CHILDCARE PRACTICES, MORBIDITY STATUS AND NUTRITION STATUS OF PRESCHOOL CHILDREN (24-59 MONTHS) LIVING IN ORPHANAGES IN KWALE COUNTY, KENYA

BY

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DECLARATION

'This thesis is my original work and has not been presented for a degree in any other University or any other award'

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DEDICATION

To my parents Mr. Bakari Swaleh and Mrs Mwanamisi Kassim, my wife Meali Abdule, my son Imraan, my sisters, Aisha, Zunera, Habiba, my brother Hudhaifa.

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OPERATIONAL DEFINITION OF TERMS

Caregiver: Refers to a person responsible for the care of children in orphanages.

Caregiver-to-child ratio: This is number of children served or cared for by each caregiver.

Childcare practices: This refers to dietary practices (meal schedule, diversity of foods consumed, amount of nutrients and kilocalories consumed per day, number of meals consumed per day and frequency of foods consumed) of the children and health care practices (access to health care, hygiene and sanitation, deworming, health seeking behaviour, vitamin A supplementation and immunization).

Institutional characteristics: This refers to the demographic characteristics of the caregivers and children, training of the caregivers on childcare practices, children with living parents, caregiver to child ratio, duration of stay in the orphanages, child mortality, history and resources for the orphanages.

Nutrition status: Refers to the anthropometric status for children based on weight-for-age (WFA), weight-for-height (WFH) and height-for-age (HFA) indices.

Orphanage: This term refers to a place where children who have been abandoned, orphaned or those whom their parents have disputes are taken to be cared for.

Preschool children: Refers to children 24-59 months of age

ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immuno-Deficiency Syndrome
CCIs	Charitable Children's Institutions
FAO	Food and Agriculture Organization
GAM	Global Acute Malnutrition
GOK	Government of Kenya
HFA	Height-for-Age
HIV	Human Immunodeficiency Virus
IYCF	Infant and Young Child Feeding
KDHS	Kenya Demographic and Health Survey
KII	Key Informant Interview
MGCSD	Ministry of Gender, Children and Social Development
MOH	Ministry of Health
OVC	Orphans and Vulnerable Children
SDGs	Sustainable Development Goals
SPSS	Statistical Package for Social Sciences
UNICEF	United Nations Children Education Fund
WFA	Weight-for-Age
WHO	World Health Organization
WFH	Weight-for-Height

ABSTRACT

High adult mortality due to various causes like HIV and AIDS has led to an upward trend of the number of orphans and vulnerable children. Extended family networks have taken the responsibility of caring for these children but lack of adequate resources for their care has forced the caretakers of these children to take them to orphanages. As a consequence to the ever-increasing number of orphans, there has been mushrooming of orphanages in the country. Appropriate childcare practices have substantial consequences for growth, development and survival of infants and children. However, due to lack of adequate resources, children living in institutions are faced with practical challenges in being provided for their basic necessities including nutritious food and clothing. Most studies that have been carried out in Kenya have focused on children below five years who are under the care of their parents. Studies conducted in orphanages have concentrated on children above five years. Thus there is minimal information on childcare practices, morbidity status and nutrition status of preschool children living in orphanages. The purpose of this study was to determine the childcare practices, morbidity status and nutrition status of preschool children 24-59 months of age living in orphanages in Kwale County, Kenya. A cross-sectional analytical study was conducted on a comprehensive sample of 162 children and 45 caregivers, drawn from a sample of 14 out of the 21 orphanages in Kwale County, Kenya. Data collection tools included; a structured researcher-administered questionnaire for caregivers, Key informant interview (KII) guide and observation checklist. The data collected was analysed using Statistical Package for Social Sciences (SPSS) version 20.0 and anthropometric data of the children analysed using ENA for SMART (2011). WHO standards (2006) were used in interpretation of anthropometric data. More than a third (36.4%) of children were either single or double orphans. The rest (63.6%) were not orphans. The mean (SD) duration of stay in orphanages was 35.22±13.54 months. Majority (84.0%) of children had favourable caregiver to child ratio while a small proportion (16.0%) had un-favourable caregiver to child ratio. Supper provided a significant proportion (35.1%) of daily energy intake than both lunch (34.7%) and breakfast (11.4%). In terms of nutrition status: 15.4% of the children were stunted, 8.6% were underweight and 3.7% were wasted. Boys were more stunted, underweight and wasted compared to the girls (chi-square test; $p < 0.05$). A small proportion (6.8%) of children suffered from upper respiratory tract infection, 10.5% suffered from malaria and 0.6% from measles. Childcare (dietary) practices were associated with underweight (chi-square test; $p < 0.001$) and stunting (chi-square test; $p < 0.001$). Children who had been ill based on a two week morbidity recall were likely to be stunted (chi-square test; $p < 0.001$), underweight (chi-square test; $p < 0.001$) and wasted (chi-square test; $p = 0.020$). Institutional characteristics (caregivers trained on childcare) were associated with underweight (chi-square test; $p < 0.001$), wasting (chi-square test; $p = 0.012$) and stunting (chi-square test; $p < 0.001$). Duration of stay of the children in the orphanages was positively associated with underweight ($p < 0.001$) and stunting ($p < 0.001$). The results of this study can therefore be used to formulate and/or strengthen strategies or systems that address the needs of children in orphanages in Kenya and other developing countries. The government should ensure that registered orphanages have adequate resources to take care of children in orphanages. The orphanages should also encourage research activities to improve conditions in the orphanages.

CHAPTER ONE: INTRODUCTION

1.1 Background information

It is estimated that there are currently 151 million orphans in the world and 2.6 million in Kenya (United Nations on HIV/AIDS [UNAIDS], 2012). The number of orphans due to all causes is likely to reach 50 million by the year 2018 in Africa (United States Agency for International Development (USAID)/Hope for African Children Initiative [HACI], 2010). HIV/AIDS and other causes such as poverty, natural disasters, endemic diseases like malaria and tuberculosis have claimed the health and lives of productive adults leaving behind young children with no caretakers and hence they face many challenges (UNAIDS, 2016). Some of the challenges faced by these children include; increased risk for malnutrition, lack of adequate food and health care services, homelessness, high dropout rate from school, child labour, drug abuse, crime and exposure to HIV infection (Johnstone 1999; Vaida, 2013).

Among all orphans in Africa, 15% are children under five years of age (Hamadani, 2006). Most family members would have taken the responsibility of caring for these children but due to limited resources that are usually over-stretched as a result of high dependency ratio, family networks have been unable to provide adequate care required for the well-being of these children (Inungu & Karl, 2006). Some of these children get accommodated in orphanages although reports show that 25% of African children in orphanages do not have any known relatives (UNAIDS, 2006).

According to United Nations International Children's Education Fund (UNICEF) (2008a), there are more than 2 million children in institutional/orphanage care around the world. It has also been indicated that institutional care for children in Africa is increasing rapidly (Browne, 2009) more so in countries or regions where there is economic transition. This is because the changes increase unemployment, migration

for work, family breakdown and single parenthood (Carter, 2005; Tinova et al., 2007). This is witnessed in Kwale County of Kenya following disruption of both tourism and fishing industries [major economic activities in the region] due to global economic winds, insecurity, global warming and dilapidated infrastructure (Abubakar et al., 2013; Government of Kenya [GOK], 2016). Consequently, there has been an increase in unemployment, poverty levels, migration for work, family breakdown, single parenthood and high HIV and AIDS and infant mortality rates. The region has also been hard hit by high rates of drug abuse where parents (victims) opt to place their children in institutional care rather than stay with them (GOK, 2010b, 2016).

Despite the fact that institutional care is expensive and should be a last resort, it provides an alternative to foster care or adoption by giving orphans and vulnerable children (OVC) a community based setting in which they live and learn. Orphanages in some cases can be dangerous and unregulated places where children are subject to abuse and neglect (HACI, 2010). They have also been associated with negative consequences for children's development (Carter, 2005; Johnson, 2006) and provision of a non-stimulating, clinical environment for children under five years (Browne, 2006, 2005; Tobis, 2000). This is as a result of the quality of care provided which differs from one institution to another, depending on the type of internal organization, number of qualified staff, working hours of caregivers, type of relationship they have with the children, management style and financial resources (Cahajic et al., 2003).

Childcare practices entail provision of appropriate feeding practices such as exclusive breastfeeding of infants for the first six months, appropriate complementary feeding, continued breastfeeding for up to 2 years or beyond and appropriate feeding of children in exceptionally difficult circumstances such as in emergency situations, malnourished children, low-birth-weight babies, infants of HIV-infected mothers and

orphans (WHO, 2003). It also entails provision of proper health care through immunizing, prompt seeking of medical care, provision of love and maintaining the child in a clean and safe environment (GOK, 2013; UNICEF, 1999).

Studies show that inappropriate childcare practices may increase the level of malnutrition which is a common cause of morbidity and mortality among children below 5 years (International Food Policy Research Institute (IFPRI), 2016). The preschool years have been identified as a crucial time to study dietary practices and health status of children as it is the period within which feeding habits are becoming established (Black & Hurley, 2013; Serdula, 2001; Tendai, 2008).

It has been reported that children below 5 years in Kwale County, Kenya are vulnerable to malnutrition and childhood illnesses such as pneumonia, diarrhoea, malaria, skin diseases, upper respiratory tract infections, dysentery and typhoid due to poor sanitation and hygiene practices and in particular low latrine coverage and failure to treat water (Kenya Food Security Steering Group (KFSSG), 2016, 2017). The situation is likely to be worse in orphanages that lack adequate resources to provide appropriate childcare practices (Sadik, 2010; Vaida, 2013).

1.2 Problem statement

Kenya is facing a crisis of orphaned generation like other sub-Saharan countries (UNAIDS, 2012; UNICEF, 2006a). This is as a result of the impact of HIV and AIDS and high poverty levels that may as well form a much larger health and development crisis in the country. The impact of high poverty levels and HIV and AIDS in Kenya is also evident in Kwale County, with an increase in number of homes headed by children and grandparents, child labour, ever-increasing number of orphans as well as mushrooming of orphanages (GOK, 2010b). Despite this crisis, very few studies have

looked into the plight of these children in Kenya.

Childcare practices which consist of actions necessary to promote child survival, growth and development are influenced greatly by the socio-economic, political and cultural environment surrounding the children (Food Security and Nutrition Analysis Unit for Somalia (FSNAU), 2017). Preschool children in orphanages are nutritionally challenged because majority have never been breastfed or exclusively breastfed. This makes them prone to illnesses as breast milk has all the nutrients children need for healthy development (GOK, 2013; Victora, Barros and Franca, 2016; WHO, 2014).

Provision of appropriate childcare practices remains a challenge in some orphanages because of lack of adequate resources. With little or no outside assistance, many orphanages might be impoverished thus may increase vulnerability of the children to malnutrition (Johnstone, 1999). Loss of parental care and other aggravating factors such as high child to caregiver ratios, poor hygiene, inadequate amounts and diversity of foods served to the orphanage children, caregivers with; low wages, little knowledge, rotating shifts, regimented and non-individualized care may worsen the situation (Mwaniki & Makokha, 2013; UNAIDS, 2005; Zeanah et al., 2003).

There is limited information about the orphanages and their relation to the nutrition and morbidity status in Kenya and Africa at large. Most of the existing literature shows most orphanages have damaging effects to the children (Dozier et al., 2012; Faith To Action Initiative (FTAI), 2014) thus assessment of childcare practices and nutrition status of institutionalized children is essential. The study therefore sought to determine nutrition status of preschool children living in orphanages in Kwale County as influenced by childcare practices from their caregivers. This was to provide information that could be a basis for intervention in reducing child malnutrition.

1.3 Purpose of the study

The purpose of this study was to determine the childcare practices, morbidity status and nutrition well-being of preschool children 24-59 months of age living in orphanages in Kwale County.

1.4 Objectives of the study

The study was guided by the following specific objectives:

1. Establish the institutional characteristics of orphanages in Kwale County.
2. Determine the dietary practices for preschool children living in orphanages in Kwale County.
3. Determine the health care practices and morbidity status of preschool children living in orphanages in Kwale County.
4. Determine the nutrition status of preschool children living in orphanages in Kwale County.
5. Establish the relationship between institutional characteristics, childcare practices, morbidity status and nutrition status of preschool children living in orphanages in Kwale County.

1.5 Hypotheses of the study

The study hypotheses were;

H_{01}: There is no significant relationship between institutional characteristics and nutrition status of preschool children living in orphanages in Kwale County.

H_{02}: There is no significant relationship between childcare practices and nutrition status of preschool children living in orphanages in Kwale County.

H_{03}: There is no significant relationship between morbidity status and nutrition status of preschool children living in orphanages in Kwale County.

1.6 Significance of the study

The findings of this study may be beneficial to stakeholders such as the ministry of gender children and social development (MGCSD), ministry of health department of Nutrition, research institutions, UNICEF and other agencies working in child health and survival programmes. The findings could also be beneficial to caregivers of the children in orphanages by helping them improve their childcare practices. This will help improve health and nutrition status of the children. The study findings may also add knowledge available on childcare, living standards, nutrition and health status of children in institutions as evidenced by limited information on such cases.

1.7 Delimitation

The study covered children 24-59 months of age living in orphanages in Kwale County, Kenya and thus the research findings can only be applied to the area and other areas with similar characteristics.

1.8 Limitation of the study

The findings will only be generalized to those children living in orphanages of similar circumstances.

1.9 Conceptual framework for the study

The conceptual framework below (Figure 1.1) shows the proximate determinants for child nutrition status. According to UNICEF (1998), proximate determinants are a resultant of interrelated underlying factors encompassing; dietary practices, caregivers care and healthcare practices. Inappropriate childcare practices which consist of inappropriate dietary and healthcare practices and inappropriate caregiver's knowledge on childcare may increase the level of malnutrition which is a common cause of morbidity and mortality among children below 5 years (IFPRI, 2016).

