tanzania
CRC	Convention on the Rights of the Child
CSO	Civil Society Organisations
FHI	Family Health International
HIV	Human Immune Virus
ICESCR	International Covenant on Economic, Social and Cultural Rights
ISS	International Social Service
ITN	Insecticide Treated Nets
KAP	Knowledge, Attitude and Practice
MOHSW	Ministry of Health and Social Welfare
NGO	Non Governmental Organization
NPA-MVC	National Plan of Action for Most Vulnerable Children
OVC	Orphans and Vulnerable Children
PPM	Parts per million (milligram/kilogram)
UN	United Nations
UNAIDS	United Nations AIDS
UNCR	United Nations Convention on the Rights of the Child
UNICEF	United Nations Children's Fund
WHO	World Health Organization

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background Information

Care refers to the behaviours and practices of care providers (mothers, siblings, fathers, and child-care providers) to provide the food, health care, stimulation, and emotional support necessary for children's healthy, growth and development. Not only the practices themselves, but also the ways they are performed - with affection and with responsive-ness to children are critical to children's growth and development (Engle *et al*., 1997).

Care practices include care for women, including pregnant and lactating women; breastfeeding and complementary feeding; psychosocial care; food preparation and food hygiene; hygiene practices; and home health practices (Engle *et al*., 1997). Therefore care can have significant positive effects on children's growth and development. More attention about care practices is needed for orphans and vulnerable children (OVC) because these group of children face a number of challenges, including finding money for school fees, food, clothing, and access to basic healthcare (Global Action for Children, 2010).

Among Africans, caring for orphans has always been the natural and expected practice, rooted in society's beliefs and culture. However, with forces such as modernization and epidemics like AIDS, natural disasters, internal migration and chronic poverty have been documented as the main reasons causing children to lack parental care on a global level and, more specifically, on the African continent (Ribeira *et al*., 2009).

The growing demand for care and support of orphans and vulnerable children at the community level has strained traditional coping mechanisms to a crisis stage in the most

heavily affected countries (Family Health International, 2001). All governments have to make arrangements for those children who, for whatever reasons cannot live with their parents, either temporarily or indefinitely (European Commission and WHO, 2007). Although research and practice over years demonstrated the harmful effects of institutionalisation upon children care such as emotionally, economically, and socially and psychological risks, this is one of the many alternatives of care for orphan children in Tanzania (MOHSW TZ, 2008).

Children may be placed in residential health and social care facilities for a wide range of reasons which include: biological orphan, separation and neglect due to poverty, stigmatisation or being an unwanted child , incapacity of parents to care due to illness, alcohol or drug misuse or imprisonment, removal from parental care under child protection proceedings in response to abuse, neglect or exploitation , disability or illness requiring specialist care or education, conduct disorder and behavioural difficulties requiring a specialist school or a secure environment, conviction of an offence requiring a correctional or detention facility and immigrant or asylum seeker leading to a detention or transit centre (Mulheir *et al.*, 2007).

The statistics about orphan children are devastating: 132 million children in the developing world are orphaned (Global Action for Children, 2010).Worldwide, it is estimated that more than 15 million children under 18 years old have been orphaned by AIDS. Around 11.6 million of these children live in sub-Saharan Africa (UNAIDS, 2008).

The situation is not different in Tanzania where factors such as poverty, social disintegration and the effect of HIV and AIDS pandemic have created a situation of uncertainty to the majority of children. This situation has seriously undermined most

vulnerable children in accessing basic rights and needs, such as care, support and protection (MOHSW TZ, 2008).

In respect to improvement of provision of care to children living in orphanage centres and vulnerable children, the government of Tanzania has embarked on a series of measures. Amongst the steps taken, is the development of the National Plan of Action for Most Vulnerable Children (NPA-MVC) for 2007-2010 and the ratification of a number of international human rights instruments. One of these instruments is the convention on rights of children of 1989.The convention obliges children in order to ensure that they can access the opportunities that will enable them to fully enjoy their rights and grow into responsible citizens. In implementing the convention and other instruments that touch on welfare of children, the government through the Department of Social Welfare of the Ministry of Health and Social Welfare through policy and legal frameworks designed a number of interventions to adequate, timely and appropriate provision of care support and protection to children and in particular most vulnerable children. The department of Social Welfare in collaboration with number of stakeholders on children issues has developed national guidelines for the establishment and management of children's centres in Tanzania. Furthermore, several people have submitted their applications to relevant authorities to establish foster care facilities or to adopt such children and some institutions have come up with the programmes to assist most vulnerable children to compliment government services (MOHSW TZ, 2006, 2008). Despite the efforts done by the Tanzania government to address such deficiencies, the situation of children living in orphanage centres especially care practices is not promising. Therefore this study was carried out to examine care practices of children living in orphanage centres in Dar es Salaam and Morogoro regions and identify the solutions on how to improve the quality of care for children living in orphanage centres.

1.2 Problem Statement

It has been witnessed recently that the number of orphans and children deprived of family life by their guardians and relatives has increased. This has been due to the sharp increase in the number of deaths of parents in the society caused by AIDS scourge that has affected the whole society (MOHSW TZ, 2006). The statistics show that two thirds of all people infected with HIV live in sub-Saharan Africa, although this region has only 10% of the world's population (UNAIDS 2008).

During 2008 alone, an estimated 1.4 million adults and children died as a result of AIDS in the sub-Saharan Africa (UNAIDS, 2009).

For Tanzania, the statistics show that at the end of the year 2007, there were 77 000 deaths caused by AIDS and 1 200 000 orphans were due to AIDS (UNAIDS, 2008, 2009).

Nevertheless, AIDS is not the only tragedy that causes children to be orphaned or made vulnerable in developing world and Sub-Saharan Africa, including Tanzania. Two million people die annually from tuberculosis and 90 percent of these deaths occur in the developing world. Malaria claims more than one million lives each year, most of them children. Sub-Saharan Africa, Tanzania being one of them bears the brunt of the malaria death toll - nearly 90 percent of the world's malaria deaths that occur in this region, which is amounting to nearly 3,000 deaths per day (Global Action for Children, 2010).

Most countries have used institutional care for children at some time. Institutions are often established with good intentions, in the belief that this is the best way to look after children. However, evidence demonstrates that family and community based forms of care are more likely to meet the needs of children (European Commission and WHO, 2007).

Although awareness about the dilemma of orphans and street children is now growing, the magnitude of the problem has not been acknowledged much by many players, such as ordinary citizen, government, and communities. Moreover, minimum literature exist that gives precise overview of the problem in Tanzania. Additionally, not much is known about the interventions or model of care that are available for street children and orphans affected by HIV/AIDS in Tanzania and Africa as whole (Unger *et al.*, 1998; Subbataro *et al*., 2001), and determining which models or interventions are working best is always difficult. Furthermore, the nutritional status of these children is not known, nutrition knowledge, attitude and practice of care providers is not known, the institutions providing care to these children are not aware of the developed national guidelines for the establishment and management of children's centres in Tanzania.

1.3 Justification of Study

The study sought to establish a relationship between care and nutrition status so as to contribute to little existing literature on orphanage centres and serve as a basis for intervening, hence better care practices in the orphanage centres. Furthermore, this study was intended to generate information which would be used in the process of developing the national nutrition guidelines for the children living in orphanage centres in Tanzania, which is missing for moment. It was also intended for designing the nutrition training package for orphanage centres care providers so as to improve their nutrition knowledge, collect and compile nutritional status data for children living in orphanage centres; and contribute to improving the quality of services for vulnerable children in Tanzania according to international child rights convention. Moreover, the findings of this study were envisaged to assist policy makers, practitioners, and other concerned stakeholders to pay attention to practices in systems of institutional care in Tanzania and support children living in orphanage centres.

1.4 Objectives of the Study

1.4.1 Overall objective of the study

The overall objective of this study was to examine care practices and support provided to children living in orphanage centers in Morogoro and Dar es Salaam regions.

1.4.2 Specific Objectives of the study:

Specific objective of this study were to:

i. Assess nutritional status of children living in orphanage
ii. Assess the food consumption patterns of children living in orphanage
iii. Assess the nutrition knowledge, attitude and practice of care providers in orphanage and
iv. Examine quality of child care provided in the orphanage centres.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Standards for Orphans and Vulnerable Children Programmes and Services

At all times, ensuring that the best interest of the child, child participation, community ownership and participation, public-private partnerships, and awareness that any support to children is not a favour, but a contribution to the attainment of their fundamental human rights, should remain key principles for all interventions to care, support and protect orphans and vulnerable children (Nigeria Ministry of Women Affairs and Social Development, 2007).

Standards of care are approved criteria for measuring and monitoring the management, provision and quality of child care services and their outcomes. Such standards are required for all child care provisions, including day care, kinship, foster and institutional care (Hunter and Parry, 2005).

The Convention on the Rights of the Child of 1989 stipulates that “States Parties shall ensure that the institutions, services and facilities responsible for the care or protection of children conform to the standards established by competent authorities, particularly in the areas of safety, health, in the number and suitability of their staff, as well as competent supervision”. In order to comply with the Convention on the Rights of the Child, the Department of Social Welfare under the Ministry of Health and Social Welfare has developed the Tanzania National Guidelines for the establishment and Management of Children’s centres (2006) and has put forward the following standards: First, an orphanage has to conform to a set of policies and procedures for registration or to have registration renewed.

Transparent procedures should be in place in relation to admission and length of stay. The orphanages should have a clear policy and carry out agreed procedures relating to the planned and unplanned conclusion of their work with children to ensure appropriate aftercare and/or follow-up. Secondly, the orphanages have to comply with the monitoring mechanisms of the Department of Social Welfare to ensure the welfare, care and protection of children. The guidelines call upon orphanages to ensure privacy and confidentiality of children's personal details. Orphanages are expected to maintain records of the daily affairs of children admitted there. Thirdly, principles and practices should be in place to ensure that children are not discriminated against on the basis of social group, class, gender, religion or ethnicity in an orphanage.

The guidelines further points out those children are to be helped to maintain linkages with their families and communities and orphanages should be safe places for children with security provided at all times through effective implementation of safety measures, rules and regulations. The orphanages should provide a safe and protective environment and the staff should have good child protection practices. Methods of controlling and redirecting children when their behaviour is challenging are to be balanced with care, respect for the law and children's rights and maintenance of the child's dignity. Good health and hygiene practices must be ensured through supportive services and a clean environment.

In addition, the document stipulates that children must have access to quality medical care and psychosocial or counselling support services. Also, there should be quality education and development opportunities according to the child's gender, age and needs. Children must participate in all activities and decisions affecting their lives and the orphanage has to be adequately staffed by professional caregivers.

Many non-governmental organizations have attempted to provide a home for orphans by building and staffing orphanages across Africa. The research findings about the quality of these institutions have indicated some inefficiency in the operations of the institutions. For example Wolff (1998) reported that group centres meet the material needs of the orphans better than foster care, but deprive the orphans from autonomy and personal contact with their care providers.

2.2 Health Care

2.2.1 Curative care

All children, especially orphans and vulnerable children, require support for survival, such as food and health care. Orphans and vulnerable children are exposed to health risks from many factors. They face deprivation and poor access to the basic services that promote and maintain health. Compared to other children, they often experience poor access to nutritious food, and shelter, health promoting and disease preventing resources such as education, counselling, immunization, and insecticide treated nets (ITN) (Nigeria Ministry of Women Affairs and Social Development, 2007).

Each Child's Home must have provision for medical services including but not limited to: First Aid Kit with regular replenishment of supplies, regular visits by medical personnel, ensure regular medical check -ups of children and prompt referral to health facility where necessary, and ensure children living with HIV/AIDS are referred to appropriate centres for appropriate advice on care and treatment (MOHSW TZ, 2006).

A study conducted by the United Nations Mission in Liberia in 2007 found that in reality, orphanages provided very limited and substandard healthcare. There were no indications in

any orphanage visited that those children received health checks on admission, nor routine regular health checks as provided for by the law(United Nations Mission, 2007).

2.2.2 Environmental and personal Hygiene

All children's home must be kept clean inside and outside the buildings and care providers must ensure children personal hygiene is maintained through physical inspection and provision, educate caregivers on the importance of personal and environmental hygiene including the use of safe water, first aid, and management of common childhood illnesses e.g. diarrhoea, fever, cough and rashes **(**MOHSW TZ, 2006).

Other Minimum Standards requirements for the facilities in which orphanages are located include: The facility must be fenced to provide security, and must be free of weapons, drugs and alcohol. The facility must provide "a child friendly environment that provides centre based activities, psycho-social support, indoor and outdoor play". Toilets must be separate and "gender friendly". There must be separate bathrooms, dining area, and an office with secured records room. The living area must be clean, hygienic, safe and ventilated and there must be sufficient space and lighting. The size of the sleeping area should be no less than 20.5 square meters for every five children and one supervisor. Each child should have a bed, mattress, four bed sheets, a pillow, sufficient and appropriate clothes, toiletries, mosquito net, school materials, shoes, slippers, an eating set, and access to toys and reading materials (Liberia MOHSW TZ, 2006).

A study done by Ribeira *et al.* (2009) in two Orphanages in the Ashanti Region of Ghana revealed a lot of weaknesses on environmental and personal hygiene in the surveyed orphanage centres.

2.3 Food and Nutrition

The right to adequate nutrition and water is guaranteed in the international human rights standards, particularly in the International Covenant on Economic, Social and Cultural Rights (ICESCR), adopted and opened for signature, ratification and accession by General Assembly resolution 2200A (XXI) of 16 December 1966 in which States Parties recognize "the fundamental right of everyone to be free from hunger and reconfirmed later when the 1996 World Food Summit requested the High Commissioner for Human Rights to define its legal content (International Human Rights Internship Program, 2000) . However many Children's Centres caring for orphans and vulnerable children often lack access to nutritionally adequate food and have chronic food insecurity (Nigeria Ministry of Women Affairs and Social Development, 2007).

Minimum Standards require that children living in orphanages receive sufficient, nutritious food appropriate to their age and developmental needs. All children's home should have regular adequate and balanced food supply as per the schedule provided by regulations. Feeding intervals should observe the age, need and conditions of the child .The food must be well prepared observing hygiene measures (MOHSW TZ, 2006). A study by UNICEF (2007) in Swaziland found that children's nutrition in residential care facilities was extremely varied. Some facilities had sufficient amounts of food, while others struggled to feed children once a day. Some facilities had balanced nutritious meals, while others simply ensured children do not go hungry.

Furthermore, another study conducted by United Nations in Liberia in 2007 noted that insufficient food was a concern in several orphanages surveyed. A number of children appeared malnourished, children described being hungry often and children in some

Orphanages were “ordered to fast” for three days because there was no food in the orphanage (United Nations Mission, 2007).

2.4 Education

Unfortunately, the ability to attend and excel in school is negatively correlated with orphan hood across Sub-Saharan Africa. Orphans are less likely to be at the appropriate education level, and their school attendance rates are lower than the average for non-orphans (Kamali *et al*., 1999; Bicego *et al*., 2003).

Every Child’s Home must have a programme that ensures that all children are enrolled for primary school education. In case the child is above enrolment age, such children must be enrolled in the Complementary Basic Education in Tanzania (COBET) programme. Every orphanage must have a programme that ensures that each child is given an opportunity for secondary school and or vocation skills training. Children’s Home must ensure sufficient regular supply of educational needs and materials for every child. Also, every Child’s Home must provide facilities that cater for children with special needs (MOHSW TZ, 2006).

The study conducted by the United Nations in Liberia in 2007 indicated that the education provided to the orphans was substandard. Teachers frequently had no teaching qualifications. Grade levels taught at the schools varied and most of them did not teach classes beyond sixth grade. Some students at the secondary level attended community schools, or schools run by religious groups to which the orphanage was connected. In addition, all schools lacked basic materials and teaching aids, including books. Some orphanages lacked space to accommodate students. In addition, the opportunity for

children in orphanages to obtain vocational training was limited (United Nations Mission, 2007).

2.5 Protection and Security

Child protection entails all initiatives carried out by children, families, communities, Civil Society Organisations, (CSO) development partners, government and the private sector that prevent the violation of rights of children in relation to abuse, exploitation and neglect. Orphans and vulnerable children need dedicated interventions to protect them from harm, to assist them when affected, and to promote their overall development. They also need the opportunity to develop their own responses to exploitation, neglect and abuse, either alone or in partnership with adults (Nigeria Ministry of Women Affairs and Social Development, 2007).

Every child, regardless of age, sex, race or ability, has, at all times and in all situations, a right to feel safe and be protected from any situation or practices that result in a child being physically or psychologically damaged. The welfare of the child is paramount, and all children, without exception have the right for protection from abuse.

Children in Children's Home are vulnerable hence open to assaults either by staff or other children. The assaults can be in form of physical abuse, sexual abuse or mental abuse. The management of children's home must ensure regular supervision and inspection to detect and deter any abuse or neglect. Segregation by age and gender must be observed in order to avoid abuse and neglect (MOHSW TZ, 2006).

Residential care facilities are expected to have a written policy regarding the protection of the children under their care. This policy should align to national laws protecting children from abuse, neglect or exploitation, as well as to the minimum standards set by the Convention on the Rights of the Child (CRC) which provides guidance and procedures for staff who discover or suspect that a child has been abused or neglected (UNICEF, 2007).