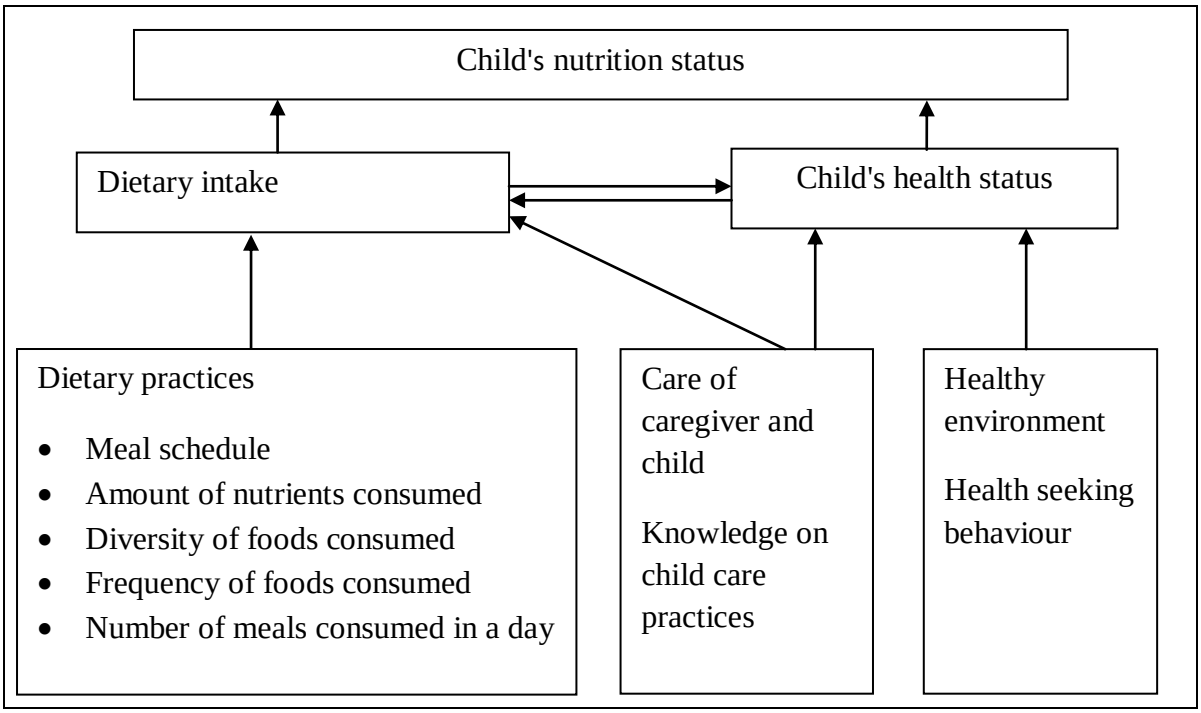

Figure 1.1. Conceptual framework model for determinants of child's nutrition status

Source: Adapted from UNICEF (2009).

According to this framework, dietary intake and health status are immediate determinants of child's nutrition status. Adequate dietary intake and good health status translate to good nutrition status of the child. Malnutrition occurs when dietary intake is inadequate and health status is compromised (immediate causes of child malnutrition). Furthermore, the framework indicates that dietary practices, childcare and healthy environment are underlying determinants of child's nutrition status. Apart from appropriate dietary practices, appropriate knowledge on childcare and good health seeking behaviour have a pivotal role in achievement of good nutrition status. Thus, inappropriate childcare practices and poor environmental conditions or health care practices are underlying causes that contribute to child malnutrition.

The interplay between the two most significant immediate causes of malnutrition, inadequate dietary intake and illness as a result of poor health status tends to create a

vicious circle: A malnourished child, whose resistance to illness is compromised, is likely to fall ill worsening malnutrition and health status. Infections cause loss of appetite, mal-absorption, metabolic and behavioral changes. These infections, in turn, increase the body's requirements for nutrients, which further affect young children's feeding patterns and how they are cared for.

Prevailing conditions in orphanages may predispose children to increased prevalence of malnutrition and infectious diseases like diarrhoea and respiratory tract infections Unavailability of safe and nutritious foods in orphanage set up and access to safe water are likely to lead to increase levels of malnutrition among children. Additionally, reports in Kwale County show that these factors such as unavailability of nutritious food, poor water and sanitation services which often contribute to diseases such as malaria, diarrhoea, skin diseases, dysentery and typhoid manifest in ways that adversely affect nutrition status of those affected (KFSSG, 2016, 2017).

Institutional characteristics and other factors such as meal schedule were assessed to determine their influence on nutrition status outcome as basic determinants of nutrition status in children. Also, access to safe drinking water, health care availability and environmental safety in orphanage set up were assessed to evaluate their impact on nutrition status of preschool children living within selected orphanages in Kwale County, Kenya.

Therefore, the conceptual framework has been used in this study in understanding how different immediate and underlying determinants of child nutrition status interact to yield/ affect child’s nutrition status and health in the orphanages in Kwale County, Kenya.

CHAPTER TWO: LITERATURE REVIEW

2.1 Characteristics of institutional care

Institutional care is among the various ways in which communities have responded towards care and support for the ever-increasing numbers of OVC. Other forms of care and support for OVC include community based care and support and include; informal and formal fostering, communal fostering, extended family and community care (GOK/UNICEF, 2002; HACI, 2002; World Conference for Religious Peace [WCRP]/UNICEF, 2002). The children live in the institutions and are usually provided with their basic needs such as food, clothing and shelter while some institutions offer education.

Institutional care entails keeping OVC in institutions such as orphanages or children's homes. The behaviours and practices of caregivers to provide food, health care, stimulation and emotional support necessary for children's healthy survival, growth and development has a powerful effect on their survival, growth and development (WHO, 2004a). The type of care children receive and how the practices are being performed are likely to be influenced by institutional characteristics particularly caregivers socio-demographic characteristics (WHO, 2004a).

Institutional/orphanage care is common in Eastern Europe, Central and South America, Asia, Africa and the Middle East (Cruckenberg et al., 2008). Although there is under-reporting and lack of regulation in some countries, the total number of children in institutions globally is said to range from 2 to 8 million (Browne, 2009; Save the children, 2009).

The quality of care provided in institutions differs greatly from one institution to another as there are large differences from one institution to another, from one unit to

another within an institution and even variability in the care individual children receive within the same grouping (Dozier et al., 2012). In most of the institutions, children are kept until the age of 18 years while a few others keep them until 21 years of age (GOK/HACI, 2010). In meeting the economic needs and care for the OVC, most institutions call for partnership with the caregivers through income generating activities in the institutions (Skovdal, 2009). However, most orphanages may fail to meet the needs of the children due to inappropriate childcare practices because of lack of adequate resources and limited outside assistance. There may also be limited awareness about appropriate childcare practices and the consequences of childhood malnutrition among the caregivers in the orphanages.

The GOK policy is that the community should be persuaded to take care for OVC to avoid their stigmatization, exploitation and alienation (GOK/MOH, 1997). The GOK through its MGCSD developed a National Plan of Action (2007-2013) on OVC which helps to strengthen the capacity of families to protect and care for OVC, provide economic, psychosocial and other forms of social support, as well as mobilize and support community based responses to increase OVC access to essential services such as food and nutrition, education, health care and housing (UNICEF, 2009a). The GOK has also developed programmes to support OVC. These programmes include the Kenya's Cash Transfer Programme for OVC that provides regular cash transfers to poor families living with OVC. This however does not cover the OVC under the institutional care making it an area of concern.

As a way of promoting and protecting children welfare in institutions, the MGCSD registers the Charitable Children's Institutions (CCIs). In Kenya, a 1999 survey of 35,000 OVC found that there were 64 registered and 164 unregistered charitable

institutions that cared for OVC (WCRP/UNICEF, 2002). Over the years these number has increased to 830 CCIs (GOK/HACI, 2010). In addition, the Department of Children's Services in Kenya has developed CCIs Regulations which the institutions must conform to before registration (Misra & Bignami, 2008). CCIs regulations were gazetted in 2005 which required the institutions to register with the Children's Welfare Services Department. However, due to constrained personnel and other resources in the field officers, only 347 CCIs have been registered (GOK, 2010a). Records also show that child neglect is the most reported category of child abuse (WCRP/UNICEF, 2002).

Despite the consensus that institutional care is not the optimal support system for orphans and that it is not suitable to meet young children's developmental needs, increasing number of OVC who are abandoned by extended family have left them with no choice but to turn to institutions for support (Dozier et al., 2012; WCRP/UNICEF, 2002). This has led to millions of children in their first 5 years to be placed in this care around the world (Dozier et al., 2012). Conversely, existing literature shows most institutions have damaging effects on the children in later years (Nelson, 2007; Zeanah et al., 2006).

2.2 Childcare practices in orphanages

2.2.1 Dietary practices for preschool children in the orphanages

An appropriate diet is essential in providing the proper quantity of the food for energy and quality of the food to provide the essential micro and macro-nutrients for proper human growth and development especially during early childhood (Manios et al., 2015; Neumann et al., 2002). The healthy development of children not only safeguards their own well-being, it is also the best guarantee of the future peace and prosperity that are central ambitions of the Millennium agenda (UNICEF, 2006b).

The rate of physical growth is slow during preschool age as compared to the first year of life but continues gradually (Mann & Ken, 2012). Healthy physical growth calls for increased nutrients needs (Edelman & Mandle, 2011). However, studies have established that most caregivers lack nutrition awareness and that once a child reaches preschool age, caregivers divert their attention from the children to other matters and care giving becomes a secondary issue. Thus, the nutrition needs are neglected (Mile, Milena and Biljana, 2013).

The consumption of a varied diet and frequency of feeding are important indicators for the attainment of adequate dietary intake. These indicators have also been associated with increased energy intake and therefore health and nutrition status (Chea, Peter and Nyamota, 2017; Susanto, 2015).

Several studies have documented dietary practices in orphanages. A study conducted in Nairobi, Kenya has shown that only 50% of children in orphanages consume the three main meals that is breakfast, lunch and supper (Mwaniki & Makokha, 2013). A study carried out in Pakistan found that 6.5% of children in orphanages consumed 4 or more food groups compared to 42.5% of the non-orphanage children. The same study showed that children in orphanages consumed 9.7%, 34.6 and 54.7% of daily energy intake for breakfast, lunch and supper respectively. The non-orphanage children consumed 9.3%, 46.3% and 44.4% of the daily energy intake for breakfast, lunch and supper respectively (UNICEF, 2009a). Another study conducted in Budgam district, India (Vaida, 2013) found that the dietary intake for children in orphanages was deficient in all nutrients. A similar study in Nigeria showed that prevalence of micro-nutrient deficiency among children in orphanages was high due to poor dietary practices (Obiakor-Okeke & Nnadi, 2014). There is paucity of data on the dietary practices of preschool children in orphanages in Kenya.

2.2.2 Health care practices

Child malnutrition is associated with susceptibility to infection and as a result many children are more likely to be prone to common childhood ailments such as diarrhoea and respiratory infections; and for those who survive, frequent illness affects their nutrition status due to lowered resistance to infections (FAO, 2004; IFPRI, 2016). It has been observed that such children are set to a vicious cycle of recurring sickness, faltering growth and diminished learning ability (Aubery, 2012; Black et al., 2008).

Common childhood illnesses among children below five years are pneumonia, diarrhoea and malaria which contribute to high child deaths (WHO, 2012, 2016). Other illnesses that could claim the lives of these children include fever and acute respiratory tract infections (KDHS, 2014) . These deaths may be prevented by prompt seeking of health care. In Kenya, children with symptoms of fever, respiratory infections and diarrhoea; about six in every ten children with such symptoms were taken to a healthcare provider for treatment including 63% of children with fever, 66% with respiratory infections and 58% of children with diarrhoea (KDHS, 2014).

Healthcare practices such as access to health care, hygiene and sanitation, deworming and caregivers health seeking behaviour have significant effect on child's health. Thousands of children suffer nutrition, education and economic loss as a result of diarrhoea and worm infestations (UNICEF, 2009c; WHO, 2004b). Safe disposal of human excreta, personal hygiene, quality and quantity of water are most strongly related to the reduction of cases of deaths from diarrhoea among children (Clasen et al., 2010; Engell, 2013). Inadequate sanitation and poor disposal of human excreta is responsible for the spread of cholera, typhoid, schistosomiasis and other infections which could adversely affect nutrition status of children (Clasen et al., 2010; Engell, 2013).

Hand washing is effective in minimizing incidence of diseases such as cholera and diarrhoea among children. It also reduces deaths from diarrhoea and acute respiratory infections by almost half and one quarter respectively (UNICEF, 2009c; WHO, 2004b). Washing hands with soap before eating and after using the toilet could save more lives than any single vaccine or medical intervention (UNICEF, 2009c). Despite this life saving potential, hand washing with soap is seldom practiced and difficult to promote. Furthermore, when less than 40 children share one latrine is usually considered fair, forty to one hundred children using one latrine is classified bad and 100 children sharing a single latrine is dangerous (UNICEF, 2009c).

2.3 Morbidity status of preschool children in the orphanages

An unhealthy environment increases the likelihood of the spread of infectious disease such as diarrhea, malaria, cholera, shigella dysentery and hepatitis 'A' among others (Engell, 2013; Guerrant et al., 2013; WHO, 2004b; Wolf et al., 2014). Provision of hygienic practices, adequate nutritious food and health services remains a great challenge in orphanages (Mwaniki & Makokha, 2013). Moreover, overcrowding increases the likelihood for the spread of infectious diseases as well as malnutrition (FAO, 2005) and also hinders achievement of good health care practices among people living in these conditions.

Various studies have shown that illness among children in orphanages is higher (30%) especially diarrheal disease compared with 7 % in non-orphanage children. It has also been shown that more boys are usually stunted with high morbidity rates than girls (Ainsworth & Semali, 2000; Mwaniki & Makokha, 2013). A study in Nicaragua found a direct correlation between the prevalence of underweight among orphanage children and diarrheal, coughs/colds and length of stay in the orphanage. In the same

study, younger children were found to be more likely to be wasted than older ones (Morris, Ohuro and Medina, 2004). There is paucity of data on prevalence of morbidity status and health care available to orphanage children in Kenya.

2.4 Nutrition status of preschool children the in orphanages

HIV and AIDS and rising poverty in Kenya has led to the number of OVC to increase exponentially (UNAIDS, 2016; UNICEF, 2016). This has a profound impact on families in which they live as well as their social and nutrition well-being as they are forced to live in deplorable conditions without adequate access to safe water, hygiene, adequate nutritious food, hygienic housing and health services (Vaida, 2013). The ever-growing number of OVC has resulted in growing number of orphanages in Kenya (Mwaniki & Makokha, 2013). This is also evident in Kwale County of Kenya where child malnutrition remains a serious public health problem (Adeladza, 2009; Kenya Demographic and Health Survey [KDHS], 2014). Reports show that 29.7% of children below the age of five years in Kwale County are stunted, 4.4% wasted and 11.8% underweight based on WHO 2006 reference growth standards (KDHS, 2014).

Malnutrition in orphanages has been exacerbated as a result of poor childcare practices, prolonged stay in the orphanage (Beckett et al., 2002; Browne, 2007; Rutter, 2007) and over-control of the children's environmental experiences (Carter, 2005; Mulheir & Browne, 2007; Smyke et al., 2007). In a study carried out in Botswana (Misra & Bignami, 2008) it was found that children in orphanages were 49% more likely to be underweight than non-orphanage children. The findings concurred with those of Lindblade et al. (2003) in Malawi where it was demonstrated that the prevalence of malnutrition in children in orphanages (below 6 years old) was 55% compared with 30% of non-orphanage children. The same study showed that among children in orphanages, 64% were stunted compared with 46% of the non-

orphanage children. In addition, girls in orphanages were more likely to be malnourished than boys.

Several studies have also demonstrated the damaging consequences of orphanages. These consequences include; delays in social, emotional and physical development (Nelson, 2007; Zeanah et al., 2006). Some studies conducted in Kenya (Mwaniki & Makokha, 2013) and Northern Tanzania (Ainsworth & Semali, 2000) have reported higher stunting levels among children in orphanages and that stunting increased with increase in age of the children. Among the children surveyed in Kenya, 47.2%, 33.2% and 9.2% were stunted, underweight and wasted respectively. Another study conducted in Nigeria showed that 18%, 34% and 19% of children in motherless babies homes in Nigeria were wasted, stunted and underweight respectively (Obiakor-Okeke & Nnadi, 2014). According to USAID (2005), fostered children (6-14 years) in Kenya were more likely to be stunted (42% and 37%) and underweight (32% and 23%) than non-fostered children of the same age respectively.

2.5 Institutional characteristics and nutrition status

The institution environment in which the children live is usually determined by the administrative personnel or management. Children have little control over this environment. The number, type, age, sex and marital status (caregivers' demographic characteristics) of caregivers to be recruited in the institution, meal schedule, duration of stay in the institution as well as training of caregivers on childcare are all influenced by institution policies. The characteristics of the institution can therefore have a direct impact on child growth, development as well as nutrition status.

Studies show that safe and stable nurturing environments are associated with positive outcomes for children's growth and development (Groak et al., 2011). A good

environment provides a child with love, a sense of belonging and lifelong connection with the community. Research has demonstrated that positive interaction between a child and a caregiver significantly impacts the development of the brain (National Scientific Council on the Developing Child (NSCDC), 2012). Children search for eye contact and listen to voices of caregivers. The absence of this kind of warm response and reciprocal relationship between a child and an adult can result in damage to brain development (Groak et al., 2011; NSCDC, 2012).

Children raised in biological and adoptive families demonstrate better physical, intellectual and development outcomes compared to children living in institutional care (Smyke et al., 2007; Van Ijzendoorn et al., 2007). Even in orphanages with high quality care there can still be negative consequences if the caregivers are unresponsive and inconsistent (Zeanah et al., 2005).

The paucity of data regarding effects of institutional characteristics on nutrition status of the children is a hinderance to advocacy and influence of policy makers in coming up with policies that govern how the children should be treated regarding nutrition and health care. Improving institution environment is therefore critical for improved nutrition, health and development of children (Groak et al., 2011; Mwaniki & Makokha, 2013; NSCDC, 2012; Van Ijzendoorn et al., 2007).

2.6 Childcare practices and nutrition status in the orphanages

Nutrition status is broadly defined as the current body status of an individual or a population as influenced by the intake and utilization of nutrients. Apart from the intake of nutrients, other factors such as the diet, age, sex, environment, healthcare, caregivers knowledge on healthcare also influence nutrition status (Adamu et al., 2012; IFPRI, 2016; Onyango et al., 2012).

Nutrition of preschool children is of paramount importance as it forms the platform for growth and development (Chea et al., 2017). Nutrition has a direct impact in child's life. Inadequate nutrition among preschool children attributed to poor childcare practices may result in retarded growth (IFPRI, 2016). The nutrition status of children in orphanages varies from one orphanage to another because of the quality of care provided which differs from one institution to another, number of qualified staff, type of relationship caregivers have with the children, management style and financial resources (Cahajic et al., 2003; Zeanah et al., 2003).

Childcare practices have a direct impact on the nutrition status and wellbeing of a child (IFPRI, 2016). Conditions in most orphanages have been decried on various fonts (Dozier et al., 2012; FTAI, 2014). Lack of proper regulations, provision of a non-stimulating clinical environment for the children, poor quality care, poor hygiene, inadequate amounts and diversity of foods served to the children and regimented and non-individualised care have been reported as some of the prevailing conditions (Browne, 2006, 2005; Tobis, 2000). These conditions may have a direct impact on child's nutrition status or put children living under such conditions vulnerable to malnutrition. It is therefore imperative to investigate the childcare practices in relation to nutrition status of children in orphanages as there is a dearth in literature concerning the malnutrition levels of children living in orphanages.

This study therefore assessed childcare practices in relation to nutrition status of preschool children in the orphanages with the aim to fill the gap that children in orphanages have fixed meal schedule, often consume certain foods or food groups, frequently consume diets low in quantity and quality, take less number of meals in a day and are usually subjected to poor healthcare by their caregivers.

2.7 Relationship between childcare practices, morbidity status and nutrition status

Poor childcare practices together with high rates of morbidity from infectious diseases are the prime proximate causes of malnutrition in children below five years of age (IFPRI, 2016). The link between childcare practices, malnutrition and morbidity is well established. Malnutrition may result from poor dietary intake and healthcare and is activated by childhood ailments such as diarrhoea and respiratory infections and in itself malnutrition weakens the immunity and quickens the progression of disease (IFPRI, 2016).

A steady gain in height and weight indicates healthy physical growth and hence calls for increased nutrient need. Poor nutrition status as a result of the increased nutrient need during preschool age when coupled with poor childcare practices and morbidity may lead to premature death (Chea et al., 2017). Studies established that most caregivers of preschool children lack nutrition awareness (Chea et al., 2017). Lack of individualized care, attention and supervision during meal times may contribute to poor dietary intake and may result in malnutrition among the children being cared for (FTAI, 2014).

It is therefore important that children in orphanages are provided with a safe environment, good hygienic practices, adequate nutritious food and health services to ensure good nutrition status. Unfortunately, very few studies have been conducted to quantify the magnitude of malnutrition of preschool children living in the orphanages as a result of poor childcare practices and morbidity status. The relationship between childcare practices, morbidity status and nutrition status in preschool children living in orphanages is not well covered by existing literature. Apart from dietary practices,

the study determined the morbidity status of preschool children living in orphanages to fill the following gaps; whether children living in orphanages were highly exposed to infectious childhood diseases, whether the caregivers of the children practiced good health seeking behaviours and whether the presence of the illnesses was due to inappropriate childcare practices.

2.8 Summary of the literature

Appropriate childcare practices have substantial consequences for growth, development and survival of infants and children. Both HIV and AIDS and rising poverty in Kenya have led to a number of children being placed in institutional care. Children are vulnerable to malnutrition thus nutrition and health status of children in institutions/orphanages is of interest. A review of literature has revealed that there is paucity of data regarding the childcare practices, morbidity status and nutrition status of preschool children 24-59 months of age in orphanages particularly in Kenya. There is actually need to investigate and improve childcare practices in relation to the nutrition status of preschool children aged 24-59 months as it is critical for improved nutrition, development and health of children (Reinsma, Nkuoh and Nshom, 2016; WHO/UNICEF/USAID, 2016).

CHAPTER THREE: METHODOLOGY

3.1 Introduction

This section focused on research design, target population, sample and sampling procedure, research instruments, data collection and analysis procedures.

3.2 Research design

A cross-sectional analytical study design (Katzenellenbogen et al., 2002) using both qualitative and quantitative approaches was employed to investigate the relationships between childcare practices, morbidity status and nutrition status of preschool children 24-59 months of age living in orphanages in Kwale County, Kenya. This design was most suitable as it described the characteristics of the study population and the variables of interest at a particular point in time.

3.3 Study variables

The dependent variable was nutrition status of the preschool children 24-59 months of age as determined by WHO standards (2006). This was based on weight-for-age (underweight), height/length-for-age (stunting) and weight-for-height/length (wasting) indices and presence or absence of oedema.

The independent variables were; dietary practices (fixed meal schedule, adequacy of energy consumed per day, number of meals, diversity and frequency of foods consumed) of the children, health care practices (access to health care, hygiene and sanitation, deworming, health seeking behaviour, vitamin A supplementation and immunization), morbidity status of the children based on 2 week morbidity recall and institutional characteristics of the orphanages as determined by socio-demographic characteristics of the caregivers, training of caregivers on childcare practices, duration of stay, caregiver to child ratio and children with living parents.

3.4 Study area

The study was carried out in Kwale County. Kwale County is bordered by Kilifi County, Mombasa County, Taita-Taveta County, Indian Ocean and United Republic of Tanzania. Due to its proximity to the Indian Ocean, the main economic activities in this area are finishing and tourism. The area is divided into 4 sub-counties namely Msambweni, Kinango, Matuga, and Lunga-lunga. The area has an approximate area of 8,270 square kilometers and a total population of 739,435 (GOK, 2016). Kwale County has been associated with poor nutrition status and morbidity status (KFSSG, 2016). Moreover, the area is associated with high poverty levels, food insecurity, drug and substance abuse and relatively medium (5.7%)-HIV burden (GOK, 2016).

3.5 Target population

Target population is the aggregate of all cases that conform to designated sets of specifications to which the study will generalize the results (Kasomo, 2006). The present study was conducted in Kuluhiro, Faraja, Upendo I, Dorcas, Amadeus, Nice view II, Makobe, Footprints, Future for children, Kebene, Diani, Nyumba ya watoto, Henny's and Tsimba children's homes. The study targeted preschool children 24-59 months of age in orphanages in Kwale County, Kenya. All the children 24-59 months of age who met the inclusion criteria were included in the study. The caregivers of these children in the selected orphanages in Kwale County, were the respondents.

3.5.1 Inclusion criteria

Study subjects were preschool children 24-59 months of age who had stayed at the orphanages for at least three months (to reflect factors affecting nutrition status in the orphanages (Browne, 2009). A sample of 45 principle caregivers of these children was also included in the study. The caregiver had to be present and in sound mind to give consent for inclusion.

3.5.2 Exclusion criteria

The study excluded non-consenting caregivers or children diagnosed with serious congenital malformations or had severe acute illnesses as well as those from outside who could be attending nursery schools located within the orphanages.

3.6 Sample size determination

The sample size was 160 for the children (24-59 months) calculated using the Cochran (1963) formula as cited by Fisher et al. (1998). The formula is as follows;

$n = \frac{Z^2 (p\ q)}{d^2}$ Where;

n = desired sample size

Z = standard normal deviate at 95% confidence interval which is 1. 96

p = the prevalence of underweight which is 11.8% in Kwale County, Kenya (KDHS, 2014)

q = population without characteristics being measured that is (1- 0.118)

d = desired level of precision which is 0.05

The formulae ($n= Z^2 (p\ q)/ d^2$) substituted $\mathbf{n= (1. 96)^2 (0.118) (1-0.118)/ (0.05)^2 = 160}$.

Data collection was on a comprehensive sample of 162 preschool children. A comprehensive sample of 162 preschool children of ages 24-59 months in the orphanages in Kwale County was used since the calculated sample of 160 was close to 162.

A total of 45 principle caregivers of the preschool children were interviewed and included in the study. The study interviewed and included all caregivers who work as 'mothers' and 'fathers' in these institutions because these caregivers have day to day interactions and attachment with the children in care. These caregivers were described as the core caregivers for the children by their institutions.

3.7 Sampling techniques

Sampling is a process of selecting a number of individuals or objects from a population. The selected group contains elements representative of the characteristics found in the entire population (Orodho & Kombo, 2002). In this study, all the children 24-59 months of age who met the inclusion criteria were included in the study sample. Underweight was used as an index for calculating the sample size because it does not distinguish between wasting and stunting (GOK, 2006; KNBS & ICF Macro, 2010; KDHS, 2014).

Fourteen orphanages were purposively sampled because they had the highest number of children aged 24-59 months and allowed research activities. They were selected from a total of 21 orphanages in Kwale County, Kenya. Five orphanages among the fourteen are registered with MGCSD. Registration is part of the social intervention initiatives by MGCSD for children social protection, making them have a comfortable life and promote their welfare.

Purposive sampling procedure was used to select the orphanages because the proportion of children aged 24-59 months in orphanages is very minimal in Kwale County and there were chances of not finding the target group in some orphanages in probability sampling methodology. Out of the 14 selected orphanages, 8 are in Msambweni sub-County namely; Kebene, Nyumba ya yatima, Faraja, Upendo, Amadeus, Diani, Future for children and Nice view II. Foot prints, Makobe, Henny's and Tsimba [4 orphanages in total] are in Matuga sub-County. Selected orphanages in Kinango Sub-County (2 orphanages) are Dorcas, Kuluhiro.

Information from the orphanages' records was used to sample the children. The sample only included children in orphanages who had lived in the orphanage for at

least three months. This was because the study aimed at establishing whether childcare practices of the children in orphanages among other factors foster good nutrition. Those children in orphanages who had less than three months stay in the orphanage would be reflecting nutrition status not fostered by the institutional characteristics or childcare practices.

At the time of the visits, 162 children meeting the inclusion criteria were found in the sampled orphanages. Since the sample size was very close to162, all the children were recruited into the study. There were 4 children below 23 months of age but were excluded from the study because they didn't meet the inclusion criteria and also had not stayed in the orphanages for at least 3 months at the time of study. The number of caregivers in the orphanages who were included in the study and interviewed was 45.

3.8 Research instruments

A structured researcher-administered questionnaire for caregivers was the main data collection tool. It was used to collect socio-demographic data, dietary intake, health care practices and anthropometric data. An observation checklist and Key Informant Interview (KII) guide were used to gather information on experiences and challenges on dietary practices, health care, water, hygiene, sanitation and other concerns relevant to the study about children in orphanages.

Data on dietary practices was collected using a 7 day food frequency questionnaire and a 24-hour food recall. Anthropometric data was collected using SECA scale and paediatric height board. To ensure relevant information and major study variables are collected, the purpose, objectives and hypothesis of the study was taken into consideration when constructing the research instruments. The questions were both closed and open-ended.

3.8.1 Pre-testing of the instruments

The questionnaire was pretested for accuracy and clarity prior to the main study on selected sample of 10 preschool children 24-59 months of age with their caregivers from The Good Life Orphanage in Kilifi County, Kenya. This orphanage was selected because it had similar characteristics with the orphanages included in the main study. However, this population was not included in the study.