Another study by UNICEF in 2007 revealed that despite the existence of individual laws governing children in Swaziland, there was no comprehensive framework for the protection of children from which child protection policies could be adapted. As a result, only 25% of the residential care facilities for children had a child protection policy in place. The remaining 75% of residential care facilities for children did not have child protection policies in place. Some managers and owners of these facilities even pointed out that the CRC was not ratified in Swaziland and they were therefore not compelled to use it as a guideline.

2.6 Psychosocial Support

Psychosocial support involves all actions that enable orphans and vulnerable children to live meaningful and positive lives. It is an ongoing process of meeting the physical, social, emotional, mental and spiritual needs of children, all of which are essential elements for meaningful and positive human development.

The primary actors in children's psychosocial support are the children themselves, their families and communities, including their schools. Since psychosocial effects are both psychological and social, interventions must address the relationship between the individual and his/her social environment (Nigeria Ministry of Women Affairs and Social Development, 2007).

Psychosocial needs of orphans and other vulnerable children and their caregivers have often been ignored, superficially handled or seen as a specialized, low-priority type of intervention. However, the fulfilment of these inherent human needs (or the failure to fulfil them) has long-term impacts on the development of the child. Psychosocial issues are crosscutting and are a critical component of all aspects of prevention, care and support and should therefore be addressed in all sectors (Nigeria Ministry of Women Affairs and Social Development, 2007).

According to one body of research, the non-material needs of children age 6-14 separate into the following categories: guidance and counselling, behaviour formation, psychosocial support, reproductive health education, life survival skills and protection (Zimmerman, 2005).

All children's home must promote close contacts between children and caretakers so as to enable them to create secured and safe relationships. Children's home must provide an opportunity for contact with their relatives and the surrounding environment. Children must have their physical, emotional, social, cultural, intellectual and spiritual needs met. Also every child's home must have a programme to address HIV/AIDS in all aspects (MOHSW TZ, 2006).

Several articles reviewed have indicated that the environment of many orphanages do not adequately address these needs, and are especially remiss in providing psychosocial support (Wolff, 1998; Drew *et al*., 1998).

CHAPTER THREE

3.0 MATERIALS AND METHODS

3.1 Description of Study Area

The study was conducted in Dar es Salaam and Morogoro regions. The regions were selected purposively from the list of all regions in Tanzania, because these regions have the largest number of orphanage centres. Also the selection of the study area considered the availability of resources in terms of financial, human and time for conducting the study.

3.1.1 Dar es Salaam

Dar es Salaam is the largest city in Tanzania. It is also the country's richest city and important economic centre because the city contains unusually high concentrations of trade and other services and manufacturing compared to other parts of Tanzania, which has about 80 percent of its population in rural areas. For example, about one half of Tanzania's manufacturing employment is located in the city despite the fact that Dar es Salaam holds only ten percent of Tanzania's population.Furthermore, its poverty rates are much lower than the rest of the country In addition Dar es Salaam is an administrative province within Tanzania, and consists of three administrative districts: Kinondoni, Ilala and Temeke.This study was carried out in all the three administrative districts (Wikipedia , 2011).

3.1.1.1 Geographical location

Dar es Salaam is located at 6°48' South, and 39°17' East. The city is situated on a massive natural harbour on the Eastern Indian Ocean coast of East Africa (Wikipedia, 2011).

3.1.1.2 Population

According to Tanzania National Census 2002, Dar es Salaam had a population of 2.8 million people, with an annual population growth rate of 4.4%, the city has become the third fastest growing city in Africa and ninth fastest in the world after Bamako and Lagos, respectively. The metro population is expected to reach 5.12 million by 2020 (Wikipedia, 2011).

3.1.1.3 Climate

Dar es Salaam features a tropical wet and dry climate, with two different rainy seasons. The annual rainfall is approximately 1,100 mm (43 in) and in a normal year there are two distinct rainy seasons: "the long rains", which fall between April and May, and "the short rains", which fall between October and November, with hot and humid weather throughout the year (Wikipedia, 2011).

3.1.1.4 Economy

The city has high concentrations of commercial and industrial activities compared to other parts of Tanzania. About half of Tanzania's manufacturing industries are located in the city despite the fact that Dar es Salaam holds only ten percent of Tanzania's population. Located on a natural harbour along the Indian Ocean shores, it is the hub of the Tanzanian transportation system as all of the country's main railways and highways originate in or near the city. Its status as an administrative and trade centre has put Dar es Salaam in the position to benefit disproportionately from Tanzania's high growth rate since the year 2000 so that by now its poverty rates are much lower than the rest of the country . According to Household Budget Survey of 2007-Tanzania mainland indicated that poverty remains highest in rural areas and other urban areas, where 38 % of the population falls below the basic needs poverty line in rural areas and 24% in other urban areas. However, Dar es

Salaam used to have the lowest level of poverty, with 16 percent below the same line (Tanzania National Bureau of statistics 2009).

3.1.2 Morogoro

Morogoro region is one of the regions in Tanzania Mainland. Administratively, the region has six districts namely Kilombero, Morogoro rural, Morogoro urban, Kilosa, Ulanga and Mvomero.

3.1.2.1 Geography

The region lies between latitude 5° 58" and 10° 0" South of the Equator and longitude 35° 25" to the East. It is bordered by seven other regions; Arusha and Tanga region in the North, the Coast region in the East, Dodoma and Iringa in the West and Ruvuma and Lindi in the South. It occupies a total land area of 72 939 square kilometers which is approximately 8.2% of the total land area of Tanzania mainland (Wikipedia, 2011).

3.1.2.2 Population

According to the 2002 Tanzania National Census, the population of the Morogoro Region was 1 759 809 (Wikipedia, 2011).

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3.1.2.3 Climate

The annual rainfall ranges from 600 mm in low lands to 1200 mm in the highland plateau. However, there are areas which experience exceptional drought (with less than 600 mm of rainfall). The average annual temperature varies between 18°C on the mountain to 30°C in the river valley. In most parts of the region, the average temperatures are almost uniform (25°C). In general, the hot seasons run from September to February (Wikipedia, 2011).

3.1.2.4 Economy

Major economic activities in Morogoro region include commercial farming, small scale enterprises, and commercial retail as well as primary and secondary industries. The major cash and food crops include maize, rice, vegetables, and fruits (Tanzania National Bureau of Statistics 2009).

3.2 Research Design

This study employed a cross-sectional design where by the data were collected once, in all selected orphanage centres.

3.2.1 Study population

The study populations included all children living in orphanage centres aged 5-18 years old, supervisors, assistant supervisors and respective caregivers in orphanage centres. The age limits of children were based on consideration that at 5 years old child can be interviewed and understands a question being asked without difficulties.

3.2.2 Sampling technique

A purposefully sampling method was used to select study subjects. In the first stage all regions in Tanzania mainland were listed and from the list two regions with the highest number of orphanage centres were selected purposively. After selecting the two regions, the three districts from Dar es Salaam region namely Ilala, Temeke and Kinondoni were included purposively and one district namely Morogoro Urban was selected purposively from Morogoro region .The reason behind selecting only one district from Morogoro region was, no other district in Morogoro region have higher numbers of orphanage centers than Morogoro Urban district. Furthermore, the orphanage centers with 30 children or more were listed in each selected district and stratified according to the type of

orphanage centers namely Private, Non-Governmental Organization; Faith Based Organization, and Government owned centers. From each stratum, one orphanage was selected randomly. In the last stage all children aged 5-18 years old living in the selected orphanage centers were listed by using the centers' register books and assigned numerical numbers. Random technique was used whereby 392 children were selected for Dar es Salaam region and 321 children were selected for Morogoro region; hence a total sample size of 713 orphan children.

3.2.3 Sample size

The sample size was determined through the following Formula (Israel, 1992).

$$n = \frac{N}{1 + N(e)^2}$$

Where n is the sample size, N is the population size or estimated proportion of an attribute that is present in the population, and e is the level of precision.

Table 1: The total number of orphan children in Dar es Salaam

District	Single orphans	Double orphans	Total
Kinondoni	1 458	6 839	8 297
Ilala	107	4 260	4 367
Temeke	895	5 363	6 258
Grand Total	**2 460**	**16 462**	**18 922**

Source: MOHSW (2008)

Therefore N=18 922

e=5%

$$392 = \frac{18\,922}{1 + 18\,922\,(0.05)^2}$$

Therefore the sample size for Dar es Salaam region was supposed to be 392.

Table 2: The total number of orphan children in Morogoro Urban District

District	Single orphans	Double orphans	Total
Morogoro urban	303	1 334	1 637

Source: MOHSW (2008)

Therefore N=1 637

e=5%

$$\frac{321 = 1637}{1 + 1\,637\,(0.05)^2}$$

Therefore, the calculated sample size for Morogoro Urban district was 321.

However, it was only possible to reach 386 children instead of 713 children.

3.3 Data Collection

3.3.1 Instrument for data collection

Tools used for data collection were observation check lists, questionnaires, interview guide, SECA electronic weighing scale (SECA-Germany), length/height measuring board (UNICEF Model DK -2000 Copenhagen, Denmark), standard bottles, and Hemocue machine. Other instruments were disposable plastic beakers, red stopper vacutainer tube, marker pen fine, examination gloves, cool boxes**,** ice packs**,** hemocue cuvettes (type Hb 201+). Duracell batteries size AA**,** blood lancets**,** Cotton wool and Methylated spirit.

3.3.2 Procedures for data collection

3.3.2.1 Interviews

A semi-structured questionnaire was used for interview sessions. Care providers, centre supervisors, assistant supervisors, and the children were approached in person at each

orphanage centre. The focus was on issues central to the children's health, dietary quality, sanitation and hygiene, illness, anthropometrics, food security and nutrition support. Others were food preparation, availability of mosquito nets, medications, immunization, education, protection and security and psychosocial support.

3.3.2.2 Direct observation

An observation checklist was used as triangulation to data reported by study respondents. This aimed at revealing the quality of child care provided in the orphanage centres. The pre-defined observation check list was prepared and used to describe the quality of centres and care. For each selected orphanage home, the researcher used 12 hours observing what was happening at the orphanage home. The observation check list included issues related to food and nutrition, health care, education, psychosocial support, protection and security.

3.3.2.3 Key informant interview

Key informants e.g. supervisors, assistant supervisors and others were used to provide background information about the orphanage home, management issues, quality of child care, food consumption patterns of children, and the factors that influence provision of care in the orphanage centers.

3.3.3 Measurements

3.3.3.1 Anthropometric measurements

The procedures used in taking anthropometric measurements were as follows:

i) Height

The board was placed firmly against a wall. An individual was asked to stand straight with the head positioned such that the Frankfurt plane is horizontal, feet together, knees straight

and heels, buttocks and shoulder blades in contact with the vertical surface of the wall, hands hanging loosely with palms facing the thighs. The movable headboard was then lowered until it touched the crown of the head; height read to the nearest 0.1cm. Two measurements were taken for each subject and averages were recorded immediately.

ii) Weight

An electronic SECA scale (0-150kg SECA-Germany) was used for measuring weight. The scale was adjusted to zero before starting the measurements. Two measurements were taken (to the nearest 0.1kg) for each subject and average recorded immediately. The batteries used were checked several times so as to minimize errors caused by using low charged voltage batteries.

iii) Mid-Upper Arm Circumference (MUAC)

Mid-Upper Arm Circumference (MUAC) was measured by using the MUAC Tape (UNICEF Model) and the arm circumference insertion tape DK - 2000 Copenhagen, Denmark). The midpoint of the child's left upper arm was located by measuring distance between the tip of the shoulder and the elbow. The reading was divided by two to estimate the midpoint. The child's arm was hanging freely and the tape was wrapped around the mid upper arm. The tape was inspected to ensure proper tension on the child's arm and not too loose or too tight. When the tape was in the correct position on the arm with the correct tension the MUAC was recorded to nearest 0.1cm.

3.3.3.2 Biochemical measurements

i) Urinary iodine

Urine samples were taken from all selected children aged 5-18 years old living in orphanage centres. The samples were collected in disposable plastic beakers so as to avoid

contaminations. The samples were then poured in red stopper vacutainer tube, packed in ice container and sent to Tanzania Food and Nutrition Centre laboratory for analysis of urinary iodine using ammonium persulfate method. The principle behind this method is that the urine is digested with ammonium persulfate. Iodide is the catalyst in the reduction of ceric ammonium sulfate (yellow) to cerous form (colourless), and is detected by rate of colour disappearance (Sandell-Kolthoff reaction)**(** Dunn, 1993). The determinations of Urinary Iodine Concentration (UIC) were carried out spectrophotometrically at 405 nm, using ammonium persulfate digestion (APD) based on the Sandell Kolthoff reaction. The UIC data was interpreted according to WHO criteria, Table 4, where median UIC within the range 100- 200 μg/L signals optimal iodine intake.

ii) Haemoglobin level in blood

Measuring haemoglobin concentration is the most reliable indicator of anaemia (WHO, 2008). Therefore anaemia in children living in orphanage centres was measured by a Hemocue (type Hb 201+)**.** This is a non-dilution method, where by whole blood is converted to azide methemoglobin in a disposable, chemically treated curvette and then measured photometrically at specified wavelength (565 nm).The haemoglobin value is displayed digitally (Programme for Appropriate Technology in Health PATH, 1996) .The sensitivity of this method is 85% in field condition. Non Anaemic and anaemic children were categorised according to WHO 2001 cut-off point as shown in Table 3.

Table 3: WHO Hb thresholds used to define anemia (ig/dL = 0.6206 mmol/L)

Age or gender group	Hb threshold (g/dl)	Hb threshold (mmol/l)
Children (0.5–5.0 yrs)	11.0	6.8
Children (5–12 yrs)	11.5	7.1
Teens (12–15 yrs)	12.0	7.4
Women, non-pregnant (>15yrs)	12.0	7.4
Women, pregnant	11.0	6.8
Men (>15yrs)	13.0	8.

Source: WHO (2001)

3.3.3.3 Dietary assessment

A dietary recall method used for dietary assessment in surveyed orphanage centres. This is a retrospective method of dietary assessment where an individual is interviewed about their food and beverage consumption during a defined period of time .For this study a seven day recall method was used. The children aged 5-18 years were asked to recall food and beverage consumed within seven days.

3.4 Data Analysis

Qualitative data (quality of child care, food consumption patterns, and nutritional knowledge of caretakers in orphanage centers and factors that influence provision of care) from the survey questionnaire were coded and analyzed using computer software Statistical Package for Social Sciences (SPSS version 16.0) and Microsoft Excel.

Anthropometric measurements

WHO AnthroPlus software for the global application of the WHO Reference 2007 for 5-19 years to monitor the growth of school-age children and adolescents was used to analyse anthropometric measurements: <-1 to > -2 Z-Score mild malnutrition, < -2 to > -3 Z-Score moderate malnutrition and < -3 Z-Score severe malnutrition. Furthermore BMI for age (5-19 years) was used to classify different categories of malnutrition using the following cut-

offs point: Overweight: >+1SD (equivalent to BMI 25 kg/m^2 at 19 years), Obesity: >+2SD (equivalent to BMI 30 kg/m^2 at 19 years); Thinness: <-2SD, Severe thinness: <-3SD. Associations between different factors under investigation and level of malnutrition were examined using Chi-square Statistic.

Biochemical measurements

Urinary iodine

The determination of urinary iodine concentration (UIC) was carried out spectrophotometrically at 405nm, using ammonium persulfate digestion (APD) based on the Sandell Kolthoff reaction (Dunn, 1993). The UIC data were interpreted according to WHO (2007) criteria, Table 4 where median UIC within the range 100- 200 μg/L signals optimal iodine intake.

Table 4: Criteria for assessing iodine nutrition based on median urinary iodine concentrations of school-age children (≥ 6 years)

Median UIC µg/L	Iodine intake	Iodine nutrition status	Traffic light colour
<20	Insufficient	Severe iodine deficiency	**Red**
20 – 49.9	Insufficient	Moderate iodine deficiency	**Orange**
50 – 99.9	Insufficient	Mild iodine deficiency	**Yellow**
100 – 199.9	Adequate	Adequate iodine nutrition	**Green**
200 – 299.9	Above requirements	Likely to provide adequate intake for pregnant /lactating women, but may pose a slight risk of more than adequate intake in the overall population	**Light Purple**
≥300	Excessive intake	Risk of adverse health consequences (iodine induced hyperthyroidism-IIH, autoimmune thyroid diseases	**Dark Purple**

Source: WHO *et al*. (2007)

Hb level in blood

Blood was collected directly from the finger by capillary action into the Hemocue microcuvettes. Care was taken to avoid any pressure on the finger, which can result in hemodilution due to the inclusion of interstitial and intracellular fluids. The apparatus converts the readings into Hb and displays the results digitally (g/dl). Anaemia diagnosis was made using the age and sex specific cut-off points for Hb recommended by the WHO 20001 as shown in Table 3. Furthermore, all of the blood sample data were analysed using Excel/SPSS statistical software to get the percentage of anaemic and non-anaemic children. The level of significance was set at $p< 0.05$ for all analyses.

3.4.1 Dietary assessment

The frequencies of food and beverage consumed by children in surveyed orphanage centres were analysed by using Excel/SPSS statistical software.