3.8.2 Validity

Validity is the degree to which the research instruments will accurately and appropriately measure what they are purported to measure (Orodho, 2005; Verma & Mallick, 1999). In this study, all steps of research process were strictly followed to check for internal validity. The questionnaires that were used were pre-tested and clarity of information ascertained. The SECA scale and paediatric height board were pre-tested to ascertain the degree of error. Standardization was done on data collected and content validity was established through a panel of 3 judges competent in the field of nutrition drawn from Kenyatta University. Their recommendations were included in the final questionnaire.

3.8.3 Reliability

Reliability is the degree to which a research instrument measures what it is supposed to measure or how it yields stable and consistent results over a number of repeated trials (Orodho, 2005; Verma & Mallick, 1999). In this study, Test retest method was used to test consistency in producing the same results. The same questionnaire was administered to the same group of respondents after a period of one week. A comparison was made between the responses obtained in the two occasions. The pre-test respondents were allowed to make comments and give suggestions concerning the

questionnaire after which a reliability coefficient was calculated. Correlation coefficient was determined using a Cronbach correlation formula (Kothari, 2004). From the data collected, the calculated reliability coefficient was 0.85. In addition, anthropometric measurements standardization was done with the help of Emergency Nutrition Assessment version 2011 soft-ware so as to assess for intra and inter-observer technical errors of measurement of weight and height.

3.9 Training of research team

Four enumerators with at least a diploma in nutrition and preferably with experience in carrying out nutrition surveys were recruited. Those fluent in English and Kiswahili were selected in order to communicate with the respondents well. The researcher conducted the training through lectures, discussions, demonstrations and role plays, and exercises with the help of teaching aids. The enumerators were trained on taking anthropometric measurements and how to administer the questionnaire including interviewing skills. To ensure relevant information was collected, training focused on research procedures, objectives and study purpose.

3.10 Data collection procedure

The researcher visited each of selected fourteen orphanages in Kwale County, Kenya prior to the actual study in order to make the necessary arrangements. The visit was also meant to book appointment with the overall in-charge of the orphanages in order to plan for the study. The children's ages were verified by the child health cards and birth certificates. Health cards were also used to extract information on immunization.

Orphanage registers were used in the cases that did not have the health cards. In cases where there was no documentation of the birth dates, the caregiver's self-reported information was used to establish the ages or history of the children. Caregivers' self-

reported information was also used to establish children's morbidity status, immunization coverage and hygiene practices of the children in the orphanages. The researcher assisted by the enumerators administered the questionnaire to the caregiver in face-to-face interviews during a one-time visit to the orphanage.

Morbidity of children in the orphanages was assessed as having presented with symptoms of illness based on two week morbidity recall. The health care staff in-charge of the orphanage assisted by verifying the scar from the BCG vaccination. For this study, evidence of a minimum of one vaccine against the six vaccine-preventable diseases (namely, tuberculosis, diphtheria, whooping cough, tetanus, polio and measles) was accepted as vaccination. This was because some children who were taken to the orphanage had no immunization records.

Water and Hygiene practices were assessed by collecting information on whether there was availability and accessibility of water for drinking and washing hands, frequency of brushing teeth and bathing, availability of latrines/ toilets or bathrooms and human waste disposal. Caregivers who reported bathing the children daily were rated as having good bathing hygiene while those who bathed children four to six times a week and less than four times a week were rated as having adequate and poor bathing hygiene respectively (UNICEF, 2009c). Similarly, caregivers who reported brushing children's teeth daily were rated as practicing good oral hygiene while those who brushed children's teeth four to six times a week and less than four times a week were rated as practicing adequate and poor oral hygiene respectively (WHO, 2008).

Information on the orphanage, history and resources of the orphanage, the proprietors, institutional characteristics, sources of support, childcare practices, challenges

experienced or issues affecting the operation of the institution was obtained from the orphanages' management.

Anthropometric data for the preschool children living in the orphanages was collected using standard procedures as stipulated in the guidelines (FSAU, 2005; GOK, 2008). The researcher took measurements on weight, height/recumbent length and also inquired about their age.

Weight of the children was measured in kilograms using SECA scale with accuracy of 0.1 Kgs. The children were weighed twice with minimal clothing. The mean of the two weights were computed so long as the difference between them was not more than 0.1 Kg. Testing of the scale was done using known weight before the actual data collection. Calibration was also done by ensuring that the scale pointers were at zero before measurements were taken.

The height/length of the child was measured in centimeters using paediatric height board with a headstand to the nearest 0.1 centimeter accuracy. Two persons were required to make the length/height measurement. Children below 87cm were measured lying on their back while the rest were measured while standing. Children above 87 cm who were not able to stand upright had -0.7 cm adjustments done before on the obtained length measurements to determine their heights. This is because generally standing height is about 0.7 cm less than recumbent length.

Before taking reading, the researcher ensured that the child was bare footed and that the heels, buttocks, scapulae and the back of the head were all touching the board. The height/length readings were taken twice and a mean of the two was computed to get the child's length/height which was then recorded in the questionnaire.

In assessing bilateral oedema, the researcher gently applied pressure on both feet of the child for three seconds using the thumbs. On lifting the thumb, children showing the print of the thumb after the three seconds were considered to have oedema.

3.10.1 24-Hour Dietary Intake Recall

A 24 hour dietary intake recall assessment on children aged 24-59 months old was used to capture detailed information about all foods and beverages the child consumed. The caregiver was asked to state what they fed the child with previous 24 hours before the study including time of day, source of food and beverage and portion size. The recall period was from the time they woke up, until the time they went to sleep.

Respondents were to try to remember everything they fed the child and were provided with household measures used in the institution while feeding children. These household measures included; cups, plates, jugs, metallic containers and spoons. Caregivers were asked to measure total amounts of food served and total amounts eaten. These amounts were measured and converted into weights measurements. All the ingredients in the meals and their weights were recorded. Food models and pictures were used to help respondent judge and report portion size.

The 5 step multiple pass method was used in the 24 hour dietary recall. First, the respondents were to list the foods and beverages the children consumed the previous day. Secondly, probing was done for any foods forgotten during the quick list. Thirdly the time and feeding occasion for each food item was recorded. Fourthly, for each food item eaten, a detailed description (cycle) of ingredients, amounts eaten, food preparation and any additions were recorded. Lastly, probing was done for anything else the child could have consumed during the 24 hour dietary recall period.

3.10.2 7-Day Food Frequency Questionnaire

The 7 day food frequency was considered in order to assess usual food consumption. Foods consumed were classified into relevant food groups which included cereals and cereal products, roots and tubers, pulses, legumes and nuts, eggs, meat and fish, fruits, vegetables, milk and milk products, sugar, salt and spices. Respondents were asked how many times the child was fed on foods from the food groups in the previous 7 days.

3.10.3 Key Informant Interviews

KII were conducted in each of the 14 orphanages. The overall in-charge in each orphanage was the respondent and was interviewed individually by the researcher using the KII guide. Each KII was expected to last for 45-60 minutes. The information given including non-verbal communication was documented by the researcher. The researcher guided the interview. The areas covered included; position of the in-charge and period of service, institution holding capacity and the challenges faced in feeding the children. The health care services offered, availability of health care staff, water and sanitation services and policies guiding feeding the children in orphanages were also covered. Most of the respondents were not comfortable with audio recording and therefore, responses were recorded manually.

3.10.4 Observation Checklists

The researcher also filled data on observation checklist in the orphanages. Some of the areas that were observed were hygiene practices of the caregivers, sanitation including hand washing facilities, food preparation methods, adequacy and cleanliness of sleeping areas of the children, availability of beds and beddings for children, availability of mosquito nets in the sleeping areas and maintenance of the surrounding.

3.11 Data analyses and presentation

Content analysis is a research technique of bringing order, structure and meaning to the mass of data collected (Mugenda & Mugenda, 1999). Based on the study objectives, anthropometry data was analysed using ENA for SMART (2011). The indices of interest were weight-for-height (WFH), height-for-age (HFA) and weight-for-age (WFA). Z scores were used to indicate various levels of undernutrition. Children with a Z score of below (< -2) for WFA, WFH and HFA were classified as underweight, wasted and stunted respectively. Children with a Z score of below < -3 and between -2 and -3 for all the indices were classified as severely and moderately malnourished respectively (WHO, 2006). Data on dietary intake was entered and analysed using Nutri-Survey software after which it was exported to SPSS version 20.0. This was for cross analysis with variables such as nutrition status, morbidity and other practices.

Descriptive statistics which included mean, standard deviation, frequencies and percentages were used to describe data on nutrition status, dietary practices, institutional characteristics and morbidity status. Pearson product moment correlation coefficient was used to show relationship between continuous variables such as the age of the child with nutrition status. Chi- square test and odds ratio were performed to establish the relationship between morbidity, dietary intake and the children nutrition status. Analysis of variance (ANOVA) was used to test for differences in mean HAZ, WAZ and WHZ among the children based on their gender. Multi-nomial regression was also performed to identify predictors of nutrition status in the study population. Significance level was set at a value of < 0.05. KIIs data were transcribed, coded, organized into common themes and conclusions drawn. The conclusions drawn provided a thick description to triangulate and support quantitative findings.

3.12 Logistical and ethical consideration

Approval to conduct the study was obtained from the Graduate School of Kenyatta University and a research permit obtained from the National Commission for Science, Technology and Innovation (NACOSTI) - clearance reference number S. No. 8392. Ethical clearance was sought from Kenyatta University Ethical Review Committee (ref. number KU/R/COMM/51/553). The researcher then visited the study area and reported to the county commissioner, director of education, children officer, the area chief, village administrators and the orphanages' administrations.

Respondents' participation was voluntary hence participated in the study based on their informed consent. The researcher ensured that the respondent understood the purpose of the study, study procedures, the risks, benefits and compensation if any before the consent was given. The researcher assured the respondents that all information collected would be treated confidentially. Children found malnourished or ill were referred to the nearest health facility for treatment.

CHAPTER FOUR: RESULTS

4.1 Introduction

This chapter consists of data findings, analysis, presentation and interpretation.

4.2 Characteristics of institutional care

Each orphanage visited was headed by an administrator, a social worker or a Matron. They had served for long (more than six years) and were conversant with the operations in the institutions. The conditions in the institutions were almost similar in reference to child care practices, living conditions, water and sanitation.

The data on institutional characteristics were collected in the study by asking each caregiver interviewed in the orphanages for the information about the variables examined. The information obtained on each caregiver included demographic characteristics of the caregivers and the children, childcare and morbidity status.

Information obtained from the orphanage administration included training of caregivers on childcare practices, children with living parents, child mortality, history and resources of the orphanages as well as challenges and other issues affecting the orphanages. The sample consisted of 162 pre-school children and their caregivers. The total number of caregivers that were interviewed was 45 as shown in Table 4.1. The low number of caregivers recruited in the study compared to their children was as a result of low caregiver to child ratio that exists in the orphanages in Kwale County.

4.2.1 Socio-demographic characteristics of caregivers in the orphanages

The youngest caregiver in this study was aged 23 years while the oldest was aged 58 years. The mean (SD) age was 36.13$\pm$ 8.72 years (Table 4.1). The majority (93.3%) of the caregivers were aged between 23-50 years (Table 4.1). The lowest proportions (6.7%) of caregivers were in the age category of above 50 years.

Majority (84.4%) of caregivers were females while a small percentage (15.6%) were males. Additionally, majority (80.0%) of the caregivers were married. Those who were single were less than a third (17.8%) with only a small percentage (2.2%) widowed. Findings of this study also showed that caregivers had varied education levels ranging from primary to college diplomas (Table 4.1).

Table 4.1. *Caregivers demographic characteristics in selected orphanages*

Characteristics of caregivers		**Kwale County**	
		N	**%**
Age of caregivers (in years)	23-50	42	93.3
	>50	3	6.7
		Mean (SD) age: 36±8.72	
Sex of caregivers	Male	7	15.6
	Female	38	84.4
Marital status	Single	8	17.8
	Married	36	80.0
	Widowed	1	2.2
Level of education	Primary	6	13.3
	Secondary	26	57.8
	College	13	28.9

4.2.2 Training of caregivers on childcare practices

More than two thirds (71.9%) of caregivers in the present study reported that they had been trained on some aspects of childcare practices (figure 4.1) such as good nutrition for children (mostly indicators showing good nutrition status for children), using locally available food items to maximize nutrient intake, food sources for particular nutrients, hygiene and sanitation, child development and behavioural management. About 80% of the administrators in the visited orphanages had been trained on childcare practices. The training is usually offered by Association of Charitable Children Institutions of Kenya (ACCIK) as in-house or as a workshop where staff from various orphanages attend or meet at a central point.

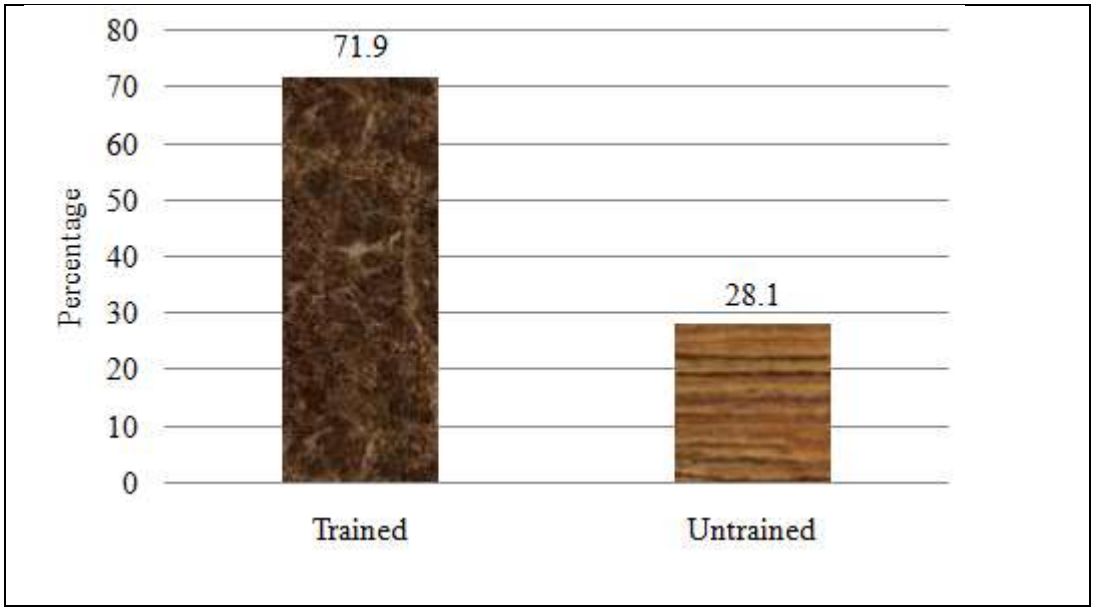

Figure 4.1. Proportion of caregivers trained on childcare practices

4.2.3 Age and sex distribution of preschool children in the orphanages

Table 4.2 shows the distribution by age and sex of the preschool children 24-59 months of age living in orphanages in Kwale County. The sample consisted of 162 preschool children 24-59 months of age who had stayed in the orphanages for at least three months.

Table 4.2. *Distribution by age and sex of the preschool children (24-59 months) in the orphanages*

Characteristics of preschool children		**Kwale County**	
		N	**%**
Age (in months) of preschool children	24-36	29	17.9
	37-59	133	82.1
		Mean (SD) age: 50.73±10.79	
Sex distribution of preschool children	Male	78	48.1
	Female	84	51.9

In the present study, there was no significant difference in the number of male and female children. There were 48.1% male and 51.9% female (P < 0.061); (Table 4.2). The findings in this study revealed majority (82.1%) of the children were in the age group 37-59 months while those below 36 months were less than one fifth (17.9%).

However, the population (number of children) living in orphanages is not constant (keeps on changing over time) as reported by one of the respondent in the orphanages. *"The population of children in orphanages is very dynamic as orphanage placement is sometimes temporary. Children are enrolled and leave the institution when it is necessary. Sometimes children go back to their biological families when the conditions that led to their placement in the orphanages improve such as settlement of disputes among parents and availability of funds to support the child at home"*(Key Informant Interviews with the overall in-charges of the orphanages in Kwale County, May/June, 2016).

4.2.4 Duration of stay of preschool children in the orphanages

Table 4.3 shows the duration of stay of preschool children (24-59 months) in the orphanages.

Table 4.3. *Duration of stay of preschool children in orphanages*

Other characteristics		**N=162**
Duration of stay (months)	**N**	**%**
<12 months	19	11.7
12 – 23 months	9	5.6
24 – 35 months	25	15.4
>36 months	109	67.3
		Mean (SD) duration 35.36±13.33

Majority (67.3%) of the study children had stayed in the orphanages for a period of between 36 and 51 months (Table 4.3) while those who had stayed for 24 to 35 months were 15.4%. Those who had stayed for 4 to 12 months were 11.7% with a small percentage (5.6%) staying between 12 to 23 months. The mean (SD) duration of stay was 35.22±13.54 months.

4.2.5 Children with living parents

More than a third (36.4%) of the study children living in selected orphanages in Kwale County were either single or double orphans. The rest (63.6%) were neither single nor double orphans. The parents often visit their children in the institutions on either monthly basis or sometimes during holidays. Children are allowed to go visit their families during holidays to maintain the family ties that exist. *"Frequently, children are placed in this care, with proper planning so that they don't lose connection with parents, extended family, and community, with hope of reintegration"* (Key Informant Interviews with overall in-charges of the orphanages in Kwale County in Kenya, May/June, 2016).

4.2.6 Infant and child mortality in the orphanages

Child mortality is a core indicator for child health and general well-being. Very few orphanages (Diani and Nice view) reported child death both occurring in the year, 2015 as a result of pain from root canal (tooth) treatment and cerebral palsy. This was confirmed from the orphanages records.

4.2.7 Staff in the orphanages

The orphanages had a variety of employees. However, those who directly influenced the health and nutrition status of the preschool children in the orphanages were as shown below (Table 4.4). Although these employees were on full time employment,

employees in 8 orphanages were on rotating shifts. The older girls in orphanages also participated in supervising and assisting the younger children in the orphanages to feed, bathe and to do their laundry on Saturday afternoon and Sundays. This is the only time they were not attending school.

Table 4. 4. *Staff in the orphanages*

Staff in orphanage	**Orphanage**														
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**Total**
Cooks	2	2	2	1	6	5	1	2	3	1	1	8	4	2	40
House mothers	3	3	3	1	1	8	2	8	6	4	2	4	3	4	52
Matron	1	1	1	1	1	0	1	1	0	0	0	0	1	0	8
Caregivers interviewed	2	4	2	1	1	7	3	4	3	4	2	4	4	4	45

4.2.8 Caregiver-to-child ratio

Caregiver-to-child ratios in the orphanages varied considerably (Figure 4.2).

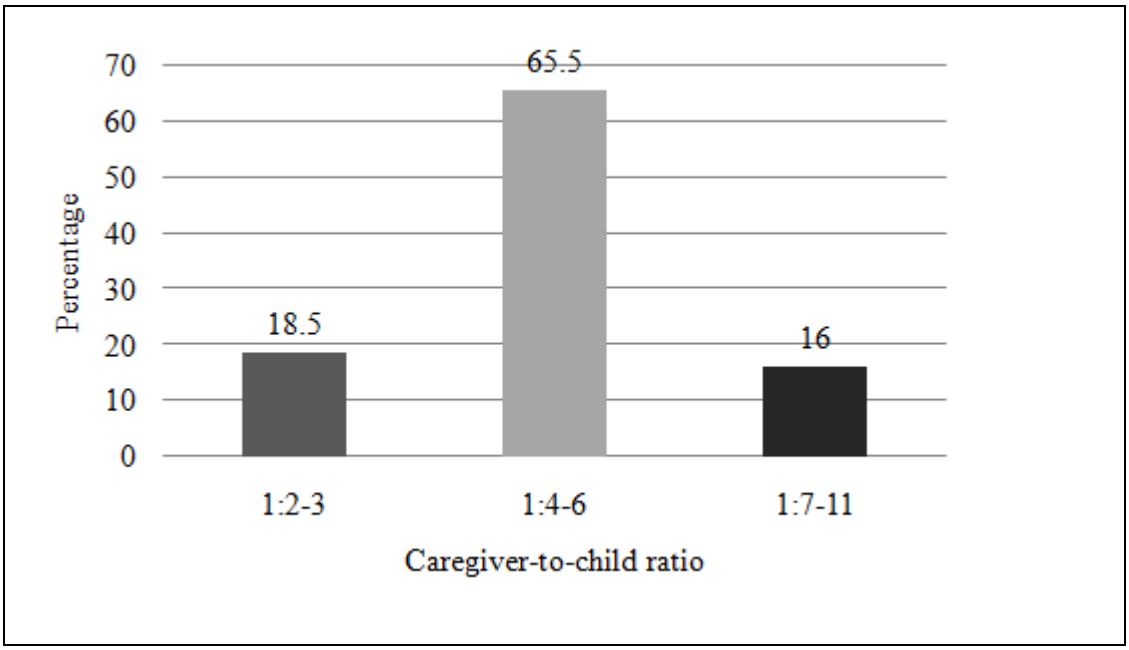

Figure 4.2. Caregiver-to-child ratio in the orphanages

All orphanages visited practiced group care for the children with the least caregiver to child ratio being 1:2 and highest 1:11 as shown on Figure 4.2. Most orphanages with higher caregiver to child ratio viewed undesirable staff turn-over as the main reason for the shortage of staff and has led to most institutions losing employees whose performance, skills and qualifications are valuable resources.

4.2.9 History and resources in the orphanages

4.2.9.1 History of the orphanages

The 14 orphanages had existed for between 6 to 16 years. They were mainly started to rescue the orphaned and vulnerable children whose relatives were not able to take them into their families due challenges they face in life in taking care for them. One was started by individuals (members of a church) who have been soliciting for support for a while from well-wishers but recently got international support, second was built and run by a church and the rest were started and got foreign aid by donors who still seek for financial support in their home countries.

4.2.9.2 Resources for the orphanages

Every home among the 14 homes selected has either permanent donor or an official sponsor. At least 50% of the homes do not have subsistence self-supporting activities. In meeting the economic needs and care for the OVC, most institutions call for partnership with the caregivers through income generating activities in the institutions. Subsistence activities practiced as alternative sources of income in the remaining homes include; farming (poultry, rabbit, livestock farming as well as kitchen gardening), providing services to the community (tailoring, medical, teaching and harvesting of farm produce) for cash, training centres (computer training centre and workshops), advocating for children's rights, hiring property (ovens, social hall), carpentry and making artifacts ['Jambo' bags] for sale (to tourists).

The homes receive donations of foodstuff and clothing through individual contributions and both governmental and non-governmental organizations such as KEMRI (Kenya Medical Research Institute), Kwale, PLAN international, religious groups and well-wishers though this trend is erratic and not dependable according to the home managers. The home managers also work closely with the MGCSD through the children's department, and when funds are available, the county Commissioner, Kwale, assists in relief foods and material. They also received support to meet the school fees for secondary school children from Kwale County bursary fund for five years since the year, 2015. In addition, most homes have social workers who help in provision of counseling services in the facilities.

4.2.9.3 Challenges in the orphanages

Through key informant interviews with the overall in charges of the orphanages, it was established that the main challenges faced by the orphanages were: inadequate amount of land to accommodate such a large number of children, lack of permanent income base, inadequate financial support, frequent staff turn-over, instability in the tourism industry, lack of funds to offset school fees levies, textbooks, clothing, salaries, medical and utilities expenses and lack of utility transport for children to and from school and to support various administrative activities of the home. The orphanages were approximately between one and three Kilometers from the primary schools attended by the children.

Involvement of the community by supporting the running of the orphanages through both participatory and material support was viewed as long term solution to these problems. Participatory support would help in maintaining good discipline, moral values and life skills of the children and material support would ensure that their basic needs (health status and nutrition well-being) are met.

4.3 Dietary practices

4.3.1 Estimated energy and nutrient intake by preschool children

The intake of energy and various nutrients by the children was established on a 24-hour dietary recall. In the orphanage set up, all the meals are prepared in one place and to establish the quantities of ingredients used, the data was obtained from the kitchen personnel. The amount of nutrients in the ingredients was established through the Nutri-survey software (2008). These amounts were computed and compared with the WHO Recommended Daily Allowance (FAO/WHO, 2004). The adequacy of energy intake and selected nutrients consumed per day by the children is shown in Table 4.5.

Table 4.5. *Estimated energy and nutrient intake by preschool children in the orphanages (N=162)*

Nutrient	RDA (FAO/WHO 2004)	Mean (SD) consumption in 24 hours	Number meeting the RDA	% meeting the RDA
Energy	1350-1690 Kcal	2183.67±672.01	128	79.0
Proteins	25-26 gm	71.98±21.51	146	90.1
Vitamin A	400-450 µg	3573.78±872.5	140	86.4
Vitamin C	30 mg	132.56±61.83	156	96.3
Iron	6.0 mg	25.67±14.49	116	71.6
Zinc	4.1-5.1 mg	17.52±6.73	162	100.0

In the present study, majority (79.0%) of the preschool children consumed adequate amounts of recommended energy per day. The mean (SD) calorie intake was 2183.67±672.01 Kcal against the recommended 1352 kcal (FAO, 2004). All the 162 children were served same quantities of food in their institutions. The difference in

energy intake was as a result of poor appetite and sickness in some children as well as age.

For protein intake, nearly all (90.1%) children consumed adequate amounts of recommended proteins per day. The mean (SD) protein intake was 71.98±21.51 g against the recommended 26g (FAO/WHO, 2004).

For micro-nutrient intake, majority (86.4%) children consumed adequate amount of vitamin A rich foods. The mean vitamin A intake was 3573.78±872.5 µg against a recommendation of 400µg. Slightly more than two thirds (71.6%) consumed adequate amounts of iron with a mean intake of 25.67±14.49 mg against the recommended 6.0 mg. All (100%) the children consumed adequate amounts of Zinc with a mean intake of 17.52±6.73 mg against the 4.1 mg recommendation.

In this study, nearly all (96.3%) the children consumed adequate amounts of vitamin C with a mean intake 132.56±61.83 mg against the recommended intake of 30mg (FAO/WHO, 2001).

4.3.2 Frequency of food consumption by preschool children in the orphanages

To determine frequency of food consumption and the types of foods consumed, the foods were classified into 12 different food groups (FANTA [Food And Nutrition Technical Assistance]), 2006; Nokuthula, 2009).

The frequency consumption of foods in this study was based on a 7 day food frequency. The food groups found in children's diet are shown in Table 4.6. All the orphanages served bread or *mandazi* (Swahili bun)/*chapatti*, *ugali* (stiff porridge) and rice as part of the daily meals for preschool children (observation made during the study period by the Author).

Table 4.6. *Frequency of food consumption by preschool children*

7-Day food frequency consumption	**Kwale County**
	N=162
Food	**Mean (SD)**
Cereals	
Ugali	4.33±1.54
Rice	3.71±1.37
Bread/ chapatti/ Mandazi/Pasta	5.27±1.82
Root and tubers	
Potatoes	3.27±1.28
Pulses, legumes and nuts	
Beans/ green grams	5.00±1.33
Green leafy vegetables	
Sukuma/ spinach/ Traditional vegetable	3.27±1.28
Fruits	
Ripe Bananas	2.37±1.35
Oranges	1.41±0.95
Meat, poultry, offal	2.51±1.32
Fish and seafood	1.24±1.18
Eggs	0.24±0.20
Milk and milk products	5.10±2.41
Sugar and honey	7.00±0.00
Oils and fats	7.00±0.00
Salt and spices	7.00±0.00

Wheat based products (*mandazi, chapatti*, bread and pasta) were the most consumed energy giving foods with a mean consumption of 5.27±1.82 times a week. The consumption pattern of potatoes was 3.27±1.28. Consumption of foods in this food group ensures that children get adequate energy for growth and development. These findings support high mean calorie intake observed in the 24 hour recall mean analysis.

Consumption patterns of legumes and nuts food group was high with the mean (SD) consumption being 5.00±1.33. No nuts were provided in either of the orphanages visited, however beans constituted a daily menu in all the orphanages surveyed. Vegetables and meat were served thrice a week with a mean consumption of 3.27±1.28 and 2.51±1.32 respectively.

The mean consumption for dairy products was 5.10±2.41. A high proportion (80%) of orphanages served milk tea as part of daily meal. Fish was served twice a week with a consumption pattern of 1.24±1.18. Ripe bananas were more preferred as fruits than oranges. This was because they are cheap and always on season. The mean consumption of ripe bananas and oranges was 2.37±1.35 and 1.41± 0.95. Sugars and oils contribute significantly to daily kilocalorie intake. All (100%) children consumed both sugar and fats added to foods during the cooking process.