CHAPTER FOUR

4.0 RESULTS

4.1 Social Economic Status of the Respondents

4.1.1 Orphaned children

The age range of orphaned children was between 5-19 years. Most of the children in the study were between 10-14 years old (50.3%). Furthermore, about 60% of orphans were males, because most of the orphanage centres preferred to take male children compared to female children might be due to male dominant system which is common in most of African societies. Most of the children who were interviewed were between standard 1 to standard 4 (36.5%). Moreover, 2.1% of orphans were not enrolled in schools at all. About 48% of the interviewed children had lost both parents (Table 5).

4.1.2 Care providers

The age range of care providers was between 20-50 years. It was found that most of them were between 41-50 years. It was also revealed that about 76% of the care providers interviewed were females. With regard to education status, most of the care providers had completed primary education (62.2%) and 2.7% had never been to school (Table 5).

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Table 5: Social economic status

Responsible group	Variable	Variable category	n	%
Orphaned children	Age(Years)	5-9	58	15.0
		10-14	194	50.3
		15-19	134	34.7
		Total	**386**	**100.0**
	Sex	Male	231	59.8
		Female	155	40.2
		Total	**386**	**100.0**
	Education	Kindergarten	6	1.6
		STD 1-4	140	36.5
		STD 5-7	120	31.1
		Form 1-2	72	18.7
		Form 3-4	38	9.8
		Form 5-6	2	0.3
		Not enrolled	8	2.1
		Total	**386**	**100.0**
	Reasons for living in orphanage	Both parent died	187	48.4
		One parent died	133	34.5
		Not have relatives	4	1.0
		Other reasons	35	9.1
		Don't know	27	7.0
		Total	**386**	**100.0**
Care providers	Age(Years)	20-30	10	27.0
		31-40	4	10.8
		41-50	16	43.2
		>50	7	18.9
		Total	**37**	**100.0**
	Sex	Male	9	24.3
		Female	28	75.7
		Total	**37**	**100.0**
	Education	Never been to school	1	2.7
		Primary	23	62.2
		Secondary	6	16.2
		College	7	18.9
		Total	**37**	**100.0**

4.1.3 Characteristics of orphanage centres

Appendix 1 and 2 summarise the profiles of study orphanage centres in Dar es Salaam and Morogoro regions. For Dar es Salaam one government owned orphanage centre, four each faiths based owned orphanage centres and NGO owned orphanage centres were involved

in the study. For Morogoro three faiths owned orphanage centres and one NGO owned orphanage centres were involved in the study.

4.2 Nutritional Status of Children Living In Orphanage Centres

The anthropometric measurements included Weight-for-age (underweight), Height-for-age (stunting) and BMI-for-age.

Table 6 presents information on nutritional status of children in orphanage centres. About 20% of children in the surveyed orphanage centres were moderately stunted and 3.7% severely stunted. The prevalence of underweight was 3.6% whereby 2.4% for the moderate underweight and 1.2% for severe underweight. The BMI for Age showed that 4.7% of the children were moderately thin, while about 1% was severely thin. Furthermore, 7.9% of the children were overweight and about 1% was obese.

Table 6: Nutritional status of children

Category of malnutrition	Stunting		Underweight		BMI-Age	
	n	%	n	%	n	%
Moderate	76	20.1	2	2.4	18	4.7
Mild	0	0.0	0	0.0	0	0.0
Severe	14	3.7	1	1.2	2	0.5
Overweight	0	0.0	0	0.0	30	7.9
Obese	0	0.0	0	0.0	3	0.8

Male children were more stunted (28%) compared to female children (17.5%). The BMI-for -Age indicated that more male children (5.8%) were thinner than female children (3.2%). However, more female children (11.6%) were overweight and obese (1.3%) respectively compared to male children (Table 7).

Table 7: Nutritional status of children by sex

Category of malnutrition	Stunting				Underweight				BMI-Age			
	Males		Females		Males		Females		Males		Females	
	n	%	n	%	n	%	n	%	n	%	n	%
Moderate	52	23.1	24	15.6	1	2.1	1	2.8	13	5.8	5	3.2
Mild	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Severe	11	4.9	3	1.9	0	0.0	1	2.8	1	0.4	1	0.6
Overweight	0	0.0	0	0.0	0	0.0	0	0.0	12	5.3	18	11.6
Obese	0	0.0	0	0.0	0	0.0	0	0.0	1	0.4	2	1.3

4.2.1 Haemoglobin (Hb) level in blood in orphanage centres

The overall mean Hb concentration was 11.8g/dl within the cut-off point (Table 8).On this aspect about 49% of the children were anaemic. The mean differences between anaemic children and non-anaemic children were significant (p=0.003).

Table 8: Hb concentration and prevalence of anaemia

Haemoglobin status by categories	n	%	Mean Hb	Overall mean Hb	P- value
Anaemic	188	48.7	10.7	11.8	0.003
Non anaemic	198	51.3	12.9		
Total	**386**	**100.0**			

The prevalence of anaemia was higher among female children (54.2%) than in male children (45%).The mean Hb concentration was 12.0 g/dl for male children and 11.6 g/dl for female children .The difference was significant (p=0.003) (Table 9).

Table 9: Prevalence of anaemia in children by sex

Haemoglobin status by categories	Sex						p-value
	Males			Females			
	n	%	Overall mean Hb	n	%	Overall mean Hb	
Anaemic	104	45.0	12.04	84	54.2	11.57	0.003
Non anaemic	127	55.0		71	45.8		
Total	**231**	**100.0**		**155**	**100.0**		

The prevalence of anaemia in children by type of ownership of the centre as shown in table 10 indicated that anaemic children were high in government owned (57.9%) orphanage centres compared to Non-Governmental Organizations and Faith Based Organizations owned orphanage centres.

Table 10: Prevalence of anaemia in children by type of ownership of the centre

Haemoglobin status by categories	**Type of ownership of the centre**					
	Government owned		**Non-Governmental Organization**		**Faith Based Organization**	
	n	**%**	**n**	**%**	**n**	**%**
Anaemic	22	57.9	72	51.4	94	45.2
Non anaemic	16	42.1	68	48.6	114	54.8
Total	**38**	**100.0**	**140**	**100.0**	**208**	**100.0**

Furthermore, the prevalence of anaemia in children by regions was higher in Dar es Salaam region (51.5%) compared to Morogoro region orphanage centres.

Table 11: Prevalence of anaemia in children by regions

Haemoglobin status by categories	**Region**			
	Dar es Salaam		**Morogoro**	
	n	**%**	**n**	**%**
Anaemic	141	51.5	47	42.0
Non anaemic	133	48.5	65	58.0
Total	**274**	**100.0**	**112**	**100.0**

4.2.2 Urinary iodine concentration for children living in orphanage centres

Most of the children (87.3%) had excess iodine excretion in the urine. About 3% of the surveyed children had adequate urinary iodine concentrations and only 0.3% had severe deficiency of urinary iodine concentration (Table 12).

Table 12: Urinary iodine concentrations of children (µg/L)

Iodine status	n	%	Mean urinary iodine	Overall mean urinary iodine
Severe deficiency	1	0.3	14.0	1 035.04
Moderate deficiency	5	1.3	33.1	
Mild Iodine deficiency	7	1.8	81.93	
Adequate	12	3.1	148.89	
More than adequate	24	6.2	251.04	
Excessive	337	87.3	1 160.12	
Total	**386**	**100.0**		

Male children had severe deficiency of iodine (0.4%) and none of the female children had the same. Also more male children (4.3%) had adequate iodine concentration than female children (1.3%). No significant differences were noted (p=0.94) between the mean overall iodine concentration for males and females (Table 13).

Table 13: Urinary iodine concentrations of children by sex (µg/L)

Iodine status	Sex						p-value
	Males			Females			
	n	%	Overall mean urinary Iodine concentration	n	%	Overall mean urinary Iodine concentration	
Severe	1	0.4	1 037.53	-	-	1 031.34	0.94
Moderate	3	1.3		2	1.3		
Mild Iodine	4	1.7		3	1.9		
Adequate	10	4.3		2	1.3		
More than adequate	13	5.6		11	7.1		
Excessive	200	86.6		137	88.4		
Total	**231**	**100.0**		**155**	**100.0**		

Table 14 shows urinary iodine concentrations (µg/L) of children living in orphanage centres by type of ownership of the centres. Non-Governmental Organizations owned orphanage centres were the leading centres by having children with severe (0.7%) and moderate (3.6%) iodine deficiency .Children living in orphanage centres owned by Faith

Based Organizations (91.8%) were leading by having excessive iodine concentration in urinary compared to government and Non-Governmental organization owned orphanage centres.

Table 14: Urinary iodine concentrations of children by type of ownership of the centre (µg/L)

Iodine status	**Type of ownership of the centre**					
	Government owned		**Non-Governmental Organization**		**Faith Based Organization**	
	n	**%**	**n**	**%**	**n**	**%**
Severe	0	0.0	1	0.7	0	0.0
Moderate	0	0.0	5	3.6	0	0.0
Mild Iodine	1	2.6	3	2.1	3	1.4
Adequate	0	0.0	7	5.0	5	2.4
More than adequate	3	7.9	12	8.6	9	4.3
Excessive	34	89.5	112	80.0	191	91.8
Total	**38**	**100.0**	**140**	**100.0**	**208**	**100.0**

Morogoro region were the leading region by having children with severe (0.9%) and moderate (4.5%) iodine deficiency (Table 15). Furthermore, about 97% of children living in surveyed orphanage centres from Dar es Salaam region indicated having excessive iodine concentrations compared to about 65% of children from Morogoro region.

Table 15: Iodine concentrations of children by regions (µg/L)

Iodine status	Region			
	Dar es Salaam		Morogoro	
	n	%	n	%
Severe	0	0	1	0.9
Moderate	0	0	5	4.5
Mild Iodine	1	0.4	6	5.4
Adequate	2	0.7	10	8.9
More than adequate	7	2.6	17	15.2
Excessive	264	96.4	73	65.2
Total	**274**	**100.0**	**112**	**100.0**

4.3 The Food Consumption Patterns of Children Living in Orphanage Centres

4.3.1 Meals frequency in orphanage centres

The meal frequency in most orphanage centres (88%) was 3 meals per day. Only 0.3% and 0.5% of the children in orphanages consumed only once and five times per day respectively (Table 16).

Table 16: Meal frequency in orphanage centres

Variable Frequency of meals eaten per day	n	%
Once per day	1	0.3
Twice per day	17	4.4
Three times per day	339	87.8
Four times per day	27	7.0
Five times per day	2	0.5
Total	**386**	**100.0**

Meal frequency in orphanage centres by type of ownership of the centres according to Table 17 indicates that about 1% of the children living in orphanage centres owned by Faith Based Organizations consumed meal once per day. Furthermore, orphanage centres

owned by Non-Governmental Organization were the only orphanage centres whereby children reported to consume meal four times (10%) and five times per day (1.4%).

Table 17: Meal frequency in orphanage centre by type of ownership of the centre

Variable	**Type of ownership of the centre**					
Frequency of meals eaten per day	**Government owned**		**Non-Governmental Organization**		**Faith Based Organization**	
	n	**%**	**n**	**%**	**n**	**%**
Once per day	0	0.0	0	0.0	1	0.5
Twice per day	1	2.6	13	9.3	3	1.4
Three times per day	37	97.4	111	79.3	191	91.8
Four times per day	0	0.0	14	10.0	13	6.2
Five times per day	0	0.0	2	1.4	0	0.0
Total	**38**	**100.0**	**140**	**100.0**	**208**	**100.0**

Table 18 shows meal frequency in orphanage centres by regions. Morogoro region was leading by having about 94% of children living in surveyed orphanage centres reported to consume meals three times per day compared to about 85% from Dar es Salaam region. However, the surveyed orphanage centres located in Dar es Salaam region reported some children consumed meals four times (9.9%) and five times (0.7%) per day.

Table 18: Meal frequency in orphanage centre by region

Variable	Region			
Frequency of meals eaten per day	**Dar es Salaam**		**Morogoro**	
	n	**%**	**n**	**%**
Once per day	0	0.0	1	0.9
Twice per day	11	4.0	6	5.4
Three times per day	234	85.4	105	93.8
Four times per day	27	9.9	0	0.0
Five times per day	2	0.7	0	0.0
Total	**274**	**100.0**	**112**	**100.0**

4.3.2 Types of foods consumed in orphanage centres

Table 19 to 25 shows frequency of consumptions of various foods consumed in surveyed orphanage centres. The data in these tables were multiple response data; questions asked with regards to these data required the respondents to make one or more choices from among unrestricted set of alternatives. This is why numbers of subjects are keeping on changing from table to table and frequencies do not add to 100%.

4.3.2.1 Frequency of consumption of cereals and cereal products

Stiff porridge and rice were the leading cereal foods consumed in most of the surveyed orphanage centres. The overall mean consumption frequency rate of these foods was 6 times per week. Also, 96.6% of the children reported to have eaten rice and stiff porridge in the orphanage centres surveyed in the past 7days prior to the survey (Table 19).

Table 19: Frequency of consumption of cereal and cereal products per week

Food name	n	%	Mean consumption frequency/ week
Rice	374	96.9	6
Bread	231	59.8	3
Biscuit	160	41.5	1
Porridge	226	58.5	3
Burns	250	64.8	2
Stiff porridge	374	96.9	6

4.3.2.2 Frequency of consumption of Roots, tubers, and banana foods

Table 20 shows various roots, tubers, and banana consumed by children per week. Irish potatoes were consumed more frequently (59.8%) than other types of roots and tubers. The overall mean consumption frequency rate of Irish potatoes was 1.1 times per week.

Table 20: Frequency of consumption of roots, tubers and bananas per week

Food name	n	%	Mean consumption frequency /week
Sweet potatoes	35	9.1	0.3
Cassava	27	7.0	0.2
Yams	8	2.1	0.1
Green banana	67	17.4	0.4
Irish potatoes	231	59.8	1.1

The frequency of consumption of green bananas had an overall mean consumption of 0.4 times per week. The proportion of the children who reported to have consumed green bananas was 17.4%.

4.3.2.3 Frequency of consumption of pulses, seeds and nuts

Table 21 shows various types of pulses, seeds and nuts consumed by children per week. Results show that beans were consumed more frequently (7 times per week} and by many children (99%).

Table 21: Frequency of consumption of pulses, seeds and nuts per week

Food name	n	%	Mean consumption frequency /week
Chickpea	87	22.5	2.0
Beans	383	99.2	7.0
Groundnuts	55	14.2	1.4
Cashew nuts	6	1.6	1.0
Pigeon peas	7	1.8	1.0

Other pulses, seeds and nuts consumed included chickpeas which were consumed by 22.5% of respondents at a frequency of 2 times per week.

4.3.2.4 Frequency of consumption of meat, poultry and fish

Beef was consumed by 80% of the children at a frequency of 3 times per week (Table 22).

Table 22: Frequency of consumption of meat, poultry and fish per week

Food name	n	%	Mean consumption frequency/week
(Cow meat) Beef	310	80.3	3.0
Fish	130	33.7	1.0
Egg	139	36.0	1.0
Chicken	84	21.8	0.3
Sausage	47	12.2	0.2

Beef was consumed at least thrice per week. Also, eggs were consumed once per week (Table 22). Other meat, poultry and fish consumed included fish and chicken which were consumed at the frequency of 1 and 0.3 times per week respectively. Fish and chicken were consumed by 33.7% and 21.8% of the children, respectively.

4.3.2.5 Frequency of consumption of milk and milk products

Table 23 shows the frequency of consumption of milk and milk products. Cow's milk was consumed more frequently by children than any other milk variety. The overall mean consumption frequency was 2 times per week. About 48% of the children reported to have consumed cow's milk at least twice a week.

Tinned milk was consumed by 15% of the children with the overall mean consumption rate of once per week. Products such as yoghurt, ice cream and cheese were modestly consumed.

Table 23: Frequency of consumption of milk and milk products per week

Food name	n	%	Mean consumption frequency/week
Fresh cow's milk	186	48.2	2.0
Ice cream	24	6.2	0.2
Tinned milk	59	15.3	1.0
Yoghurt	39	10.1	0.3
Cheese	11	2.8	0.1

4.3.2.6 Frequency of consumption of fruits and vegetables

Results revealed that fruits were consumed only once per week (Table 24). About 52% of children reported to have eaten ripe bananas and 48.7 % reported to had drunk fruit juice in the orphanage centres.

Table 24: Frequency of consumption of fruits per week

Food name	n	%	Mean consumption frequency/week
Avocado	43	11.1	0.3
Fruit jam	37	9.6	1.0
Fruit juices	188	48.7	1.0
Fruit salads	154	39.1	1.0
Oranges	108	28	1.0
Papaws	16	4.1	0.1
Ripe banana	199	51.6	1.0
Pineapples	79	20.5	1.0

The data on the frequency of consumption of vegetables are presented in Table 25. Tomatoes were the leading vegetable that was consumed by 77% of the children in orphanage centres with a mean consumption of 6 times per week.

Table 25: Frequency of consumption of vegetables per week

Food name	n	%	Mean consumption frequency/week
Carrots	202	52.3	3.0
Tomatoes	298	77.2	6.0
Spinach	42	10.9	1.0
Pumpkins leaves	66	17.1	0.1
Amaranths	210	54.4	1.0
Cabbages	14	3.6	0.1
Potatoes leaves	54	14.0	0.4

About 54% of children reported to have consumed amaranths in the orphanage centres once per week. Other vegetables consumed included carrots, spinach pumpkins leaves, cabbage and sweet potato leaves.