4.3.3 Diversity of foods consumed by preschool children in the orphanages

Findings in this study showed majority (82.1%) of the children in orphanages were served meals with more than four food groups while a small percentage (17.9%) were served meals with less than four food groups (Table 4.7). Majority (85.8%) of the children 24-59 months old had consumed foods rich in iron in the past 24 hours.

Table 4.7. *Diversity of foods consumed by the preschool children in the orphanages*

Food groups	**N**	**%**
< 4 food groups	29	17.9
≥ 4 food groups	133	82.1

4.3.4 Meal frequency

Table 4.8 presents the meal frequency of preschool children living in orphanages.

Table 4.8. *Meal frequency*

Meal	**Mean Energy intake (Kcal)**	**% contribution to total energy**	**N**	**%**
Break fast	249.95 ±213.13	11.4	162	100
Snack (10.00 am)	222.58 ±188.3	10.2	62	38.3
Lunch	758.80 ±346.43	34.7	162	100
Snack (4.00 pm)	188.47 ±69.12	8.6	23	14.2
Supper	763.88 ±346.47	35.1	162	100
Total	2183.70 ± 672.01	100	162	100

All the orphanages visited had a fixed meal schedule (Observation made during the study period by Researcher). "*The daily meal schedule is regimented, and typically children are expected to conform to the institution's meal schedule"* (Key Informant Interview with overall in-charges of the orphanages in Kwale County, May/June, 2016). Usually, children sit in groups at tables or in chairs. Generally, younger children are fed by their caregivers while older children feed themselves with limited adult supervision. The children in orphanages who attended school away from the orphanage were given packed food to consume at the respective schools so that they could not be disadvantaged while away. These comprised 21.6% of all the children in orphanages. This was in a day during school days but not on a weekend.

In this study, Supper was the main contributor of total energy intake (35.1%) compared to lunch (34.7%). Kcals derived from breakfast were less than one eighth (11.4%) while 10.00am snack and 4.00pm snack contributed 10.2% and 8.6% Kcals respectively (Table 4.8). Additionally, more than two thirds (61.7%) of children in the orphanages had three meals in a day. This was attributed to lack of snacks between the major meals and it is short of the four to six meals recommended per day (Chea et

al., 2017; FANTA, 2001). Those who had four meals in a day were 25.9%. A small percentage (12.4%) took five meals in a day (Figure 4.3).

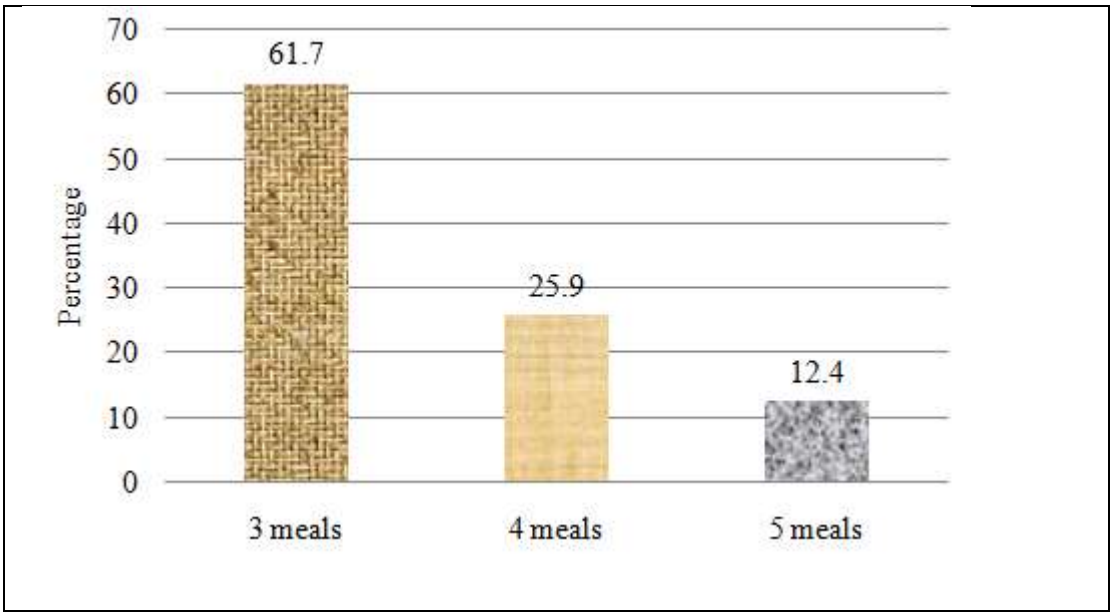

Figure 4.3. Number of meals taken per day by pre-school children in orphanages

4.4 Morbidity status among preschool children in orphanages

4.4.1 Morbidity prevalence among preschool children in orphanages

In the current study, 21.6% of the study children were reported ill based on a two week recall. The duration of illness was between one to fourteen days. Nearly a third (31.4%) of the sick children had illnesses lasting for less than three days.

4.4.2 Common illnesses among preschool children in the orphanages

To obtain information on behavior surrounding these illnesses, caregivers were asked if any of their children 24-59 months of age had experienced the following symptoms in the two weeks prior to the study: cough with short , rapid breathing (symptoms of an acute respiratory infection, considered a proxy for pneumonia), fever (symptom of malaria), or diarrhoea. Caregivers who indicated their child had experienced such symptoms were then asked if treatment advice was sought from a health facility or

provider. For children with diarrhoea, the caregiver was asked additional questions regarding treatment given to the child.

A small proportion (6.8%) of reported illnesses were associated with upper respiratory tract infection mainly coughs and runny nose (Table 4.9). Additionally, symptoms associated with malaria were reported by 10.5% of the sick children; however none of them had laboratory diagnosis to confirm the clinical symptoms.

A very small proportion (0.6%) of the children had chronic diarrhea lasting between 3-7 days while those with vomiting accompanied by acute diarrhea were also reported by 0.6%. Chronic diarrhoea in this study refers to three or more loose stools in a day lasting between 3-7 days. Moreover, the prevalence of skin infection in this study was reported by 2.5%. Finally, measles prevalence in this study was reported by 0.6%).

Table 4.9. *Morbidity patterns among preschool children*

Morbidity prevalence	**Kwale County**	
	N = 162	
Presence of illness two weeks prior to the study	**N**	**%**
Sick	35	21.6
Not sick	127	78.4
Duration of illness		
≤ 3 days	11	31.4
< 3days - < 6 days	15	42.9
>6 days	9	25.7
Nature of illness		
Upper Respiratory Tract Infections	11	6.8
Diarrhea lasting more than 3 days	1	0.6
Vomiting and acute diarrhea	1	0.6
Skin infection	4	2.5
Clinical malaria (No laboratory confirmation)	17	10.5
Measles	1	0.6
Others	15	9.3

*Multiple responses expected

4.5 Caregivers' health seeking behaviour

More than two thirds (78.9%) of caregivers sought medical help for the sick children within 24 hours of illness. Nearly a fifth (18.2%) of those who did not seek medical attention felt the illness was mild. A high proportion (81.8%) of caregivers did not see the importance of seeking health services because in their view the treatment offered was blanket not based on proper diagnosis. Slightly half the proportion (52.6%) of the caregivers who sought medical help for their sick children did so in the public hospitals outside the orphanage ground.

Table 4.10. *Caregivers health seeking behaviour*

Health seeking behavior	**Kwale County**	
	N = 26	
Sought medical help for sick child	**N**	**%**
Sought help	19	73.1
Did not seek medical help	7	26.9
Reasons for not seeking medical help		
Illness considered mild	2	18.2
Provisions of blanket prescriptions	5	81.8
Time within which help was sought		
Within 24 hours	15	78.9
After 24 hours	4	21.1
Where medical assistance was sought		
Public hospitals outside the orphanage grounds	10	52.6
Dispensaries outside the orphanages grounds	5	26.3
Clinic within the orphanage	4	21.1

4.6 Immunization status, vitamin A supplementation and deworming

Figure 4.4 shows immunization coverage, vitamin A supplementation coverage and deworming coverage for preschool children in the orphanages. Information on immunization was obtained from health cards and from caregivers verbal reports.

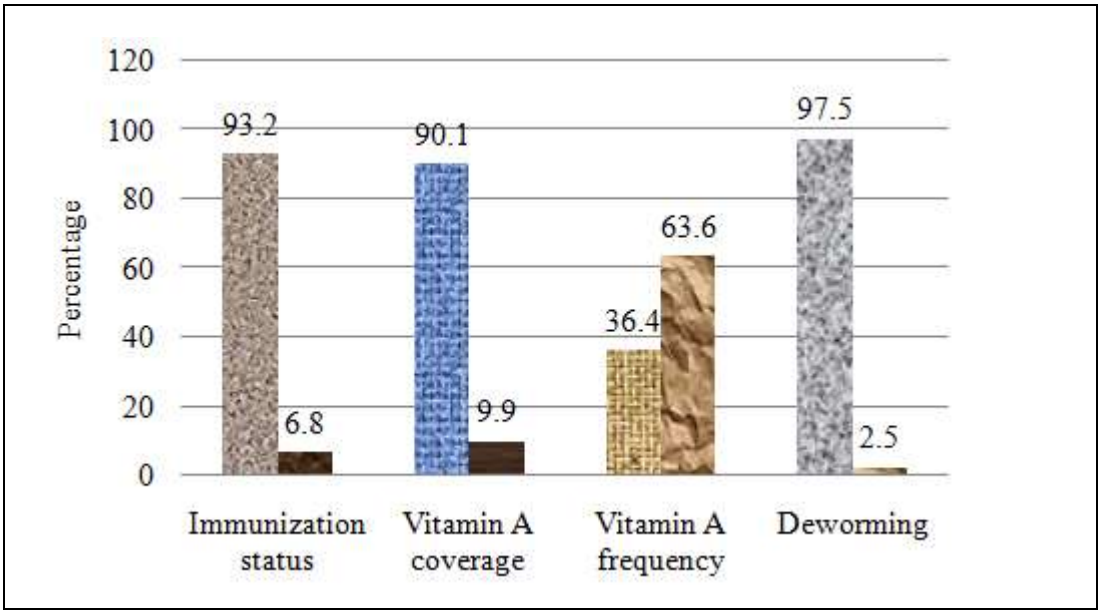

Figure 4.4. Immunization status, vitamin A supplementation and deworming coverage

A child is considered to have received all basic vaccinations if he or she has received a BCG vaccination against tuberculosis, three doses of DPT vaccine to prevent diphtheria, pertussis and tetanus (or three doses of pentavalent, which includes DPT and vaccinations against both hepatitis B and haemophilus influenza type B), at least three doses of polio vaccine and one dose of measles vaccine (KDHS, 2014; WHO, 2016).

Child immunization services offered in various orphanages were referred to the nearest government facility. During the government accelerated immunization campaigns, the orphanages are included. Majority (93.2%) of children were fully immunized (Figure 4.4). Moreover, majority (90.1%) of children in this study received vitamin A supplement six months prior to the study (Figure 4.4). A larger percentage (63.6%) of the preschool children had received vitamin A supplement twice within twelve months prior to the study (Figure 4.4). In addition, almost all (97.5%) of children 24-59 months old had been dewormed six months prior to the study (Figure 4.4).

4.7 Water accessibility and hygiene practices in the orphanages

4.7.1 Sources of water, availability and adequacy

Table 4.11 shows the distribution of water and sanitation facilities in the orphanages.

Table 4.11. *Distribution of water and sanitation facilities*

Distribution of water and sanitation practices	**Kwale County**	
	N = 45	
	N	**%**
Source of water for household use		
Tap water	10	22.2
Borehole water	31	68.9
Rain water	4	8.9
Source of water for drinking		
Tap water	11	24.4
Borehole water	27	60.0
Rain water	3	6.7
Tanker	4	8.9
Treatment of drinking water for children		
Boiling and adding water guard	32	71.1
Tap water	10	22.2
No treatment	3	6.7
Adequacy of water for use (Washing,bathing,cooking)		
Always	33	73.3
Sometimes	12	26.7
Type of toilet in use		
Flush toilet	38	84.4
Improved pit latrine	4	8.9
Traditional pit latrine	3	6.7
Hand washing facility near toilet		
Yes	42	93.3
No	3	6.7
Availability of water at hand washing facility		
Yes	33	73.3
Sometimes	12	26.7
Availability of soap at hand washing facility		
Yes	33	73.3
Sometimes	12	26.7

The main source of water for more than two thirds (68.9%) of the respondents was borehole. Those whose main source of water was tap water were slightly more than a

fifth (22.2%) while a small percentage (8.9%) of respondents reported that their main source of water was rain. A larger percentage (60%) of the respondents reported that they were giving their children treated borehole water available within the orphanages grounds while more than a fifth (24.4%) were giving their children tap water available from stand taps in the orphanages. A small percentage (6.7%) and (8.9%) of the respondents reported that they were giving their children treated rain water and water from tanker, respectively.

4.7.2 Human waste disposal

In the orphanages visited, majority (84.4%) of the respondents reported to have flush toilets within the institutions (Table 4.11). Those who reported to have improved pit latrine were 8.9% while a small percentage (6.7%) reported to have access to traditional pit latrine. All (100%) respondents reported that they disposed children excreta immediately and hygienically (once children defecated) in the toilets.

4.7.3 Hand washing practices, oral and bathing hygiene

Table 4.12 shows the caregivers hand washing practices, oral and bathing hygiene.

Table 4.12. *Caregivers hand washing practices, oral and bathing hygiene*

	Kwale County	
	N = 45	
Caregivers' hand washing practices	**N**	**%**
Before eating	35	77.8
After defecating	43	95.6
Before feeding the baby	42	93.3
After cleaning baby's bottom	33	73.3
Use of soap in hand washing practices		
Before eating	27	60.0
After defecating	36	80.0
Before feeding the baby	38	84.4
After cleaning baby's bottom	29	64.4
Good oral hygiene	45	100
Good bathing hygiene	45	100

Appropriate practice of hand washing is crucial in attaining good health. The findings (Table 4.12) showed that more than two thirds (77.8%) of caregivers washed hands before eating and slightly more than one fifth used soap. Majority (95.6% and 93.3%) washed hands after defecating and feeding the baby respectively and more than a third (36% and 38%) used soap.

4.8 Nutrition status of the preschool children in the orphanages

Malnutrition places children at increased risk of morbidity and mortality and is also shown to be related to impaired mental development. Anthropometry provides one of the most important indicators of children's nutrition status (KDHS, 2014; Ruwali., 2011). In this study, the wasting rate was 3.7% (95% CI: 1.2-6.8), underweight 8.6% (95% CI: 4.9-13.0) and stunting rates of 15.4% (95% CI: 10.5-21.0), (Figure 4.5). None of the study children presented with oedema.

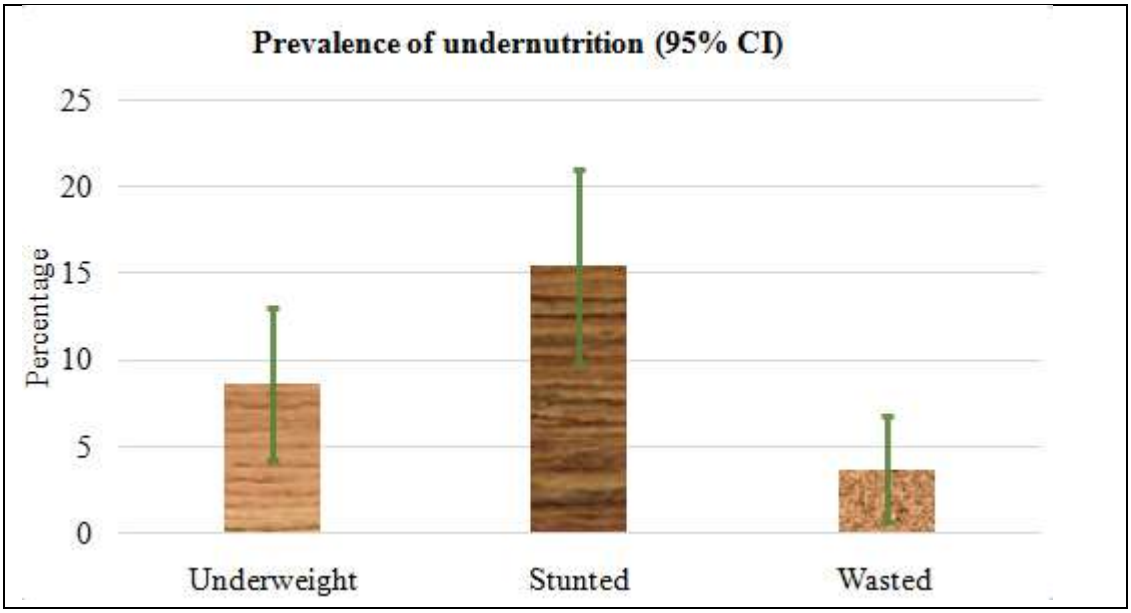

Figure 4.5. Nutrition status of preschool children in the orphanages

The findings also showed that preschool children living in orphanages in Kinango sub-county had a significant ($p < 0.006$) lower mean WAZ than those in Matuga and Msambweni sub-county respectively.

4.8.1 Nutrition status of preschool children by sex

Table 4.13 presents the nutrition status of preschool children living in orphanages by sex. For boys the rates of stunting, wasting and underweight observed in the current study were at 23.1%, 7.7% and 10.3%) respectively. For girls, stunting, wasting and underweight were at 8.3%, 0.0% and 7.1% respectively. The results (Table 4.13), show that boys were more stunted ($\chi^2 = 6.737$, $p = 0.008$), wasted ($\chi^2 = 6.710$, $p = 0.011$) and underweight (though not significant, $p = 0.580$) compared to the girls.

There was also a significant difference in nutrition status based on gender. ANOVA tests showed that boys had a lower mean WHZ ($p = 0.035$) than girls. Moreover, significant correlation existed within the forms of malnutrition. Underweight was significantly associated with stunting ($r = 0.127$, $p < 0.001$). On the other hand, underweight was significantly associated with wasting ($r = 0.181$, $p < 0.001$). This implies that the index child is likely to suffer more than one form of undernutrition putting them at an increased risk of morbidity and subsequent mortality.

Table 4.13. *Nutrition status of preschool children in orphanages by sex*

		Kwale County			
Forms of undernutrition	**Sex distribution**	**N**	**%**	χ^2	**p-value**
HAZ (Stunting)	Boys	18	23.1	6.737	0.008*
	Girls	7	8.3		
WAZ (Underweight)	Boys	8	10.3	0.497	0.580
	Girls	6	7.1		
WHZ (Wasting)	Boys	6	7.7	6.710	0.011*
	Girls	0	0.0		

4.9 Factors associated with nutrition status of preschool children

Several factors were associated with nutrition status of preschool children in the current study. These factors included duration of stay of the preschool children in the

orphanages, dietary practices for the preschool children, morbidity status of the preschool children, training of caregivers on childcare practices and other institutional characteristics.

The anthropometric data was categorized into undernourished and well-nourished. The dietary practices were categorized as appropriate and inappropriate based on (FAO/WHO, 2004) guidelines for feeding practices for preschool children. Additionally, the prevalence of morbidity was categorized into presence or absence of sickness based on a two-week recall period.

4.9.1 Relationship between duration of stay in orphanages and nutrition status

Prevalence of undernutrition seemed to increase significantly with an increase in length of stay in the orphanage (Figure 4.6). These differences were significant for stunting ($r = 0.378$, $p < 0.001$) and underweight ($r = 0.560$, $p < 0.001$) but not significant ($r = 0.013$, $p = 0.914$) for wasting.

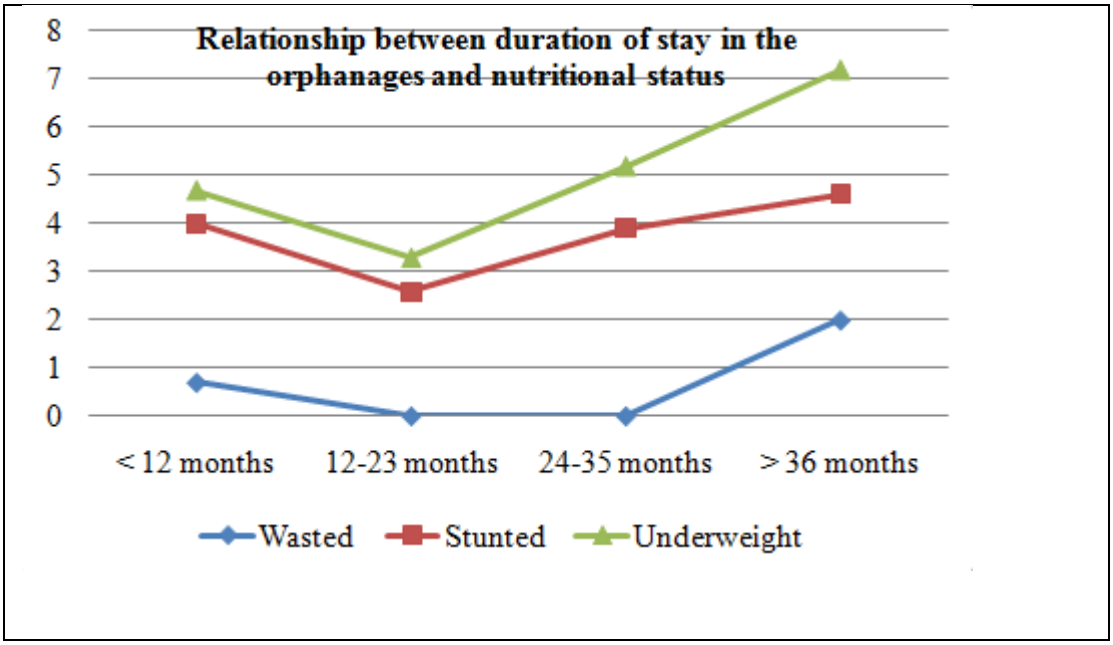

Figure 4.6. Relationship between duration of stay for preschool children in the orphanages and nutrition status

4.9.2 Relationship between dietary practices and nutrition status

Table 4.14 shows the relationship between dietary practices and nutrition status of the preschool children living in orphanages in Kwale County. In this study, the amount of energy consumed per day for preschool children showed a significant relationship with underweight ($\chi^2 = 38.72$, $p < 0.001$) and stunting ($\chi^2 = 39.40$, $p < 0.001$). Children whose energy intake was not adequate were more likely to be underweight and stunted. Wasting did not show any relationship ($\chi^2 = 0.573$, $p = 0.607$) with adequacy of energy intake. The hypothesis stated that there is no significant relationship between childcare practices and nutrition status of preschool children was therefore rejected.

Table 4.14. *Relationship between dietary practices (adequacy of energy intake) and nutrition status*

Nutrition status	Energy intake adequate N=128		Energy intake not adequate N=34		Total N=162		χ^2	P-value
	N	%	N	%	n	%		
Underweight	2	1.6	12	35.3	14	8.6	38.72	0.001**
Normal	126	98.4	22	64.7	148	91.4		
Wasted	4	3.1	2	5.9	6	3.7	0.573	0.607
Normal	124	96.9	32	94.1	156	96.3		
Stunted	8	6.3	17	50.0	25	15.4	39.40	0.001**
Normal	120	93.7	17	50.0	137	84.6		

Likelihood ratio correlations used for cells with less than 5 counts

4.9.3 Relationship between morbidity status and nutrition status

Presence of illness in this study showed a significant relationship with stunting ($\chi^2 = 16.13$, $p < 0.001$), underweight ($\chi^2 = 16.48$, $p < 0.001$), and wasting ($\chi^2 = 7.470$ $p = 0.020$). Children who were sick were more likely to be stunted, underweight and wasted respectively. The hypothesis that there is no significant relationship between morbidity and nutrition status of preschool children was thus rejected.

Table 4.15. *Relationship between morbidity and nutrition status*

Nutrition status	Children sick N=35		Children not sick N=127		Total N=162		χ^2	P-value
	N	%	N	%	n	%		
Underweight	9	25.7	5	3.9	14	8.6	16.48	0.001**
Normal	26	74.3	122	96.1	148	91.4		
Wasted	4	11.4	2	1.6	6	3.7	7.470	0. 020*
Normal	31	88.6	125	98.4	156	96.3		
Stunted	13	37.1	12	9.4	25	15.4	16.13	0.001**
Normal	22	62.9	115	90.6	137	84.6		

Likelihood ratio correlations used for cells with less than 5 counts

4.9.4 Relationship between caregivers' marital status and nutrition status

Caregivers marital status categorized as married, widowed and single (Table 4.16) showed a significant relationship with stunting (χ^2 = 6.073, p = 0.048). Children whose caregivers were married were more likely to be stunted. Underweight (χ^2 = 0.467, p = 0.792) and wasting (χ^2 = 0.058, p = 0.971) did not show any significant relationship with caregivers' marital status. The findings imply that beneficial effects on marital status may not be significant in the orphanage set up. The hypothesis stated that there is no significant relationship between institutional characteristics and nutrition status of preschool children was therefore rejected.

Table 4.16. *Relationship between institutional (socio-demographic [Marital status]) characteristics and nutrition status*

Nutrition status	Single N=58		Married N=103		Widowed N=1		Total N=162		χ^2	P-value
	N	%	n	%	n	%	N	%		
Underweight	4	3.8	10	6.1	0	0.0	14	8.6	0.467	0.792
Normal	54	96.2	93	93.9	1	100.0	148	91.4		
Wasted	2	0.2	4	3.0	0	0.0	6	3.7	0. 158	0.971
Normal	56	99.8	99	97.0	1	100.0	156	96.3		
Stunted	7	9.4	17	13.1	1	100.0	25	15.4	6.073	0.048*
Normal	51	90.6	86	86.9	0	0.0	137	84.6		

Likelihood ratio correlations used for cells with less than 5 counts

4.9.5 Relationship between training of caregivers on childcare practices and nutrition status

Training of caregivers on childcare practices categorized as trained versus not trained (Table 4.17) showed a significant relationship with underweight, wasting and stunting ($\chi^2 = 41.20$, $p < 0.001$; $\chi^2 = 14.08$, $p = 0.004$ and $\chi^2 = 45.00$, $p < 0.001$) respectively. Children whose caregivers had not received any form of training on childcare practices were more likely to be underweight, wasted and stunted respectively. The hypothesis stating that there is no significant relationship between institutional characteristics and nutrition status of preschool children was therefore rejected.

Table 4.17. *Relationship between institutional characteristics (training of caregivers on childcare practices) and nutrition status*

Nutrition status	Trained N=139		Not trained N=23		Total N=162		χ^2	P-value
	N	%	n	%	N	%		
Underweight	4	2.9	10	43.5	14	8.6	41.20	0.001**
Normal	135	97.1	13	56.5	148	91.4		
Wasted	2	1.4	4	17.4	6	3.7	14.08	0.004*
Normal	137	98.6	19	82.6	156	96.3		
Stunted	5	3.6	20	86.9	25	15.4	45.00	0.001**
Normal	134	96.4	3	13.1	137	84.6		

Likelihood ratio correlations used for cells with less than 5 counts

4.10 Predictors of preschool children nutrition status

Morbidity status was a predictor of stunting (OR = 1.734, $p < 0.001$), underweight (OR = 8.446, $p < 0.001$) and wasting (OR = 2.967, $p < 0.015$). Adequacy of vitamin A intake was a predictor of stunting but the relationship was not statistically significant (OR = 3.000, $p = 0.666$). Adequacy of energy intake was also a predictor of stunting (OR = 16.70, $p < 0.001$) and underweight (OR = 9.400, $p < 0.001$). Children who had inadequate energy intake were more likely to be stunted and underweight compared to those who had adequate energy intake. Lastly, training of caregivers on childcare

practices was a predictor of stunting (OR = 2.222, p < 0.001), underweight (OR = 8.000, p < 0.001) and wasting (OR = 8.000, p = 0.012) respectively. Children whose caregivers had not been trained on child care practices were more likely to be stunted, underweight and wasted (Table 4.18).

Table 4.18. *Predictors of preschool nutrition status*

Variable	**Odds ratio**	**95% CI**	**P-value**
Adequacy of energy intake		Stunting	
	16.70	3.170 – 19.09	0.001**
		Underweight	
	9.400	3.333 – 27.02	0.001**
Adequacy of Vitamin A intake		Stunting	
	3.000	1.404 - 6.579	0.666
Caregivers trained on child care practices		Stunting	
	2.222	0. 903 - 5.263	0.001**
		Underweight	
	8.000	2.558 – 25.00	0.001**
		Wasting	
	8.000	1.529 – 41.66	0.012*
Morbidity status		Wasting	
	2.967	1.051-8.403	0.015*
		Underweight	
	8.446	2.615 – 27.28	0.001**
		Stunting	
	1.734	0.438 – 14.03	0.001**
Significance at p < 0.05			

CHAPTER FIVE: DISCUSSION

5.1 Introduction

This was a cross sectional study aimed at establishing childcare practices, morbidity status and nutrition status of preschool children living in orphanages in kwale County, Kenya. Quantitative data were collected using researcher administered questionnaire while qualitative data were collected through key informant interviews and observation checklist. A search through the existing literature showed that there are very few studies conducted in Kenya on preschool children living in orphanages.