4.4 Nutrition Knowledge, Attitude and Practice of Care Providers in Orphanage Centres

4.4.1 Nutrition knowledge of care providers

Table 26 presents the nutrition knowledge of care providers in the studied area. Only 38% of the care providers in the surveyed orphanage centres had participated in nutrition training at some stages of their profession. About 89% of the care providers had heard of iodine and 81% had accessed nutrition and child feeding information. A significant proportion of care providers had no training on nutrition (62%).

Table 26: Nutrition knowledge of care providers (n = 37)

Variable	Response	n	%
Participation in nutrition training	Yes	14	37.8
	No	23	62.2
	Total	**37**	**100.0**
Access to child feeding information	Yes	30	81.1
	No	7	18.9
	Total	**37**	**100.0**
If ever heard about Iodine	Yes	33	89.2
	No	4	10.8
	Total	**37**	**100.0**

It was also noted that 30% of care providers had been trained on general nutrition knowledge (Table 27). Sources of information on child feeding for care providers was mass media including radio and television (29.7%) and about 11% of the care providers indicated that Tanzania Food and Nutrition Centre was their source of child feeding information.

Table 27: Knowledge of care providers (n = 37)

Variable	n	%
Training attended		
General nutrition knowledge	11	29.7
Infant and Young Child Nutrition	2	5.4
Nutrition and HIV/AIDS	1	2.7
Not trained	23	62.2
Total	**37**	**100.0**
Sources of child feeding information		
Tanzania Food and Nutrition Centre	4	10.8
Radio and TV	11	29.7
From health centre s	5	13.5
Other sources	10	27.0
None	7	18.0
Total	**37**	**100.0**

Only 5.4% of the care providers stated that diseases and inadequate maternal and child care practices were the main causes of malnutrition in children (Table 28).

Furthermore, 48.6% of the care providers reported that vitamin A protects children from diseases. Also, 60% of the care providers indicated that inadequate dietary intake was a cause of malnutrition in children (Table 28).

Table 28: Nutrition knowledge of care providers (n = 37)

Variable	n	%
Causes of malnutrition		
Inadequate dietary intake	22	59.5
Diseases	2	5.4
Inadequate maternal and child care practices	2	5.4
Insufficient access to food	4	10.8
Others	2	5.4
Don't know	5	13.5
Total	**37**	**100.0**
Important of vitamin A for children		
Protect them against diseases	18	48.6
It is important for growth	2	5.4
Other reasons	8	21.6
Don't know	9	24.3
Total	**37**	**100.0**
Sources of iodine for un breast fed child		
Iodated salt	18	48.6
Fishes from sea	9	24.0
Don't know	9	25.0
Others	1	2.4
Total	**37**	**100.0**

Table 29 shows nutrition knowledge of care providers by type of ownership of the centre. The orphanage centres owned by Non-Governmental Organizations were the leading by having 63.6% of care providers reported to participate in nutrition training, compared to 16.7% and 30% from government and Faith Based Organizations owned orphanage centres consecutively. With regards to access to child feeding information of care providers, Faith Based Organization owned orphanage centres performed better (75%) compared to government and Non-Governmental Organization owned orphanage centres. Furthermore, when care providers asked if ever heard about Iodine, all care providers from government owned orphanage centres responded heard about Iodine compared to 81.8%

and 90% of care providers from orphanage centres owned by Non-Governmental and Faith Based Organization successively.

Table 29: Nutrition knowledge of care providers by type of ownership of the centre (n = 37)

Variable	Response	Type of ownership of the centre					
		Government owned		Non-Governmental Organization		Faith Based Organization	
		n	%	n	%	n	%
Participation in nutrition training	Yes	1	16.7	7	63.6	6	30.0
	No	5	83.3	4	36.4	14	70.0
	Total	**6**	**100.0**	**11**	**100.0**	**20**	**100.0**
Access to child feeding information	Yes	4	66.7	11	100.0	15	75.0
	No	2	33.3	0	0.0	5	25.0
	Total	**6**	**100.0**	**11**	**100.0**	**20**	**100.0**
If ever heard about Iodine	Yes	6	100.0	9	81.8	18	90.0
	No	0	0.0	2	18.2	2	10.0
	Total	**6**	**100.0**	**11**	**100.0**	**20**	**100.0**

4.4.2 Nutrition practice of care providers

Nutrition practices of the care providers in the surveyed orphanage centres indicated that 62.2% of the care providers had started complementary feeding at the age of six months. Furthermore, only 40.5% of the care providers had confidence in preparing replacement feeding for babies. Nevertheless 62.2% of the care providers indicated that they did not know the appropriate ratio between cow's milk and water. Also, 40.5% of the care providers reported that when they mixed special infant formula, they followed the instructions according to the given label. With regards to feeding a baby with infant formula, 54.2% of the care providers indicated that a feeding bottle was the best option.

Moreover, 56.8% of the care providers recommended increasing the frequency of eating when a child is sick (Table 30).

Table 30 Nutrition practice of care providers in orphanage centres

Variable	n	%
Age to start complementary		
At three months	4	10.8
At four months	6	16.2
At sixth months	23	62.2
Others	2	5.4
Don't know	2	5.4
Total	**37**	**100.0**
Competence in preparing replacement milk		
Yes	15	40.5
No	22	59.5
Total	**37**	**100.0**
Cow's milk water ratio		
2parts milk:1part water	2	5.4
1part milk:1part water	2	5.4
Other ratio	10	27
Don't know	23	62.2
Total	**37**	**100.0**
Mixing special infant formula		
I follow instruction according to the label	15	40.5
I just mix milk with water	1	2.7
Others	1	2.7
Don't know	20	54.1
Total	**37**	**100.0**
How to give infant formula		
Feeding bottle	20	54.1
Cup and spoon	17	45.9
Total	**37**	**100.0**
Recommended on feeding sick child		
Food should be avoided	1	2.7
Reduce food in amount	6	16.2
Increase frequency of eating	21	56.8
Others	5	13.3
Don't know	4	10.3
Total	**37**	**100.0**

Table 31 shows nutrition practice of care providers in orphanage centres by type of ownership of the centre. Care providers from orphanage centres owned by Non-Governmental Organization were leading by responding that a baby should start given complementary foods at sixth months (81.8%).Care providers from government owned orphanage centres indicated to be more competent (66.7%) in preparing replacement milk for babies compared to care providers from Non-Governmental (54.5%) and Faith Based Organizations (25%) .Also with regards to Cow's milk water ratio more care providers from government owned orphanage centres (16.7%) indicated the ratio should be 2 parts milk: 1 part water. Majorities of care providers from Non-Governmental Organization owned orphanage centres (72.7%) responded they do not know the correct ration of mixing cow's milk and water. Furthermore, 66.7% of care providers from government owned orphanage centres indicated to follow instruction according to the label when mixing special infant formula compared to 45.5% and 30 % care providers from orphanage centres owned by Non-Governmental and Faith Based Organization successively .Majorities of care providers (63.7%) from Non-Governmental owned orphanage centres indicated to use feeding bottles when giving infant formula to a baby.

Table 31: Nutrition practice of care providers in orphanage centres by type of ownership of the centre (n = 37)

Variable	Type of ownership of the centre					
	Government owned		Non-Governmental Organization		Faith Based Organization	
	n	%	n	%	n	%
Age to start complementary						
At three months	1	16.7	1	9.1	2	10.0
At four months	0	0.0	1	9.1	5	25.0
At sixth months	4	66.7	9	81.8	10	50.0
Others	1	16.7	0	0.0	1	5.0
Don't know	0	0.0	0	0.0	2	10.0
Total	**6**	**100.0**	**11**	**100.0**	**20**	**100.0**
Competence in preparing replacement milk						
Yes	4	66.7	6	54.5	5	25.0
No	2	33.3	5	45.5	15	75.0
Total	**6**	**100.0**	**11**	**100.0**	**20**	**100.0**
Cow's milk water ratio						
2parts milk:1part water	1	16.7	0	0.0	1	5.0
1part milk:1part water	0	0.0	0	0.0	2	10.0
Other ratio	2	33.3	3	27.3	5	25.0
Don't know	3	50.0	8	72.7	12	60.0
Total	**6**	**100.0**	**11**	**100.0**	**20**	**100.0**
Mixing special infant formula						
I follow instruction according to the label	4	66.7	5	45.5	6	30.0
I just mix milk with water	0	0.0	1	9.1	0	0.0
Others	1	16.7	0	0.0	0	0.0
Don't know	1	16.7	5	45.5	14	70.0
Total	**6**	**100.0**	**11**	**100.0**	**20**	**100.0**
How to give infant formula						
Feeding bottle	3	50.0	7	63.7	10	50.0
Cup and spoon	3	50.0	4	36.4	10	50.0
Total	**6**	**100.0**	**11**	**100.0**	**20**	**100.0**
Recommended on feeding sick child						
Food should be avoided	1	16.7	0	0.0	0	0.0
Reduce food in amount	0	0.0	3	27.3	2	10.0
Increase frequency of eating	5	83.3	5	45.5	11	55.0
Others	0	0.0	2	18.2	3	15.0
Don't know	0	0.0	1	9.1	4	20.0
Total	**6**	100.0	**11**	**100.0**	**20**	**100.0**

4.4.3 Attitude of care providers about nutrition care in surveyed orphanage centres

The assessment of attitude was based on 13 statements (Table32). The results show that 94.6% of the care providers indicated that breast milk was the best food for infants for the first six months of life. This is in line with UNICEF recommendation. About 68% of the care providers admitted that feeding bottles was the best option for feeding a baby infant formula/animal's milk. However, this is against WHO and UNICEF recommendations which recommend that a cup should be used in feeding infants. Nevertheless, 86.5% of the care providers were against saving a plate of food among the under-five year's children with other older children during eating. This is in line with the child feeding guidelines of MoHSW. Also, 75.7% of the care providers admitted that orphanage centres were the best places for their relative's orphan children. Furthermore, about 95% of the care providers stated that children were getting enough food in the orphanage centres and 83.8% indicated that children were getting a mixed diet. Moreover, about 84% of the care providers in the surveyed orphanage centres indicated the need to have nutritionist in their centres. About 27% of the care providers indicated the need of reducing the amount of food given to a sick child, which is contrary to the Ministry of Health and social Welfare guidelines.

Table 32: Statements/questions and responses used to assess the nutrition attitude of care providers in surveyed orphanage centres (n = 37)

Statements or questions	Care providers responses%			
	Yes, I agree	No, I don't agree	I don't know	Total
Mother milk is the best food for baby for first six months of life.	94.6	5.4	-	100.0
Feeding bottles should be used to give a baby infant formula/animal's milk.	67.6	32.4	-	100.0
Milk in some other form should be given to an infant if is not getting breast milk, in the first six months.	100.0	-	-	100.0
Under five years children should eat together in one plate with older children.	10.8	86.5	2.7	100.0
My relative's orphan children should live here?	75.7	21.6	2.7	100.0
Children here are getting enough food.	94.6	2.7	2.7	100.0
Children here are getting mixed/balanced diets.	83.8	16.2	-	100.0
Poor nutrition status does not have effect on child development.	13.5	86.5	-	100.0
Nutrition Education is important to me.	94.6	5.4	-	100.0
We need nutritionists to solve nutritional problem at our institute/centre.	83.8	16.2	-	100.0
We need to reduce the amount of food when a child/baby gets sick.	27.0	73.0	-	100.0
Children need Fruits and Vegetables for their health.	100.0	-	-	100.0
Growth monitoring is important until a child reach five years of age.	97.3	2.7	-	100.0

4.5 Quality of Child Care Provided in the Orphanage Centres

4.5.1 Food and nutrition

Table 33 presents data on food and nutrition issues in the orphanage centres. About 88% of the children had dining rooms and 74.4% had adequate utensils. Also, 86% of the children had adequate amount of foods and about 87% were satisfied with foods served in the orphanage centres surveyed. Furthermore, 45.6% of the children stated that care providers were making decision for them on the amount of foods to be consumed.

Table 33: Food and nutrition issues

Variable	Response s	n	%
Presence of dining room	Yes	340	88.1
	No	46	11.9
	Total	**386**	**100.0**
Adequate number of utensils	Yes	287	74.4
	No	99	25.6
	Total	386	100.0
Adequate amount of food	Yes	332	86.0
	No	54	14.0
	Total	**386**	**100**
Satisfied with food	Yes	334	86.5
	No	52	13.5
	Total	**386**	**100.0**
Decision about the amount of food to eat	Myself	208	53.9
	Care providers	176	45.6
	Friend	2	0.5
	Total	**386**	**100.0**

Looking upon food and nutrition issues in orphanage centres by type of ownership of the centre Table 34, dining room issues indicates that government owned orphanage centres performed better by having 100% of children in surveyed orphanage centre reported to have dining rooms followed by Faith Based Organization (97.1%). Furthermore, Most of the children (87.5%) living in orphanage centres owned by Faith Based Organization

responded to have adequate number of utensils compared to children from orphanage centres owned by government and Non-Governmental Organizations. Government owned orphanage centres were leading (89.5%) with regards to children indicated having adequate amount of food compared to children from Non-Governmental Organizations and Faith Based Organizations owned orphanage centres. However more children (90.9%) from orphanage centre owned by Faith Based Organizations reported to be satisfied with served food, compared to children from government and Non-Governmental Organizations owned orphanage centres.

Table 34: Food and nutrition issues in orphanage centre by type of ownership of the centre

Variable	Responses	Type of ownership of the centre					
		Government owned		Non-Governmental Organization		Faith Based Organization	
		n	%	n	%	n	%
Presence of dining room	Yes	38	100.0	100	71.4	202	97.1
	No	0	0.0	40	28.6	6	2.9
	Total	**38**	**100.0**	**140**	**100.0**	**208**	**100.0**
Adequate number of utensils	Yes	16	41.2	89	63.6	182	87.5
	No	22	58.8	51	36.4	26	12.5
	Total	**38**	**100.0**	**140**	**100.0**	**208**	**100.0**
Adequate amount of food	Yes	34	89.5	118	84.3	180	86.5
	No	4	10.5	22	15.7	28	13.5
	Total	**38**	**100.0**	**140**	**100.0**	**208**	**100.0**
Satisfied with food	Yes	22	57.9	123	87.9	189	90.9
	No	16	42.1	17	12.1	19	9.1
	Total	**38**	**100.0**	**140**	**100.0**	**208**	**100.0**
Decision about the amount of food to eat	Myself	19	50.0	67	47.9	122	58.7
	Care providers	19	50.0	71	50.7	86	41.3
	Friend	0	0.0	2	1.4	0	0.0
	Total	**38**	100.0	**140**	**100.0**	**208**	**100.0**

Table 35 presents data on food and nutrition issues in the orphanage centres by regions. About 95% of children in surveyed orphanage centres from Morogoro region responded presence of dining rooms compared to about 85% of children from Dar es Salaam region surveyed orphanage centres. More children from Morogoro region indicated to have an adequate number of utensils (84.8%), an adequate amount of food (99.1%) and satisfied with food served compared to children from Dar es Salaam region surveyed orphanage centres.

Table 35: Food and nutrition issues in orphanage centres by regions

Variable	**Responses**	**Region**			
		Dar es Salaam		**Morogoro**	
		n	**%**	**n**	**%**
Presence of dining room	Yes	234	85.4	106	94.6
	No	40	14.6	6	5.4
	Total	**274**	**100.0**	**112**	**100.0**
Adequate number of utensils	Yes	192	70.0	95	84.8
	No	82	30.0	17	15.2
	Total	**274**	**100.0**	**112**	**100.0**
Adequate amount of food	Yes	221	80.7	111	99.1
	No	53	19.3	1	0.9
	Total	**274**	**100.0**	**112**	**100.0**
Satisfied with food	Yes	224	81.8	110	98.2
	No	50	18.2	2	1.8
	Total	**274**	**100.0**	**112**	**100.0**
Decision about the amount of food to eat	Myself	134	48.9	74	66.1
	Care providers	138	50.4	38	33.9
	Friend	2	0.7	0	0.0
	Total	**274**	100.0	**112**	**100.0**

4.5.2 Health and sanitation

Table 36 presents health and sanitation issues of children living in the orphanage centre**s.** About 25% of all children indicated that they share beds. Also 26.2 % of the children slept without mosquito nets and 7.8 % lacked shoes. Furthermore, about 50% of the children reported to fall ill one month prior to the study. Children who suffered from malaria one month prior to the study were 19.9% and about 54% of them were not treated during sickness. The results also indicated that about 84% of children who felt sick one month prior to this study were not given special diet during sickness.

Table 36: Health and nutrition situation issues

Variable	Responses	n	%
Sleeping alone in bed	Yes	290	75.1
	No	96	24.9
	Total	**386**	**100.0**
Having bed net	Yes	285	73.8
	No	101	26.2
	Total	**386**	**100.0**
Having shoes	Yes	356	92.2
	No	30	7.8
	Total	**386**	**100.0**
Fallen ill one month prior the study	yes	194	50.3
	No	192	49.7
	Total	**386**	**100.0**
Suffered fever	Yes	20	5.3
	No	366	94.7
	Total	**386**	**100.0**
Suffered malaria	Yes	77	19.9
	No	309	80.1
	Total	**386**	**100.0**
Suffered stomach ache	yes	29	7.5
	No	357	92.5
	Total	**386**	**100.0**
Suffered diarrhoea	Yes	4	1.0
	No	382	99.0
	Total	**386**	**100.0**
Suffered other illness	Yes	38	9.8
	No	348	90.2
	Total	**386**	**100.0**
Got treatment during sickness	Yes	177	45.9
	No	209	54.1
	Total	**386**	**100.0**
Got special diet during sickness	Yes	63	16.3
	No	323	83.7
	Total	**386**	**100.0**

Most of the children in the orphanage centre owned by Faith Based Organizations (99%) were sleeping alone in bed compared to children living in orphanage centres owned by government (44.7%) and Non-Governmental Organizations (47.9%) (Table 37).The problem of bed net were dominant in orphanage centres owned by Non-Governmental Orphanage centres by indicating only about 53% of children having bed nets compared to about 89% of children from orphanage centres owned by Faith Based Organizations and 68% children from government owned orphanage centres. Furthermore, about half of children in all surveyed orphanage centres owned by government, Non-Governmental Organizations and Faith Based Organizations fallen ill one month prior the study. Also providing special diet for children during sickness were noted as a big problem in orphanage centres owned by Faith Based Organization by indicating only 25.5% of children got special diet during sickness compared to 38.9% and 37.8% children from orphanage centres owned by government and Non-Governmental Organizations respectively (Table 37).

Table 37: Health and sanitation issues in orphanage centres by type of ownership of the centre

Variable	Responses	Type of ownership of the centre					
		Government owned		Non-Governmental Organization		Faith Based Organization	
		n	%	n	%	n	%
Sleeping alone in bed	Yes	17	44.7	67	47.9	206	99.0
	No	21	53.3	73	52.1	2	1.0
	Total	**38**	**100.0**	**140**	**100.0**	**208**	**100.0**
Having bed net	Yes	26	68.2	74	52.9	185	88.9
	No	12	31.6	66	47.1	23	11.1
	Total	**38**	**100.0**	**140**	**100.0**	**208**	**100.0**
Having shoes	Yes	32	84.2	125	89.3	199	95.7
	No	6	15.8	15	10.7	9	4.3
	Total	**38**	**100.0**	**140**	**100.0**	**208**	**100.0**
Fallen ill one month prior the study	Yes	18	47.4	82	58.6	94	45.2
	No	20	52.6	58	41.4	114	54.8
	Total	**38**	**100.0**	**140**	**100.0**	**208**	**100.0**
Suffered fever	Yes	0	0.0	13	9.3	7	3.4
	No	38	100.0	127	90.7	201	96.6
	Total	**38**	**100.0**	**140**	**100.0**	**208**	**100.0**
Suffered malaria	Yes	1	2.6	28	20.0	48	23.1
	No	37	97.4	112	80.0	160	76.9
	Total	**38**	**100.0**	**140**	**100.0**	**208**	**100.0**
Suffered stomach ache	Yes	5	13.2	12	8.6	12	5.8
	No	33	86.8	128	91.4	196	94.2
	Total	**38**	**100.0**	**140**	**100.0**	**208**	**100.0**
Suffered diarrhoea	Yes	2	5.3	2	1.4	0	0.0
	No	36	94.7	138	98.6	208	100.0
	Total	**38**	**100.0**	**140**	**100.0**	**208**	**100**
Suffered other illness	Yes	7	18.4	11	7.9	20	9.6
	No	31	81.6	129	92.1	188	90.4
	Total	**38**	**100.0**	**140**	**100.0**	**208**	**100.0**
Got treatment during sickness	Yes	15	83.3	71	86.6	91	96.8
	No	3	16.7	11	13.4	3	3.2
	Total	**18**	**100.0**	**82**	**100.0**	**94**	**100.0**
Got special diet during sickness	Yes	7	38.9	31	37.8	24	25.5
	No	11	61.1	51	62.2	70	74.5
	Total	**18**	**100.0**	**82**	**100.0**	**94**	**100.0**

Table 38 shows health and sanitation issues in orphanage centres by regions. Morogoro region performed better in this aspect compared to Dar es Salaam region. About 98% of

children in surveyed orphanage centres from Morogoro region reported to sleep alone in bed compared to 66% of children from Dar es Salaam region. Furthermore, 82.1% of children from Morogoro region indicated to possess bed nets compared to 70.4% of children from Dar es Salaam region. Also more children from Dar es Salaam region suffered malaria (53%) compared to children suffered malaria from surveyed orphanage of Morogoro region (21.4%). However, about 38% of children in surveyed orphanage centres from Dar es Salaam region were given special diet during sickness compared to about 17% of children from Morogoro region.

Table 38: Health and sanitation issues in orphanage centres by regions

Variable	Responses	Regions			
		Dar es Salaam		Morogoro	
		n	%	n	%
Sleeping alone in bed	Yes	181	66.1	109	97.3
	No	93	33.9	3	2.7
	Total	**274**	**100.0**	**112**	**100.0**
Having bed net	Yes	193	70.4	92	82.1
	No	81	29.6	20	17.9
	Total	**274**	**100.0**	**112**	**100.0**
Having shoes	Yes	251	91.6	105	93.8
	No	23	8.4	7	6.2
	Total	**274**	**100.0**	**112**	**100.0**
Fallen ill one month prior the study	Yes	146	53.3	48	42.9
	No	128	46.7	64	57.1
	Total	**274**	**100.0**	**112**	**100.0**
Suffered fever	Yes	16	5.8	4	3.6
	No	258	94.2	108	96.4
	Total	**274**	**100.0**	**112**	**100.0**
Suffered malaria	Yes	53	19.3	24	21.4
	No	221	80.7	88	78.6
	Total	**274**	**100.0**	**112**	**100.0**
Suffered stomach ache	Yes	22	8.0	7	6.2
	No	252	92.0	105	93.8
	Total	**274**	**100.0**	**112**	**100.0**
Suffered diarrhoea	Yes	4	1.5	0	0.0
	No	270	98.5	112	100.0
	Total	**274**	**100.0**	**112**	**100.0**
Suffered other illness	Yes	31	11.3	7	6.2
	No	243	88.7	105	93.8
	Total	**274**	**100.0**	**112**	**100.0**
Got treatment during sickness	Yes	128	87.7	48	100.0
	No	18	12.3	0	0.0
	Total	**146**	**100.0**	**48**	**100.0**
Got special diet during sickness	Yes	55	37.7	8	16.7
	No	91	63.3	40	83.3
	Total	**146**	**100.0**	**48**	**100.0**

4.5.3 Education

Table 39 presents education status in surveyed orphanage centres .About 93% of the children had school uniforms. Of these, 9.8% had three pairs of school uniforms. Furthermore, about 53% of the children had adequate text books and exercises in the

orphanage centres. Also, about 37% of the children were enrolled in STD 1-4 and only 2.1% of them were not enrolled in schools although they had attained a school going age.

Table 39: Education status in orphanage centres

Variable	Responses	n	%
Having school uniforms	Yes	357	92.5
	No	29	7.5
	Total	**386**	**100.0**
Having enough text books and exercises	Yes	203	52.6
	No	183	47.4
	Total	**386**	**100.0**
Number of pairs of school uniforms	One pair	192	49.7
	Two pairs	128	33.2
	>Three pairs	38	9.8
	No uniform	28	7.3
	Total	**386**	**100.0**
School enrolments	Kindergarten	6	1.6
	STD 1-4	140	36.5
	STD 5-7	120	31.1
	Form 1-2	72	18.7
	Form 3-4	38	9.8
	Form 5-6	2	0.3
	Not enrolled	8	2.1
	Total	**386**	**100.0**

Most of the children living in surveyed orphanage centres owned by government, Non-Governmental Organizations and Faith Based Organizations have school uniforms (Table 40). However, orphanage centres owned by Faith Based Organization performed better (94.7%) in this aspect compared to government (81.6%) and Non-Government Organizations (92.1%) owned orphanage centres. Text books and exercises books was a big problem in orphanage centres owned by government , because only 18.4% of children reported have enough text books and exercises books. Most of children in surveyed

orphanage centres owned by government, Non-Governmental Organization and Faith Based Organizations reported to own only one pairs of school uniform.

Table 40: Education status in orphanage centres by ownership of the centre

Variable	Responses	Type of ownership of the centre					
		Government owned		Non-Governmental Organization		Faith Based Organization	
		n	%	n	%	n	%
Having school uniforms	Yes	31	81.6	129	92.1	197	94.7
	No	7	18.4	11	7.9	11	5.3
	Total	**38**	**100.0**	**140**	**100.0**	**208**	**100.0**
Having enough text books and exercises	Yes	7	18.4	68	48.6	128	61.5
	No	31	81.6	72	51.4	80	38.5
	Total	**38**	**100.0**	**140**	**100.0**	**208**	**100.0**
Number of pairs of school uniforms	One pair	16	51.6	71	55.0	105	53.3
	Two pairs	15	48.4	33	25.6	80	40.6
	>Three pairs	0	0.0	25	19.4	12	6.1
	Total	**31**	**100.0**	**129**	**100.0**	**197**	**100.0**
School enrolments	Kindergarten	0	0.0	0	0.0	6	2.9
	STD 1-4	20	52.6	59	42.1	62	29.8
	STD 5-7	4	10.5	47	33.6	69	33.2
	Form 1-2	6	15.8	24	17.1	42	20.2
	Form 3-4	5	13.2	4	2.9	29	13.9
	Form 5-6	0	0.0	1	0.7	0	0.0
	Not enrolled	3	7.9	5	3.6	0	0.0
	Total	**38**	**100.0**	**140**	**100.0**	**208**	**100.0**

Table 41 presents education status in orphanage centres by regions. Most of the children living in surveyed orphanage centres from Morogoro (93.8%) and Dar es Salaam (92%) regions indicated to have school uniforms. The issues of text books and exercises books were noted as a problem for the children living in surveyed orphanage centres from Dar es

Salaam region (47.8%) compared to Morogoro region (64.3%). Furthermore, most of the children living in orphanage centre from Dar es Salaam (61.9%) and Morogoro (50.4% reported to own only one pair of school uniform. More children living in surveyed orphanage centres from Dar es Salaam region (3%) were not enrolled in schools at all compared to Morogoro region (1%).

Table 41: Education status in orphanage centres by region

Variable	Responses	Regions			
		Dar es Salaam		Morogoro	
		n	%	n	%
Having school uniforms	Yes	252	92.0	105	93.8
	No	22	8.0	7	6.2
	Total	**274**	**100.0**	**112**	**100.0**
Having enough text books and exercises	Yes	131	47.8	72	64.3
	No	143	52.2	40	35.7
	Total	**274**	**100.0**	**112**	**100.0**
Number of pairs of school uniforms	One pair	127	50.4	65	61.9
	Two pairs	95	37.7	33	31.4
	>Three pairs	30	11.9	7	6.7
	Total	**252**	**100.0**	**105**	**100.0**
School enrolments	Kindergarten	1	0.4	5	4.5
	STD 1-4	98	35.8	43	38.4
	STD 5-7	72	26.3	48	42.9
	Form 1-2	62	22.6	10	8.9
	Form 3-4	34	12.4	4	3.6
	Form 5-6	0	0.0	1	0.9
	Not enrolled	7	2.6	1	0.9
	Total	**274**	**100.0**	**112**	**100.0**

4.5.4 Psychosocial support

Most of the children (90%) seemed to like living in the orphanage centres (Table 42). Nevertheless, about 12% of them wished to vacate the centres. The major reason for wishing to vacate was to join their families. With regard to sports, about 87% of the

children had play ground in orphanage centres and 87.8% was engaged in various sports activities. About 91% of the children had opportunities to worship according to their faiths.

Table 42: Psychosocial support in orphanage centres

Variable	Responses	n	%
Liking to live in orphanage centre	Yes	347	90.0
	No	39	10.0
	Total	**386**	**100.0**
Having play ground	Yes	334	86.5
	No	52	13.5
	Total	**386**	**100.0**
Having play activities	Yes	339	87.8
	No	47	12.2
	Total	**386**	**100.0**
Having playing facilities	Yes	231	59.8
	No	155	40.2
	Total	**386**	**100.0**
Worshiping according to his/her faith	Yes	352	91.2
	No	34	8.8
	Total	**386**	**100.0**
Reasons to want to move the orphanage centre	Care providers are not good	15	3.9
	Tired to live in the centre	34	8.8
	Other reasons (go for self-reliance ,want to join the family)	45	11.7
	Not want to move	292	75.6
	Total	**386**	**100.0**

Table 43 presents data on psychosocial support in orphanage centres by type of ownership of the centre. About 94% of children in surveyed orphanage centres owned by Faith Based Organizations indicated to like living in orphanage centres compared to 73.7% and 90% of children from orphanage centres owned by government and Non-Governmental Organizations respectively. Play grounds noted as a problem in orphanage centres owned

by Non-Governmental Organizations because about 77% of children indicated to have play grounds compared to 100% and 90.4% of children indicated to have play grounds from orphanage centres owned by government and Faith Based organization respectively. Government owned orphanage centres performed better with regards to play activities and playing facilities by indicating 100% and 94.7% of children respectively reported to have play and playing facilities. Furthermore, the issues of worshiping according to his/her faith noted as problem in orphanage centres owned by Non-Government organizations (11%) and Faith Based Organizations (9%) indicated not to worship according to their faith.

Table 43: Psychosocial support in orphanage centres by type of ownership of the centre

Variable	Responses	Type of ownership of the centre					
		Government owned		Non-Governmental Organization		Faith Based Organization	
		n	%	n	%	n	%
Liking to live in orphanage centre	Yes	28	73.7	126	90.0	195	93.8
	No	10	26.3	14	10.0	13	6.2
	Total	**38**	**100.0**	**140**	**100.0**	**208**	**100.0**
Having play ground	Yes	38	100.0	108	77.1	188	90.4
	No	0	0.0	32	22.9	20	9.6
	Total	**38**	**100.0**	**140**	**100.0**	**208**	**100.0**
Having play activities	Yes	38	100.0	110	78.6	191	91.8
	No	0	0.0	30	21.4	17	8.2
	Total	**38**	**100.0**	**140**	**100.0**	**208**	**100.0**
Having playing facilities	Yes	36	94.7	87	62.1	108	51.9
	No	2	5.3	53	37.9	100	48.1
	Total	**38**	**100.0**	**140**	**100.0**	**208**	**100.0**
Worshiping according to his/her faith	Yes	38	100.0	125	89.3	189	90.9
	No	0	0.0	15	10.7	19	9.1
	Total	**38**	**100.0**	**140**	**100.0**	**208**	**100.0**
Reasons to want to move the orphanage centre	Care providers are not good	3	7.9	11	7.9	1	0.5
	Tired to live in the centre	18	47.4	8	5.7	8	3.8
	Other reasons (go for self-reliance, want to join the family)	5	13.2	15	10.7	25	12.0
	Not want to move	12	31.6	106	75.7	174	83.7
	Total	**38**	**100.0**	**140**	**100.0**	**208**	**100.0**

More children from Morogoro region surveyed orphanage centres showed interest to live in orphanage centre (98.2%) compared to children from Dar es Salaam region (87.2%) (Table 44). No big difference noted with regards to children indicated having playground, play activities and playing facilities between Morogoro and Dar es Salaam regions. Furthermore, most of the children from surveyed orphanage centre in Morogoro (96.4%) and Dar es Salaam regions (89.1%) indicated to worship according to their faith (Table 44).

Table 44: Psychosocial support in orphanage centres by regions

Variable	Responses	Regions			
		Dar es Salaam		Morogoro	
		n	%	n	%
Liking to live in orphanage centre	Yes	239	87.2	110	98.2
	No	35	12.8	2	1.8
	Total	**274**	**100.0**	**112**	**100.0**
Having play ground	Yes	243	88.7	91	81.2
	No	31	11.3	21	18.8
	Total	**274**	**100.0**	**112**	**100.0**
Having play activities	Yes	243	88.7	96	85.7
	No	31	11.3	16	14.3
	Total	**274**	**100.0**	**112**	**100.0**
Having playing facilities	Yes	244	89.1	108	96.4
	No	30	10.9	4	3.6
	Total	**274**	**100.0**	**112**	**100.0**
Worshiping according to his/her faith	Yes	244	89.1	108	96.4
	No	30	10.9	4	3.6
	Total	**274**	**100.0**	**112**	**100.0**
Reasons to want to move the orphanage centre	Care providers are not good	15	5.5	0	0.0
	Tired to live in the centre	32	11.7	2	1.8
	Other reasons (go for self-reliance ,want to join the family)	42	15.3	3	2.7
	Not want to move	185	67.5	107	95.5
	Total	**274**	**100.0**	**112**	**100.0**

4.5.5 Protection and security

About 5% of the children in the orphanage centres felt unsafe living in the orphanage centres. Furthermore, 18.7% of the children had been abused in the orphanage centres. Most of the abused children (81%) had not reported the cases to their superiors and 4% of them did not report the cases because care providers were involved in the abuses .The results also indicated that about 10% of the children were abused through atrocity /abusive language (Table 45).

Table 45: Protection and security in orphanage centres

Variable	Responses	n	%
Feeling safe living in centre	Yes	366	94.8
	No	20	5.2
	Total	**386**	**100.0**
Abused in orphanage centre	Yes	72	18.7
	No	314	81.3
	Total	**386**	**100.0**
Reported abuse cases	Yes	46	11.9
	No	340	88.1
	Total	**386**	**100.0**
Sharing room with	Care providers	7	1.8
	Same sex friend	373	96.6
	Different friend sex	4	1.0
	Not sharing	2	0.3
	Other s	2	0.3
	Total	**386**	**100.0**
Why not reported the abuse cases	I was afraid to report	7	1.8
	Care provider abused me	14	3.6
	My friend abused me	2	0.5
	Others	4	1.0
	Not abused	359	93.0
	Total	**386**	**100.0**
Types of abused reported	Sexually/rape	3	0.8
	Atrocity /abusive language	38	9.8
	Beaten	31	8.0
	Not abused	314	81.4
	Total	**386**	**100.0**

Table 46 presents data on protection and security in orphanage centres by type of ownership of the centre. About 11% of children in surveyed orphanage centres from Non-Governmental Organizations owned orphanage centre felt unsafe living in centre compared to only 1.9% and 2.6 % of children from Faith Based Organizations and government owned orphanage centres respectively. Furthermore, about 37% of children in surveyed orphanage centres from government owned orphanage centres had been abused compared to 18.6% and 15.4% of children from Non-Governmental Organizations and Faith Based Organizations in that order . Also it was indicated that more children from Non-Governmental Organizations owned orphanage centres (42.3%) did not reported abuse cases and abused through atrocity/abusive language (69.2%) compared to orphanage centres owned by government and Faith Based Organizations.

Table 46: Protection and security in orphanage centres by type of ownership of the centre

Variable	Responses	Type of ownership of the centre					
		Government owned		Non-Governmental Organization		Faith Based Organization	
		n	%	n	%	n	%
Feeling safe living in centre	Yes	37	97.4	125	89.3	204	98.1
	No	1	2.6	15	10.7	4	1.9
	Total	**38**	**100.0**	**140**	**100.0**	**208**	**100.0**
Abused in orphanage centre	Yes	14	36.8	26	18.6	32	15.4
	No	24	63.2	114	81.4	176	84.6
	Total	**38**	**100.0**	**140**	**100.0**	**208**	**100.0**
Reported abuse cases	Yes	10	71.4	15	57.7	21	65.6
	No	4	28.6	11	42.3	11	34.4
	Total	**14**	**100.0**	**26**	**100.0**	**32**	**100.0**
Sharing room with	Care providers	0	0.0	6	4.3	1	0.5
	Same sex friend	37	97.4	129	92.1	207	99.5
	Different friend sex	0	0.0	4	2.9	0	0.0
	Not sharing	1	2.6	0	0.0	0	0.0
	Other s	0	0.0	1	0.7	0	0.0
	Total	**38**	**100**	**140**	**100.0**	**208**	**100.0**
Why not reported the abuse cases	I was afraid to report	3	7.9	2	1.4	2	1.0
	Care provider abused me	0	0.0	11	7.9	3	1.4
	My friend abused me	0	0.0	0	0.0	2	1.0
	Others	1	2.6	0	0.0	3	1.4
	Not abused	34	89.5	127	90.7	198	95.2
	Total	**38**	**100.0**	**140**	**100.0**	**208**	**100.0**
Types of abused reported	Sexually/rape	1	7.1	0	0.0	3	9.4
	Atrocity /abusive language	4	28.6	18	69.2	16	50.0
	Beaten	9	64.3	9	34.6	13	40.6
	Total	**14**	**100.0**	**26**	**100.0**	**32**	**100.0**

With regards to protection and security in orphanage centres by regions indicated 7.3% of children in surveyed orphanage from Dar es Salaam region felt unsafe living in centres (Table 47). Also abuse cases were dominant in orphanage centres located in Dar es Salaam region (23%) compared to Morogoro region (8%). However no significant different noted for the children reported abuse cases in surveyed orphanage centres between Dar es Salaam region (63.5%) and Morogoro region (66.7%). Furthermore, about 51% of children in surveyed orphanage from Dar es Salaam region abused through atrocity /abusive language and 55.6% of children from Morogoro region were brutal beaten.

Table 47: Protection and security in orphanage centres by regions

Variable	Responses	Regions			
		Dar es Salaam		Morogoro	
		n	%	n	%
Feeling safe living in centre	Yes	254	92.7	112	100.0
	No	20	7.3	0	0.0
	Total	**274**	**100.0**	**112**	**100.0**
Abused in orphanage centre	Yes	63	23.0	9	8.0
	No	211	77.0	103	92.0
	Total	**274**	**100.0**	**112**	**100.0**
Reported abuse cases	Yes	40	63.5	6	66.7
	No	23	36.5	3	33.3
	Total	**63**	**100.0**	**9**	**100.0**
Sharing room with	Care providers	6	2.2	1	0.9
	Same sex friend	262	95.6	111	99.1
	Different friend sex	4	1.5	0	0.0
	Not sharing	1	0.4	0	0.0
	Other s	1	0.4	0	0.0
	Total	**274**	**100.0**	**112**	**100.0**
Why not reported the abuse cases	I was afraid to report	7	2.6	0	0.0
	Care provider abused me	13	4.7	1	0.9
	My friend abused me	1	0.4	1	0.0
	Others	3	1.1	1	0.9
	Not abused	250	91.2	109	97.3
	Total	**274**	**100.0**	**112**	**100.0**
Types of abused reported	Sexually/rape	1	1.6	2	22.2
	Atrocity /abusive language	37	50.8	2	22.2
	Beaten	25	39.7	5	55.6
	Total	**63**	**100.0**	**9**	**100.0**

CHAPTER FIVE

5.0 DISCUSSION

5.1 Nutritional Status of Children Living in Orphanage Centres

Adequate nutrition is one of the essential determinants of mother and child health. The right to adequate food is one of the fundamental human rights enshrined in many international documents. The growth status is considered to be the best indicator of child wellbeing. It is conditioned by the socio-economic level and by the good health of the population, being a prerequisite for the sustainable development of the society (Rusescu, 2005).In view of this; the current study assessed the nutritional status of the children living in orphanage centres.

The nutritional status of children in the surveyed orphanage centres indicated that there were problems of care practices in orphanage centres especially on issues of food and nutrition, health and sanitation, and psychosocial support. This also reflects the nature of children themselves that are orphans, who arrive at the orphanage centres with nutritional deficiencies. Therefore, proper nutrition rehabilitation is necessary in order to improve the nutritional status of the children living in the centres. The observation that more female children aged 5-9 years were more severely and moderately malnourished than the male children of the same age group suggests that in orphanage centres probably the male children were cared better compared to female children.

Similar findings were revealed by the Tanzania National Bureau of Statistics (2010), although the surveyed age range was different.

Height for age or stunting reflects past or chronic malnutrition (Chiabi *et al.,* 2008). In this study 20.1% of the children were moderately malnourished and some few cases of severe malnutrition were noted (3.7%). The age group of children mostly affected was 10-14 years age group which accounted for 25.4%.Therefore, stunting was one of the main problem facing children in the surveyed orphanage centres. As pointed earlier height for age Z score reflects past or chronic malnutrition. Therefore, children living in orphanage centres are vulnerable and the care practices in most of the orphanage centres in general were ineffective. Stunting was expected for these children. Male children living in the surveyed orphanage centres were more stunted than female children.This was similar to the observations by Tanzania National Bureau of Statistics (2010).

In addition, some children in the surveyed orphanage centres were overweight (7.9%) and some cases of thinness (4.7%) and obesity (0.8%) were also noted. There is enough evidence that excessive sugar intake through consumption of soft drinks, increased portion size, and steady decline in physical activity has a major role in the rising rates of overweight and obesity around the world (Dehghan *et al*., 2005). In some orphanage centres adequate foods and sufficient care needed for children were provided. This could be the reason for having some cases of overweight and obesity. Furthermore, more male children were thin than female children. This is probably because female children prefer to consume excessive sugar intake through consumption of soft drink and other junk foods which were available in surveyed orphanage centres.

Salih and Aziz (2007) conducted a study in Sudanese secondary school children of Khartoum State where the cases of overweight were noted and more girls were overweight than boys.

5.1.1 Biochemical assessment

The biochemical assessment which was carried out during this study was intended to examine haemoglobin and Urinary Iodine Concentrations for children living in orphanage centres.

5.1.1.1 Haemoglobin (Hb) concentration (in gram per litre) in children living in orphanage centres

The overall haemoglobin (HB) concentration in children living in the orphanage centres indicated that half of children in the surveyed orphanage centres were anaemic. Anaemic children were high in government owned orphanage centres compared to Non-Governmental Organizations and Faith Based Organizations owned orphanage centres. Furthermore, anaemia was higher for the children in surveyed orphanage centres from Dar es Salaam region compared to children from Morogoro region.

The consumption of iron rich foods like fruits, vegetables and meat in most of the orphanage centres surveyed was limited. The common foods mostly consumed in the orphanage centres were starch foods and beans. In addition, malaria was the leading disease in the orphanage centres which most of the children suffered from. Malaria parasites have a tendency to destroy red blood cells hence can cause anaemia to children. Malaria is likely to be a major factor for the chronic anaemia in endemic areas (Carneirro *et al*., 2006). In addition, the use of mosquito nets was limited and more female children were anaemic than male children. This situation could be attributed to the fact that females have blood losses during menstruation which could probably be the cause of anaemia. The other major factor is consumptions of diet poor in iron. Diets in orphanage centres surveyed were severely lacking significant proportion of vegetables, fruits as well as animal products .This could explain for the high prevalence of anaemia. The observation is

similar to that of Mazigo *et al.* (2010), who observed high anaemia prevalence among school children in Western Tanzania.

5.1.1.2 Urinary iodine concentration level for children living in orphanage centres.

The urinary iodine concentration in the surveyed orphanage centres implied that iodine intake was in excess. The urinary iodine concentration ≥300 μg/L implies excessive intake of iodine (WHO *et al.,* 2007). Excessive iodine intake can lead to health consequences (iodine induced hyperthyroidism-IIH, autoimmune thyroid diseases). Moreover; the tested sample of the salts in the orphanage centres indicated that most of the orphanages were using iodated salts. WHO has recommended salt iodine levels of 20-40 parts per million (ppm) (milligram/kilogram) as adequate as the daily requirement of 150-200 μg iodine per person for adults. For this study average iodine level concentration for salts used in surveyed orphanage centres was 37.6ppm.

Although the general results showed that children in the orphanage centres had excessive intake of Iodine, some cases of severe iodine deficiency and moderate iodine deficiency were observed. This was because children in the orphanage centres came from different areas of Tanzania and the severity of iodine deficient differs with region. Non-Governmental Organizations owned orphanage centres and surveyed orphanage centres located in Morogoro region were the leading by having children with severe and moderate iodine deficiency. Furthermore, excessive iodine concentration in urinary were higher in Faith Based Organizations and surveyed orphanage centres located in Dar es Salaam compared to government, Non-Governmental organization owned orphanage centres and orphanage centres located in Morogoro region.

UNICEF (2007) and Assey (2009) made similar observations that there was excessive iodine intake among school children in Tanzania and in the Eastern and Southern Africa regions. Excessive iodine intake in Tanzania could be due to improved salt packaging, especially for the people living close to salt factories and ports of entry, which receive iodated salt and where minimal losses occur before consumption. Inadequate quality control is another reason for over-iodations of salt and possibly also high intake of salted marine foods (using iodated salt), for instance in Coast and Dar es Salaam regions along the Indian Ocean. The most common fish preservative used in these regions is salt, which in most cases is iodated, hence possibly adding up the amount of iodine consumed.

5.2 Food Consumption Patterns of Children Living in Orphanage Centres

Minimum Standards of the Ministry of Health and Social Welfare in Tanzania require that children living in orphanages receive sufficient, nutritious food appropriate to their age and developmental needs. All children's home should have regular adequate and balanced food supply as per the schedule provided by regulations. Feeding intervals should consider the age, needs and conditions of the children. The food must be well prepared observing hygiene measures (MOHSW TZ, 2006).

5.2.1 Feeding frequency in orphanage centres per day

Feeding frequency in orphanage centres correlated positively with nutritional status of children. With exceptions of some few cases, children in orphanage reported that they ate two, four and five times per day. The differences in the number of meals could be attributed to type of ownership of the orphanage centres: either government, Faith based or Nongovernmental organizations type of ownership. The type of ownership of the centre had effects on the availability of resources, hence affecting care practices of the centres. Nongovernmental organizations type of ownership was leading by the percentages of

children indicated to eat twice per day. Furthermore, more children from surveyed orphanage centres located in Morogoro region, indicated to eat thrice per day compared to children from surveyed orphanage centres located in Dar es Salaam region. Most of the supervisors in the orphanage centres stated that they had meal timetables, although the timetables were not adhered to, due to variations of food availability in the centres. Some orphanage centres indicated clearly that they did not have fixed time tables and that the meal depended on availability of resources. Zimmerman (2005) in Malawi also made similar observations.

5.2.2 Various foods eaten in the orphanage centres

The right to adequate nutrition and water is guaranteed in the international human rights standards, in particular the International Covenant on Economic, Social and Cultural Rights (ICESCR) in which States Parties recognize "the fundamental right of everyone to be free from hunger.

In the surveyed orphanage centres, cereals and cereal products were consumed more frequently. Moreover, stiff porridge was a cereal product with high frequency of consumptions per week in most of the orphanage centres compared to other cereals and cereal products. The problems of mono cereal foods consumption were noted in some orphanage centres. Children in those orphanage centres were complaining that they were tired of taking stiff porridge daily .The fact that children ate cereals only has reflected itself on the nutritional status of the children, as that half of them were anaemic due to fact that stiff porridge is not a good source of iron compared to meat and meat products, fruits and vegetables. Furthermore, some cases of moderate, mild and severe malnutrition were noted. Zimmerman (2005) reported that the consumption of cereals and cereal products

were very common in the Malawi orphanage centres and anaemia was common among children living in those orphanage centres.

Roots, tubers and banana were also consumed by children in some orphanage centres but other centres were not providing them. In some orphanage centres owned by the Muslims, the children reported that such crops were eaten during fasting months in the Holy Ramadhan month. A Study by Ryan et al (2009) and Zimmerman (2005) observed a similar pattern.

The consumption of beans was common in most of the surveyed orphanage centres and children from those orphanage centres felt that there was a need to have additional food stuffs. The reason behind the frequent consumption of beans was that the crop was readily available and cheaper in price compared to other types of pulses, seeds and nuts.

Although meat was also being consumed in some orphanage centres, its frequency of consumption was low. Also, milk and milk products were not commonly consumed in the surveyed orphanage centres. The reason behind this situation is that such foods were expensive and not easily accessible.

The consumption of fruits and vegetables in the orphanage centres was limited and was manifested by having majority of children being anaemic because fruits and vegetables are good sources of minerals and vitamins. Nevertheless Ryan *et al.* (2009) in a study carried out in Ghana observed high frequency of consumption of fruits hence low prevalence of anaemia in the orphanage centres surveyed. There is a need of increasing consumption of fruits and vegetables in surveyed orphanage centres.

Generally, differences in food consumption were noted in the surveyed orphanage centres. Some orphanage centres consumed mixed diets while others did not.

5.3 Nutrition Knowledge, Attitude and Practice of Caregivers in Orphanage Centres

5.3.1 Nutrition knowledge of care providers

Nutrition education is important to the care providers in orphanage centres. However, in the surveyed orphanage centres, care providers had no training in nutrition matters and the highest education level for the majority was standard seven.

Although most of the care providers had no adequate nutrition education, they managed to provide the right responses for the following nutrition issues: the best food for the first six months of life, the causes of malnutrition to children, reasons for children needing more protein than adult people, the importance of vitamin A for children, the importance of washing hands before preparing foods and the sources of iodine for baby/children if not getting breast milk.

The knowledge of care providers about nutrition care in the surveyed orphanage centres was modest, and the knowledge of majorities of care providers was not acquired through nutrition training. The orphanage centres owned by Non-Governmental Organizations were leading by having majority of its care providers who indicated to have participated in nutrition training, compared to care providers from government and Faith Based Organizations owned orphanage centres.

The care providers reported to have acquired knowledge through radio, television, health centres, brochures, booklets, Tanzania Food and nutrition centre, relatives and colleagues. These was observed by some of the care providers who managed to provide the right

answers to some question asked to them in testing their nutrition knowledge. Such that, some care providers managed to mention that vitamin A protects children against diseases and others managed to mention that diseases and inadequate maternal and child care practices were among the causes of malnutrition in children. Furthermore, some care providers managed to indicate that inadequate dietary intake was among a cause of malnutrition. With regards to this area, Faith Based Organization owned orphanage centres performed better compared to government and Non-Governmental Organization owned orphanage centres.

5.3.2 Nutrition practice of care providers

Care providers showed problems in the following practices: how to measure and prepare the replacement feeding for babies/children, the mixing ratio of cow's milk to water given to baby, mixing the infant formula to be given to baby, most of care providers indicated that feeding bottle is the best option for giving a baby infant formula. This was reflected in the nutrition care of the care providers and nutritional status of children in the surveyed orphanage centres that was not very promising .As pointed out earlier most of the care providers in surveyed orphanage centres did not attend any nutrition training and the highest education was standard seven, this contributed to modest nutrition practice of care providers. Nutrition practices of care providers in surveyed orphanage centres were varied with respects to the type of ownership of orphanage centres. It was indicated that the nutrition practice of care providers from government owned orphanage centres were better, followed by Non-Governmental Organization owned orphanage centres and at last was Faith Based Organization owned orphanage centres. This situation might be had contributed to the different employment system followed by these organizations to get care providers. Government owned orphanage centres use more formal system compared to Faith Based Organization and Non-Governmental Organization owned orphanage centres.

5.3.3 Nutrition attitude of care providers

Most of the care providers in the surveyed orphanage centres indicated feeding bottles as the best option for feeding a baby infant formula/animal's milk. However, this is contrary to WHO and UNICEF recommendations. Bottle-feeding can lead to illness and death, if a woman cannot breastfeed her infant, the baby should be breast fed or given a breast milk substitute from an ordinary clean cup (UNICEF, 2005). Nevertheless, most of the care providers showed positive attitude with regards to mother's milk being the best food for baby for the first six months of life.

Overall, the attitude of most of the care providers about nutrition care was promising. This could be attributed to the selected accurate information, about nutrition attitude from radio and TV. Also most of the care providers were old enough with lots of experiences on child care in the orphanage centres and the majority of them were women who had experience on caring their babies.

5.4 Quality of Child Care Provided in the Orphanage Centres

Standards of care are approved criteria for measuring and monitoring the management, provision and quality of child care services and their outcomes. Such standards are required for all child care provision, including day care, kinship, foster and institutional care (Hunter and Parry, 2005).

5.4.1 Food and nutrition

Most of the children living in the orphanage centres responded that each child had its own eating utensils. However, sharing of utensils was noted in some orphanage centres such that, Darul Muslimeen and Rehabilitation Centre in Morogoro, Kurasini Children National Home and Mwana Orphanage Centre in Dar es Salaam. The sharing of eating utensil in

those orphanage centres caused a lot of inconveniences to children. Children were supposed to eat in turns. This resulted in delaying children to go to school. Furthermore, children had to eat in a hurry so that their colleagues could use the same utensils. This challenge was mainly observed in Government Owned orphanage centres and surveyed orphanage centres located in Dar es Salaam region, where utensils in dining rooms were not enough.

Food shortages were also common occurrences in the orphanage centres. Sometimes, centres lacked money to purchase foods and donors did not contribute foods. Food shortage had a negative impact on nutritional status of children in the surveyed orphanage centres. The cases of malnutrition were common in most of the orphanage centres experienced food shortage. Food shortage was more common in surveyed orphanage centres owned by Non-Governmental Organizations and located in Dar es Salaam region.

Furthermore, the majority of the children indicated that care providers were deciding about the amount of food to be eaten. This was particularly typical in orphanage centres in the Non-Governmental Organization type of ownerships and located in Dar es Salaam region for example Mwana orphanage centre located in Ilala district.

5.4.2 Health and sanitation

All children, especially orphans and vulnerable children, require support for survival, such as food and health care. Orphans and vulnerable children are exposed to health risks from many factors. They face deprivation and poor access to the basic services that promote and maintain health (Nigeria Ministry of Women Affairs and Social Development, 2007).

Furthermore, the standards and guidelines emphasize that, each child should have a bed, mattress, four bed sheets, a pillow, sufficient and appropriate clothes, toiletries, mosquito net, school materials, shoes, slippers, an eating set, and access to toys and reading materials (Liberia MOHSW, 2006).

Health care professionals disagree about bed-sharing techniques, effectiveness and ethics (Mace, 2006). However in the surveyed orphanage centres, most of the children were sharing beds hence sleeping below international and national standard guidelines. Bed sharing is unhealthy, can cause skin infections, contaminations within children and can make children feel uncomfortable and stressed. Besides bed sharing, some children reported sleeping on the floor because of inadequate beds and resources constraint. Most of the children in the orphanage centre owned by Faith Based Organizations and from Morogoro region were sleeping alone in bed. However, bed sharing was common to children living in orphanage centres owned by government, Non-Governmental Organizations and from Dar es Salaam region. Study by Family Health International (2010) in Ethiopia, found similar results.

Also it was indicated that 26.2% of all children living in orphanage centres had no bed nets. Thus caused 19% of children to suffer from malaria and half of them were anaemic because of frequent attack by malaria. The problem of bed net was noted in orphanage centres owned by Non-Governmental Orphanage centres and from Dar es Salaam region. Similar results were observed by United Nations Mission (2007) in the Liberia orphanage centres study.

Water problem in some of the surveyed orphanage centres such that, Mwana orphanage centre in Dar es Salaam and Mission to Homeless Children in Morogoro contributed to

poor health and sanitation of some of the children .Children reported to wash their body once, and toilet and surrounding environment were not cleaned regularly. Children were taking bath only when water was available. The results obtained in this study are similar to those of Zimmerman (2005) in Malawi orphanage centres.

Shoes are important for children protection as they help to avoid infections and other contaminations. However, some children in the surveyed orphanage centres had no shoes while others had only one pair of shoes. The children without shoes complained that they did not feel comfortable .The nature of the centre resources were the major factor that determined whether a child had shoes or not. Children lacking shoes were more common in orphanage centres owned by government than orphanage centres owned by Faith Based Organizations and Non-Governmental Organizations.

Closely related to sanitation is illness, and illness is intimately intertwined with malnutrition. Illness and malnutrition together form a dangerous cycle that ultimately leads to death for many children in developing countries, as poorly nourished children are much more susceptible to disease (UNICEF, 2002). Half of children in the orphanage centres were sick one month prior to this study. This implies that children were weak and probably had poor immune status .Also treatment during sickness was not provided timely in the surveyed orphanage centres and the reasons given were lack of money to purchase medicine, nobody was ready to send a child to a health centre or hospital when the sickness was not very serious so they desired to stay at the centre. The provision of treatment during sickness was a big problem in government owned orphanage centres compared to Faith and Non-Governmental Organizations. The study conducted by United Nations in Liberia orphanage centres in (2007), and in Ghana Orphanages by Ribeira *et al.* (2009) reported similar results that of this study.

Some of the centres had health facilities within the compound, but the majority of them depended on treatment out of the centres. Therefore centres with health facilities within the compound treated children easily than those who depended on health facilities situated outside the centres. These results are dissimilar to the results by Zimmerman (2005) in which children in Malawi orphanage centres got treatment without problems and most orphanage centres had health facilities within the compound. Orphanage centres are advised to have health facilities within the compound so as to easy the treatment process for sick children especially during night.

Nutritional needs change during illness. The diet may need also to change as well (Anonymous, 2011)**.** However, most of the fallen sick children in the surveyed orphanage centres were not given special diet during illness. These results reflect low knowledge of care providers about nutrition care during sickness and resources constraints of the surveyed orphanage centres. Providing special diet for children during sickness were noted as a big problem in orphanage centres owned by Faith Based Organization and from Morogoro region than orphanage centres owned by government, Non-Governmental Organizations and from Dar es Salaam region.

5.4.3 Education

The majority of school age children in the surveyed orphanage centres were enrolled in schools as part of care. Nevertheless, the quality of education provided was questionable. Some children had no school uniforms or had only one pair of school uniforms. Considering water problems in most of the surveyed orphanage centres, washing school uniforms frequently was difficult for most of the children with a single pair of school uniform. Some children had no school uniform due to lack of money. Government owned

orphanage centres were leading by having a big number of children without school uniforms.

Furthermore, in all the surveyed orphanage centres, no vocational education was being provided within or outside the orphanage centres. Most of the children were studying away from the orphanage centres.

Pupil textbooks are an integral part of the curriculum as they contain knowledge, explanation and exercises essential to the understanding of each subject. The availability, quality and effective use of textbooks is one of the most important factors affecting the quality of education. Textbooks support the curriculum by reinforcing and extending the work of the teacher. Thus good textbooks can lead to better teaching (Commonwealth Secretariat, 1993). However; most of the children enrolled in schools in the surveyed orphanage centres had inadequate text books and exercise books as there were no funds to buy the required textbooks. Text books and exercises books were a big problem in surveyed orphanage centres owned by government and located in Dar es Salaam region.

5.4.4 Psychosocial support

Psychosocial support involves all action that enables orphans and vulnerable children to live meaningful and positive lives. It is an ongoing process of meeting the physical, social, emotional, mental and spiritual needs of children, all of which are essential elements for meaningful and positive human development. The primary actors in children's psychosocial support are the children themselves, their families and communities, including their schools. Since psychosocial effects are both psychological and social, interventions must address the relationship between the individual and his/her social environment (Nigeria Ministry of Women Affairs and Social Development, 2007).

Most of the children in the surveyed orphanage centres showed the interest to live in the centres. This means that they were satisfied with care and treatment they were getting in the centres. However, few of them reported that they did not like where they were living because food was not good, care providers were not good, and they were just tired of living in the centre since they have lived at the centre for a long time, fellow friends don't like them and they want to go to start their own life. More children from surveyed orphanage centres owned by Faith Based Organizations and located in Morogoro region indicated to like living in orphanage centres compared to children from surveyed orphanage centres owned by government, Non-Governmental Organizations and located in Dar es Salaam region.

The issue of care providers mistreating children was also reported in some of the surveyed orphanage centres. Children were complaining that care providers were abusing them. Some of the children went further to state that they were thinking of going to live in another place other than the centres where they are living now. This implies that the care provided to children was probably not good and adequate. These issues of care providers mistreating children were more common in surveyed orphanage centres owned by government, Non-Governmental Organization and located in Dar es Salaam region.

Playing is important for optimize child development and it has been recognized by the United Nations High Commission for Human Rights as a right of every child (UNHCHR, 1989).

Playing allows children to use their creativity while developing their imagination, dexterity, and physical, cognitive, and emotional strength. Playing is important to healthy brain development. Most of the children in the orphanage centres had playing activities.

The main factors which appeared to deter playing activities in the orphanage centres were lack of playgrounds and equipment. The problem of playgrounds was typical to most of the orphanage centres because of the location of the centres. Most of the centres were located in the crowded areas, within the town centre; hence no space for constructing playing grounds. However play grounds noted as a big problem in orphanage centres owned by Non-Governmental Organizations than orphanage centres owned by government and Faith Based Organizations. This might be contributed by the bureaucracy in process of formalizing land ownership by Non-Governmental Organizations.

The United Nations Convention on the Rights of the Child (UNCR) provides that freedom of thought, conscience and religion of the child must be guaranteed. In compliance with this provision, the draft Minimum Standards prohibits the use of position, power or relationship to change the names of children and influence the children to change their personal, religious or cultural beliefs (UN, 2007).

Most of the children in the surveyed orphanage centres were allowed to worship according to their faith. No cases of forcing children to change their religious belief systems were noted. However, worshiping was noted as a problem in most orphanage centres owned by Faith Based Organization as for Non-Governmental Organization. In one of the orphanage centre owned by a Faith Based Organization the administrators stated that one of the conditions to live there was to be ready to fast during the Holy month of Ramadhan. The segregation of children according to religion was clearly noted. If the centre is owned by a Muslim Faith Based organization, then most of children were Muslims and vice versa, when the orphanage centre was owned by Christian Faith Based Organization. The study conducted in Liberia orphanage centres by United Nations Missions to Liberia (2007) noted the same kind of results as observed to this study.

5.4.5 Protection and security

Majority of children living in the orphanage centres shared room with other children of the same sex. However, few cases were reported where children of different sex shared rooms. Most of the orphanage centres had dormitories for children except few of them used self-contained rooms and village-type centres, this is the reason why the majority of children responded that sharing bed rooms. For the case of children who responded sharing rooms with other children of different sex, the sharing was with blood related children brothers or sisters. This happens when in some orphanage centres were possible to find more than two children who are blood related living together in one orphanage centre. Furthermore, some sleeping rooms of orphanage centres surveyed were very dirty, not conducive for children at all and children belonging were not properly arranged, overcrowding, lack of privacy, some children slept on the floor, mattresses were old and dirty and there were no linens or bed sheets.The children in those facilities seemed apprehensive and fearful. Also, some cases of sleeping rooms or dormitories missing doors were observed, making the place unsafe for children. When you compare the status of sleeping rooms in this study and the study conducted in Swaziland orphanage centres by UNICEF Swaziland (2007), the results differ a little bit .In Swaziland study most of the orphanage facilities studied were village-type centres built in a Swazi family style and most of the children were not sharing the beds.

Most of the children felt safe living in the orphanage centres surveyed. However, some of them were reported to be unsafe living in surveyed orphanage centres. Children who did not feel safe were due to some weakness on some issues regarding care practices. Those practices included lack of doors in sleeping rooms, some care providers were very harsh to children, care providers were not regularly visiting sleeping rooms, no guards for children and other issues related to care practice. Care providers are supposed to visit children

sleeping rooms regularly; however from this study some of the children in surveyed orphanage centres were complaining that care providers were not regularly visiting children in sleeping rooms. Regular visiting of Care providers in children sleeping rooms in orphanage centres is part of the control mechanism of maintaining safety in orphanage centres. Study carried out in Malawi by Zimmerman (2005) showed that children living in orphanage surveyed were safer than children in this study.

States Parties to the United Nations Convention on the Rights of the Child (UNCRC) must take legislative, administrative, social and educational measures to protect the child from "all forms of physical or mental violence, injury or abuse, neglect or negligent treatment, maltreatment or exploitation, including sexual abuse" (United Nations, 2007).

However, some cases of abuse were reported in the surveyed centres. Most of the children abused, reported the abuse cases to their superior, although some of them did not report the cases with the following reasons: care providers were the one abusing them, no reporting system existed within the centres and friends abused themselves and forgave themselves. Most of the children in the surveyed orphanage centres reported to have been abused through atrocity/abusive language. Other types of abuse reported were sexual abuses and beating/brutal beating. The results of this study are comparable to those by the United Nations Missions in Liberia (UNML) (2007), whereby abuse cases were reported in Liberia orphanage centres.

Generally the Protection and security in surveyed orphanage centres were more promising in orphanage centres owned by Faith Based Organizations than orphanage centres owned by government and Non-Governmental Organizations.

CHAPTER SIX

6.0 CONCLUSION AND RECCOMENDATIONS

6.1 Conclusion

Children living in the selected orphanage centres owned by government, Faith Based Organizations and Non-Governmental Organization, located in Dare es Salaam and Morogoro regions were living in poor conditions. However, the conditions were worse in orphanage centres owned by government, Non-Governmental Organizations and located in Dar es Salaam region. In some orphanage centres, there were indications that access to food was limited. In some the centres quality of care was sub-standard due to limited financial resources, lack of supervision, and minimal awareness of child development issues. The situation in the surveyed orphanages must be placed in the context of the prevailing economic situation in the country. However, economic conditions must not constitute an excuse for the failure to fulfil the basic rights of institutionalised children. When a child is admitted to an orphanage centre, the director of that institution has the immediate responsibility for the wellbeing of the child, and can and should be held accountable if the rights of the child are denied or abused.

Together with efforts to resolve the Situation by the Ministry of Health and Social Welfare by developing the National guideline for implementation of orphanage centres, the situation in the centres have not improved. Overall, there is minimal adherence to, or even knowledge of the minimum care standards outlined in the National Guideline of implementation of orphanages centres.

6.2 Recommendations

Providing a safe, loving and protective residential facility for children without parental care can be extremely complex. The reasons for out-of-home care, the forms it takes, the issues it raises, and the responsibilities it implies are all challenges faced by alternative care facilities. Based on the conclusions of this study, the following recommendations are made:

(i) The minimum standards of establishing care institutions should be made known by the responsible government officials, child care institutions, and local organizations involved in the alternative care. They should be translated into Kiswahili, in order to be understood well by all.

(ii) Child care institutions should be encouraged to improve their level of care, based on internationally and nationally recognized standards. Such changes could include incorporating small rooms or centres suitable for groups; promoting linkages and participation in local communities; ensuring that a child protection policy and accompanying mechanisms are in place; providing appropriate psychosocial support, education, Health, Food and Nutrition and developmentally appropriate care; and providing support and skills training to facilitate successful transition for children existing care.

(iii) All caregivers should be trained in the various aspects of Child Care and Protection, so that they do not see themselves as mere child attendants responsible for feeding children and cleaning the facilities but to provide and promote quality care to the children.

(iv) A network of exchange and experience sharing is recommended among facilities. This will allow staff and caregivers to learn all aspects of child care, including the right to privacy, supporting children to make informed decisions, listening to the voice of children, and treating children with dignity and respect.

(v) Using agreed upon indicators, regular evaluation of all facilities should be conducted by external and internal evaluators. This requirement should also be part of the quality standards of care that will be established by the Social Welfare Department.

(vi) A comprehensive Nutrition training package and guidelines for orphanages centres need to be developed.

(vii) Comprehensive research is required to study care practices in orphanage centres all over Tanzania to complement the finding of this study.

(viii) Finally, efforts to reunify children with their relatives, whenever possible and in the best interest of the child should be undertaken. This would not only benefit the children who are thereby returned to a family environment. It would also lead to the channelling of assistance to those children who cannot be reunified with their families and who are in actual need of support.

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APPENDICES

Appendix 1: Profile of the study Orphanage centres in Dar es Salaam region

Region	District	Name of orphanage centre	Ownerships	Number of children		Total
				Males	Females	
Dar es Salaam	Temeke	Kurasini Children National Home	Government	57	50	**107**
		Kwetu Mbagala Girls	Faith based (Salvation Army)	0	30	**30**
		Dar Al Arqam	Faith based (Muslim)	97	0	**97**
	Kinondoni	SOS Children Home	NGO	66	57	**123**
		Bertha said	Faith based (Roman Catholic)	0	-	**-**
		New life Orphanage Centre	NGO	67	34	**101**
	Ilala	Mwana Orphanage Centre	NGO	33	37	**67**
		KIWOHODE	NGO	1	18	**19**
		DarIbn Kathiri	Faith based (Muslim)	144	0	**144**
		Grand total		**465**	**226**	**691**

Source: Author Field survey (2011)

Appendix 2: Profile of the study Orphanage centres in Morogoro region

Region	District	Name of orphanage centre	Ownerships	Number of Children		Total
				Males	Females	
Morogoro	Morogoro Urban	AGAPE Children Village	Faith based (Assembles of God)	18	10	**28**
		Mission to the Homeless Children	NGO	37	20	**57**
		Darul Muslimeen and Rehabilitation Centre	Faith based (Muslim)	39	0	**39**
		Daru Rrahmah Orphanage Centre	Faith based (Muslim	83	0	**83**
Grand Total				**177**	**30**	**207**

Source: Author Field survey 2011

Appendix 3: Questionnaires

1.Structured questionnaire for orphans children

Age above five years children

INTRODUCTION
Questionnaire number----------

Date of the interview----------

Time interview started ----------

Time interview finalized ----------

Data collector's name and signature ----------

General information

Name of institution
(according to the license)----------
Date of establishment: DATE --- MONTH ----- YEAR--------

License number----------
Type of institution/owner
1. Governmental
2. Non-governmental
3. Faith based
77. Other (specify)

A: Background Information(1-5)

1	Name of Child	----------
2	Date of birth	1.dd----------mm----------yy------ 88. Don't know 99. No response
3	. Sex of child	1.Male 2.Female
4	Age of child (complete months)	1.---------- Months 88. Don't know 99. No response
5	Do you know why you're living here?	1.I don't have both parents 2. My mother passed away 3. I don't have any relatives 77.Others Specify 88. Don't know 99. No response

Food and Nutrition (6-14)

6	Do you have dining room?	1.Yes 2.No
7	If yes which things are available at dining room?	1.Dinning tables 2. Dinning seats 3. Plates 4. Shelves 5.Spoons 77.Others specify---------- 88. Don't know 99. No response
8	Does things available in dining room are enough?	1.Yes 2.No 88. Don't know 99. No response
9	How many times a day does you eat?	1.One times a day 2.Two times a day 3.Three times a day 4.Four times a day 5.Five times a day 77.Others specify---------- 88. Don't know 99. No response
10	At mealtime, can you eat as much as you want?	1.Yes 2.No
11	Who decides how much you can eat?	1.Myself 2.Care providers 3.Friends 77.Others specify----------
12	Do you eat the flowing meal?	1.Breakfast 2.Lunch 3.Dinner 77.Others specify----------
13	Do you enjoy your food?	1.Yes 2.No

14	In one week, how many times have you eaten the following food stuffs? **Put X when never consumed and √ when consumed**						
S/NO	**Food items**	**Never consumed**	**Frequency of consumption**				
			1	**2**	**3**	**4**	**5**
	Cereals and cereal products						
1	Rice,						
2	Bread						
3	Biscuits						
4	Porridge						
5	Chapatti, Andazi,						
6	Heavy porridge						
77	Others Specify						
	Roots, tubers, and bananas						
1	Potatoes,						
2	Cassava,						
3	Taro						
4	Banana						
5	Potato chips						
77	Others Specify						
	Pulses, seeds, nuts						
1	Pigeon pea						
2	Beans						
3	Groundnuts						
4	Cashew nuts						
5	Cow peas						
77	Others Specify						
	Meat, poultry, fish						
1	Meat						
2	Fish						
3	Eggs						
4	Poultry (Chicken)						
5	Sausages						
77	Others Specify						
	Milk and milk products						
1	Milk						
2	Ice cream,						
3	Infant formula,						
4	Yogurt						
5	Cheese						
77	Others Specify						
	Oils and fats						
1	Coconuts						
2	Korie						
77	Others Specify						
	Fruit and fruit juices						
1	Avocado						
2	Fruit jams,						

3	Juices						
4	Fruit salad						
5	Orange						
6	Papayas						
7	Ripen banana						
8	Pineapple						
77	Others Specify						
	Vegetables						
1	Carrots						
2	Tomatoes,						
3	Spinach						
4	Pumpkin leaves,						
5	Pumpkin						
6	Local spinach (mchicha)						
77	Others Specify						
	Miscellaneous						
1	Sugar						
2	Honey						
3	Tea,						
4	Coffee,						
77	Others Specify						

Part C: Health and Sanitation (15-43)

15	Do you have your own bed?	1.Yes 2.No
16	Do you have a mattress/blanket?	1.Yes 2.No
17	Who clean it?	1.My self 2.My friend 3.Care providers 77.Others Specify----------
18	How often mattress/blanket is cleaned?	1. Every week 2. Every month 77.Others specify---------- 88. Don't know 99. No response
19	Do you have mosquito nets?	1.Yes 2.No
20	Do you have the bathroom?	1.Yes 2.No
21	If yes how often the bathrooms and wash areas are cleaned?	1.Every day 2.Every week 3.Every month 77.Others Specify
22	How often do you bathe?	1.Once per day 2.Twice per day 3.Thrice per day 4. I don't bathe 77.Others Specify

23	Where do you get water?	1.We have taps here 2. We have water pump here 3. We have well here 4. We walk to fetch them 77.Others Specify
24	How many changes of clothes do you have per week?	1.1 -3Per week 2.4-6 per week 3. 7-8 per week 4. More than 8 per week 5.Don,t change 77.Others Specify----------
25	Who wash your clothes?	1.My self 2.Care providers 3. My friends 77.Others Specify----------
26	How often are washed?	1.1 -3Per week 2. 4-6 per week 3. 7-8 per week 4. More than 8 per week 77.Others Specify
27	Do you have shoes?	1.Yes 2.No
28	In the last month have you been suffered?	1.Yes 2.No
29	What did you have suffering?	1.Fever 2.Malaria 3.Headeche 4. Stomach 5.Diarhoea 6.Coughing 77.Others Specify----------
30	Did you notice you were sick or did someone else?	1.Myself 2.Somebody else
31	Did you go to a doctor?	1.Yes 2.No
32	Where did you go?	1. Doctor looked me here 2. I went to hospital 3. I went to health centre 4. I went to dispensary 77.Others Specify----------
34	Who went with you?	1.Care providers 2.My friends 3. Alone 77.Others Specify----------
35	Did you managed to get medicine?	1.Yes 2.No
36	Did you take all the medicine?	1.Yes 2.No
37	Who was responsible for being sure you took the medicine?	1.Care providers 2.My friends 3. No body 77.Others Specify----------

38	If you didn't go to a doctor, did you do anything else to get better?	1.Yes 2.No
39	Who took care of you while you were sick?	1.Care providers 2.My friends 3.Myself 77.Others Specify
40	Did you rest or stay home from school while you were sick?	1.Yes 2.No
41	Was that your idea or your caregiver's?	1.My idea 2.Care providers
42	Did you get special diet when you were sick?	1.Yes 2.No
43	If yes what were those special diets?	1.Milk 2. Rice 3.Bread 4.Fruits 5.Vegetables 6.Porrige 7.Fried eggs 8.Meat 9.Fish 77.Others Specify ----------

Education(44-51)

44	What standard or form are you in?	1.Nursery school 2. STD 1-4 3. STD 5-7 4. Form 1-2 5. Form 3-4 6. Form 5-6 7. Not in school 77.Others Specify ----------
45	Do you go to school regularly?	1.Yes 2.No
46	If no why?	1.I was sick 2. I didn't pay school fees 3. I was bored 77.Others Specify----------
47	When was the last time you missed school?	1.Last week 2. Last month 3. Last year 88. Can't remember
48	Who made the decision to have you miss school?	1.Myself 2.Care providers 3. My friends 4.My teachers 5.Doctors 77.Others Specify----------
49	Do you have school uniform?	1.Yes 2.No
50	If yes how many pairs of school uniform do you have?	1.One pair 2.Two pairs 3. More than three pairs 77.Others Specify----------

51	Do you have enough text books and exercise books for your school?	1.Yes 2.No
	Part E: Psychosocial support(52-66)	
52	Do you like where you are living?	1.Yes 2.No
53	Do you ever think about moving?	1.Yes 2.No
54	If yes where would you like to move?	1.Going to my relatives 2. Going to other Children's home 3. Going to street 4. I expect to marry/ be married 77.Others Specify----------
55	Why do you think moving	1.Care providers not good 2. I am bored living here 3. my colleagues don't like me 77.Others Specify----------
56	Do you like your care providers?	1.Yes 2.No
57	If yes why?	1. Polite 2. Love us 3. Listen us 4. Kind to us 77.Others Specify----------
58	If no why?	1.Harsh to us 2.Beat us 3Abuse us 4.Not polite to us 5. Don't give us foods 77.Others Specify----------
59	Do you have Seating room where you can rest and talk each other?	1.Yes 2.No
60	If yes which things are available in seating room?	1.Radio 2. TV 3. Seats/Sofa 4.Tables 77.Others Specify----------
61	Do you have playing ground here?	1.Yes 2.No
62	Do you have sports and recreation activities /programme here?	1.Yes 2.No
63	Do you have playing facilities here?	1.Yes 2.No
64	Do you have time to visit you relatives?	1.Yes 2.No
65	Other people and relatives come here to visit you?	1.Yes 2.No

66	Are you allowed to participate in religious activities /services according to your believes?	1.Yes 2.No

rotection and security(67-74)

67	Who lives with you?	1. Care providers 2. My friends of the same sex 3. My friend of different sex 4. No body 77.Others Specify----------
68	Do you feel safe in your home?	1.Yes 2.No
69	Your care providers come to visit your rooms regularly?	1.Yes 2.No
70	Your sleeping room have got doors and locks?	1.Yes 2.No
71	Have you ever experienced any form of physical abuse here?	1.Yes 2.No
72	If yes did you reported it?	1.Yes 2.No
73	If no why?	1.I was afraid 2. My care providers did it 3. My friend did it 77.Others Specify----------
74	What form of abuse was that?	1.Sexual harassment 2. Harsh / abusive language used 3. I was beaten 77.Others Specify

Part G: Assessments of nutritional status
I. Anthropometric Measurements (75-78)

75	Birth weight (Kg) **(**Check the child's growth card, any reliable document)	--------Kg
76	Weight of child (Kg)	----------Kg
77	Length /Height of child (cms) (Length for infants and children 0-24 months and Height for children 24 months and older)	----------cms
78	Mid Upper Arm Circumference of Child (MUAC) (cms)	----------cms

Part G: Assessments of nutritional status
II. Biochemical measurements (79-80)

79	Hb level in blood	---------- g/l
80	Iodine concentration level in urine	----------

2.Structured Questionnaire for care providers to assess Nutrition Knowledge , Attitude and Practice

INTRODUCTION

Questionnaire number----------

Date of the interview----------

Time interview started----------

Time interview finalized----------

Data collector's name and signature----------

General information

Name of institution (according to the license)--------

Date of establishment: DATE -- MONTH----- YEAR------

License number:----------

Type of institution/owner
1. Governmental
2. Non governmental
3. Faith based
77. Other (specify)

Address of institution/organization:
Region----------

District----------

P.O.BOX----------

TEL.NO.----------

E-mail:----------

Was the institution built for this purpose?
1. Yes

2. No

Section A: Background Information

1	Name of care providers	----------
2	Sex	1.Male 2.Female
3	Age	----------Years
4	Educational status	1. None 2.Adult education 3.Primary school 4.O' level Secondary school 5. A-level Secondary school 6.College 77.Others Specify----------

5	How many years have you been working as a care providers at orphanage centres?	1. 1-5 years 2. 6-10 Years 3.More than 10 Years
6.	How long have you been working at this orphanage home**?**	1. 1-5 years 2. 6-10 Years 3.More than 10 Years

Section B: Nutrition Knowledge

7.	Have you ever participated in any Nutrition Education/Training?	1.Yes 2.No
8.	If yes the training was about what?	1. General nutrition Knowledge 2.Basics of Nutrition Education 3. Infant and Young Child Nutrition 4. Nutrition and HIV/AIDS 77.Others Specify----------
9	Have you ever got information about child feeding?	1.Yes 2.No
10	If yes from which sources?	1.Tanzania Food and Nutrition Centre 2.Radio and TV 3.From brochures 4.From health centres
11	What is the best food for baby for first six months of life?	1.Mother Milk 2. Infant formula 3.Cows Milk 4. Porridges 5.Mixed Cereals 6.Water 77.Others Specify----------
12	What are the causes of malnutrition to children?	1. Inadequate dietary intake 2. Diseases 3. Inadequate maternal and child care practices 4. Insufficient access to food 5. Poor water/ sanitation and inadequate health services 77.Others Specify 88. Don't know
13	Why children need more protein than adult people?	1.They growing fast 2.Because they like meat 3.Protein protect them 77.Others Specify 88. Don't know
14	Which do you think is best between infant formula and Mothers Milk?	1.Mother milk 2.Infant formula 3.Both are the same 88. Don't know
15	Why vitamin A is important for Children?	1.Protect them against sickness 2.It is important for growth 77.Others Specify---------- 88. Don't know
16	Why it is important washing your hands before preparing children foods?	1. To avoid food contamination 2. Removing bacteria to our hands 3. Removing dust to our hands 4. It is health rule 77.Others Specify---------- 88. Don't know

17	Do you think children need special diet consideration when compared to adult?	1.Yes 2.No 88. Don't know
18	If yes why?	1.Their growing 2.They have high food need 3.Their vulnerable 77.Others Specify---------- 88. Don't know
19	Do you think children need vegetables and Fruits?	1.Yes 2.No
20	Have you ever held about Iodine?	1.Yes 2No
21	Do you think is it important for baby or children?	1.Yes 2.No 88. Don't know
22	If a baby /Child not getting mother breast milk where can get iodine?	1.Iodated Salt added to food 2.Eating fish from sea 77.Others Specify---------- 88. Don't know
22	How can you assess and know if a child is growing well or not?	1.Comparing a child weight with age 2.Compare a child Height for age 3.Compare a child Weight for Height 77.Others Specify---------- 88. Don't know

Section C: Nutrition practice

24	What is the appropriate age to start giving Complementary food to baby?	1. At three Months 2. At four months 3. At five Months 4.At six months 77.Others Specify---------- 88. Don't know
25	Do you know how to measure and prepare the replacement feeding to be given to infants?	1.Yes 2.No
26	What is the mixing ratio of cow's milk to water to be given to baby?	1. 2 parts milk: 1 part water 2. 2parts water: 1 part milk 3. 1part milk: 1part water 4. 2parts milk: 2 parts water 5. 3parts milk: 3 parts water 77.Others Specify---------- 88. Don't know
27	How do you mix the infant formula to be given to baby?	1. I follow the instruction according to the labels 2. I don't Know how to mix 3. I just mix poured milk with water 77.Others Specify---------- 88. Don't know
28	What should be used to give a baby infant formula / animal's milk?	1. Feeding bottle 2.Cups and spoon 3. Tableware 4. Bowls 77.Others Specify---------- 88. Don't know

29	What should be given to an infant if is not getting breast milk, in the first six months?	1. Milk in some other form 2. Porridge 3. Water 4. Soft rice 5Juices 77.Others Specify---------- 88. Don't know
30	What types of home modified animal milks suitable for first six months do you know?	1. Whole cow's milk 2. Whole goat's milk 3. Full cream powdered milk 4. Evaporated milk 77.Others Specify---------- 88. Don't know
31	What types of Commercial infant formula suitable for first six months do you know?	1. Lactogen 1 2.Lactogen 2 3.NAN 1 4.NAN 2 77.Others Specify---------- 88. Don't know
32	What is recommended about feeding a sick baby/Child?	1.Food should be avoided 2.Food must be reduced in amount 3. Increase food through increasing frequency of feeding a baby /child 4.Water should be avoided 77.Others Specify---------- 88. Don't know
33	What is recommended when feeding less than five years children and older children above five years?	1.Separate them according to age 2.Give food together 3.Under five children need assisted when eating 77.Others Specify---------- 88. Don't know

Section C: Nutrition Attitude

Statements or questions		Yes, I agree	No, I don't agree	I don't know
34	Mother milk is the best food for baby for first six months of life			
35	Feeding bottles should be used to give a baby infant formula / animal's milk			
36	Milk in some other form should be given to an infant if is not getting breast milk, in the first six months			
37	Under five years children should eat together in one plate with older children			
38	My relatives orphan children should live here			
39	Children here are getting enough food			
40	Children here are getting mixed/balanced diets			
41	Poor nutrition status does not have effect on child development			
42	Nutrition Education is important to me			
43	We need nutritionists to solve nutritional problem at our institute			
44	We need to reduce the amount of food when a child/baby get sick			
45	Children need Fruits and Vegetables for their health			
46	Growth monitoring is important until a child reach five years of age			