5.2 Characteristics of the institutional care

5.2.1 Caregivers' socio-demographic characteristics

The results of the present study showed older caregivers (above 50 years) in the orphanages constitute a small proportion (6.7%). Majority of the caregivers in this study were aged between 23 and 50 years. Majority (80.0%) of them were married. The study findings are comparable with those by Mwaniki & Makokha (2013) which showed that caregivers (below 50 years) constitute a small percentage (<25%). Moreover, the study findings by Mwaniki & Makokha (2013) revealed that majority of the caregivers were married.

The level of education is likely to influence childcare practices in the orphanages or institutions in general where resources are limited (Abuya et al., 2012). The findings of this study showed that caregivers had varied levels of education ranging from primary level education to college diplomas. More than half (57.8%) of the caregivers had secondary level education while slightly more than one-quarter (28.9%) had college level education with a small percentage (13.3%) having primary level education. A study by Mwaniki & Makokha (2013) showed similar findings.

5.2.2 Caregiver-to-child ratio

The number of children served by each caregiver is critical to higher quality care. Poor caregiver to child ratio not only inhibits social interaction, but also influences the way caregiver responds to the needs of the children. Although young children in group care often fail to thrive, tend to be sickly and often demanding of attention; provision of supportive and stable caregiver to child relationships is of paramount importance (WHO, 2004a). Favourable caregiver to child ratio in institutional care is 1:4-6 (Vorria et al., 2003; Zeanah et al., 2005).

Most institutions that have been studied have had high caregiver to child ratios. In many studies, ratios have ranged from 1:12 to 1:15, even for children less than 3 years old (Zeanah et al., 2005). Even in orphanages with more favorable child to caregiver ratios, there is still the problem of inconsistent caregiving. A given child may be cared for by 15 to 30 different caregivers who worked in rotating shifts (Smyke et al., 2002; Zeanah et al., 2005). Understaffing and frequent turnover exacerbate the problem of limited psychological investment by caregivers and lead to rare opportunities for infants and children to be held or to experience meaningful interactions with their caregivers (Zeanah et al., 2005).

It was noted in the present study that the least caregiver to child ratio was 1:2 while the highest was 1:11. Majority (84.0%) of the children had favourable caregiver to child ratio. However caregivers were on rotating shifts in most institutions and discouraged individualized care. "*We discourage individualized care so that children don't develop a preferred attachment to a specific caregiver"* (Key Informant Interviews with overall in-charges of the orphanages in Kwale County, May/June, 2016).

The larger the orphanage, the less likely it is that children receive care from a consistent caregiver who would focus on the child's individualized needs (FTAI, 2014; Mile et al., 2013). Typically, children will be group-fed on a schedule rather than on demand and less attention will be paid to a child's individual growth, social, and emotional development. Poor quality care and a lack of individualized stimulation can lead not only to health and development problems, but to isolation and lack of identity (Zeanah et al., 2005).

Studies of orphanages in Ethiopia and Rwanda have reported high caregiver-to-child ratios compared to the study findings. In the Ethiopian study, three orphanages reported that they had administrative personnel but did not have any caregivers (Family Health International (FHI), 2010). The other orphanages were in a range that includes 33 to 125 children per caregiver. In Rwanda, the study found that the average ratio was one caregiver to 13 children (Republic of Rwanda [ROR], 2012).

5.2.3 Children with living parents

The vast majority of children in residential care globally are not double orphans (United Nations [UN], 2010). Depending on the region, 50-90% of children living in orphanages have at least one living parent (Williamson & Greenberg, 2010). It was however noted in this study that more than a third (36.4%) of children in the selected orphanages were either single or double orphans. The rest (63.6%) were not orphans.

The findings in this study differ slightly with those of UNICEF (2012) where a situation analysis showed that in Eastern Europe and Central Asia, 95-98% of children below three years of age in formal care were not orphans (UNICEF, 2012a). They had parents who for one reason or another felt they could not care for them. The findings of this study also differ slightly with those by Frimpong-Manso (2013) in

Ghana where 80-90% of the children in orphanage care had families that, with some support, would be able to care for them.

5.2.4 Duration of stay of children in orphanages

Studies have shown that orphanages and duration of stay in institutions may have damaging effects on a child's early development. The damaging effects increase with increase in length of stay (Carter, 2005; Johnson, 2006). Findings in this study concur with a study in Zimbabwe where stunting and underweight rates of children in orphanages were directly correlated to length of stay in the orphanages (C-SAFE/World Food Program (WFP), 2004). Another study in Northern Tanzania found higher stunting levels among children in orphanages and this increased with age of the children (Ainsworth & Semali, 2000). The findings in this study are also in agreement with those by Mwaniki & Makokha (2013) which showed that stunting and underweight rates of children increased with duration of stay.

For reintegration purposes, every child in an orphanage should have an individualized case plan that minimizes the time spent in an orphanage and facilitates eventual integration into a family (FTAI, 2014). In Kwale County, this is through the relatives visiting the child in the orphanage or the child be allowed to visit the relatives during holidays (observation made by the researcher during study period). When orphanages provide limited opportunities for interaction between children and their families, they hinder reunification (ROR, 2012).

Several studies have shown how orphanages provide limited opportunities for interaction between children and their families. A study in Malawi showed that only one third of the children in orphanages reported being visited by a relative (ROR, 2012). The same study also showed that only 9% of more than 6,000 children in care

had a case plan (ROR, 2012). A similar study in Ethiopia showed that only one-third of all orphanages reported having case plans (FHI, 2010).

Other studies have also shown how a temporary solution of placing children in orphanages becomes permanent. A study in Guatemala found that about one-third of the children living in orphanages had a judicial decree stating that their placement was permanent. This was in direct violation of the country's Children's Law, which states that orphanage placement could only be temporary (Perez, 2008). A study of orphanages in Rwanda showed that more than a third (30%) of all Rwandan children in orphanages have been in care for more than ten years, and 13.6% of children (452 children) spent more than 15 years in an orphanage-essentially their entire childhoods (ROR, 2012).

5.2.5 Infant and Child mortality

Child mortality is a core indicator for child health and well-being (KDHS, 2014). Information on infant and child mortality is important in identifying at risk segments of the population so that programmes can be targeted to reduce it. Child mortality rates are also basic indicators of socio-economic level of a country and quality of life (KDHS, 2014). The proposed Sustainable Development Goals (SDGs) target for child mortality represents a renewed commitment to the world's children: By 2030, end preventable deaths of newborns and children under five years of age, with all countries aiming to reduce neonatal mortality to at least less than 25 deaths per 1,000 live births (UNICEF/WHO, 2015). Remarkable progress has been made in recent years in reducing child mortality. The progress is however insufficient to achieve the MDG 4 target (UNICEF/WHO, 2015). Concomitantly, child mortality in this study was very low as indicated by only two deaths of children occurring in the year 2015.

5.2.6 Training of caregivers on childcare practices

Training and education for childcare providers are extremely important and as a result leads to quality childcare and build confidence to those cared for (Abuya et al., 2012; Negash et al., 2015). Through key informant interviews with the in-charges of the orphanages, it was noted that training was usually provided by ACCIK and the strategy was to train the administrators so that they could cascade the information to other caregivers. This was viewed as the easiest way in ensuring that at least each caregiver had the basic knowledge in caregiving. More than two thirds (71.9%) of caregivers in this study had been trained on childcare practices with majority (80%) of those trained being the administrators of the orphanages.

5.3 Dietary practices

5.3.1 Food consumption in the orphanages

The consumption of a varied diet is associated with increased intake of energy and better health (Chea et al., 2017; Juma et al., 2016; Senbanjo, Olagiwola and Wasio, 2016). The starchy foods should form the main part of the meal and the rest of the meal can be planned around the starchy component (Vorster & Nell, 2002). Consumption of foods in this food group ensures that children get adequate energy for growth and development. Energy is also required for basal metabolic rate, for physical activity and to replenish losses through infections' symptom such as fever. Inadequate energy intake results in the use of body reserves to meet the deficit leading to weight loss and consequently poor nutrition status.

The diet served in the orphanages comprised mostly of starchy foods. The cereal based foods mainly *ugali*, porridge, bread, *mandazi* and beans contributed the highest proportion of food energy. These findings support high mean kilocalorie intake

observed in the 24 hour recall mean analysis and the 7-food frequency consumption. The findings of the current study are in agreement with a Western Kenya study where cereals contributed the highest proportion of food energy (Nokuthula, 2009).

Breakfast should provide at least 15-25% of the total energy intake (Spence, 2017). However, the energy (less than 12% of the daily energy intake) derived from breakfast in this study were too low to enable the children to perform adequately until lunch. This suggests that majority of the children were hungry for a great part of the morning. Supper was the main contributor of daily energy intake (35.1%) compared to lunch (34.7%).

These findings are comparable to the Pakistan study which observed that children in orphanages had lower intakes of calories for breakfast (less than 10%) (UNICEF, 2009a). Similarly, this study concurs with a study by Mwaniki & Makokha (2013) which showed that supper made valuable contribution (44.9%) of daily energy intake compared to lunch (43.9%) for children in orphanages. The proportionately high contribution of lunch and supper to daily energy intake implies that more emphasis was placed on these two meals than on breakfast. However the mean energy intake for children in orphanages didn't meet the energy requirements for all children. Among the children in orphanages, majority (79.0%) met their daily energy requirements.

Consumption of meat, fruits and vegetables was low. Meat was served thrice a week in most of the orphanages; however, all orphanages served beans daily. Kales were more preferred and were served thrice a week with some orphanages serving cabbage once or twice a week. Similarly, fruits which comprised of ripe bananas and oranges were served thrice a week. Ripe bananas were more preferred in the orphanages than oranges because they are cheap and always in season. Low consumption of fruits and

vegetables could expose children to micronutrient deficiencies that take long to manifest. In all the orphanages, either a cup of milk or milk tea was offered to the children. A combination of these food groups contributed to majority (82.4%) of the children having a dietary diversity of more than four food groups.

5.3.2 Meal frequency

The frequency of feeding is an important indicator for the attainment of adequate dietary intake and therefore health and nutrition status. Breakfast is often described as the most important meal of the day in provision of both sustenance and energy (Spence, 2017; Susanto, 2015). Eating breakfast is associated with a range of positive health outcomes and significantly contributes to whole diet nutrient adequacy (Rampersaud et al., 2005; Susanto, 2015). Skipping breakfast during childhood has been associated with malnutrition and may also have an adverse effect on cognitive function, academic performance, psychosocial function and mood in children and young people (Pollit & Mathews, 1998; Rampersaud et al., 2005; Utter et al., 2007).

Lunch and evening meal or supper contributes substantially to energy and nutrient intake. The dinner or evening meal has historically been the main meal of the day and the meal most families have together. As such, it provides a significant proportion of daily energy and nutrient requirements (MOH, 2012).

Snacks can be considered ‘mini-meals’ that make a valuable contribution to energy and nutrient intake between main meals (GOK, 2014). Many children will need snacks mid-morning and mid-afternoon, while after-dinner snacks can also be included for older children. The ideal snacks provide energy, protein, carbohydrate, vitamins, minerals, dietary fibre and a good balance of dietary fats. The recommended

meal pattern is breakfast (7.00am), mid-morning (10.00am), lunch (12.00-1.00pm), mid-afternoon (3.00pm) and evening meal (5.00pm) (GOK, 2014; MOH, 2012).

It has been recommended that preschoolers consume 4 to 6 meals in a day because of their rapid growth and that breakfast to provide 15-25% daily energy intake (Chea et al., 2017; Spence, 2017). However in this study, nearly two thirds (61.7%) of the children were served with 3 meals hence meeting the recommended meal frequency in orphanage set up was an area of concern. More than a third (38.3%) of the children were served at least 1 or 2 snacks per day. Some of the meals (on average) were however served within very short intervals in all the orphanages (Observation made during the study period by the researcher). Meals served within short intervals may interfere with nutrient utilization in the body leading to malnutrition (GOK, 2014).

Through key informant interviews with the overall in charges of the orphanages, it was established that all children were served same quantities of food. The difference in energy intake was as a result of poor appetite, illness among children as well as age. It could therefore be suggested that for those children whose energy intake fell below the recommended intake, they were at risk of suffering from nutrition deficiencies. The diet of children in orphanages was dominated by basic staple foods supplemented by complimentary foods usually, in form of stews (observation made during the study period by the researcher).

5.3.3 Diversity of foods consumed by the preschool children in the orphanages

Majority (82.1%) of the children in orphanages were served meals with more than four food groups. Only a small proportion (17.9%) of the children in orphanages were served meals with less than four food groups. This results are similar to another study in Western Kenya which found that all the children in the study consumed four or

more food groups (Nokuthula, 2009). This study also concurs with a 1999 micronutrient survey, which reported a relatively low consumption of fruits in Kenya (MOH/UNICEF, 2001).

Findings of the current study are also comparable with a study conducted on preschoolers in Kenya which showed that over three quarters (79.1%) of children consumed meals with more than four food groups (Chea et al., 2017). Additionally, the orphanages depended on purchased food rather than on home-produced food (observation made by the researcher).

4.3.4 Consumption of iron rich foods

Consumption of iron-rich or iron fortified foods is recommended to fight iron deficiency anaemia (IDA) in children (Sills, 2016; WHO, 2010). The WHO recommended foods in this group are flesh foods (WHO/UNICEF, 2010). Majority (85.8%) of the preschool children had consumed foods rich in iron in the past 24 hours. Low consumption of iron-rich foods may put children in orphanage set up at an increased risk of IDA. Children above one year of age are routinely given antihelminthic to control certain types of intestinal parasites that can cause anaemia. Vitamin C is required for iron absorption. Children taking adequate amounts of iron may end up with IDA arising from poor absorption.

5.4 Morbidity status and health care practices

Overall, the health status of the population in Kenya is poor, with an infant mortality rate of 39 deaths per 1,000 live births, and under five mortality rate of 52 deaths per 1,000 live births (KDHS, 2014). The evidence contributes to the growing scientific consensus that tackling childhood morbidity as well as malnutrition and improving health care is a high priority (Olack et al., 2011).

5.4.1 Morbidity prevalence among preschool children

Acute respiratory tract infection (ARI), malaria and dehydration caused by severe diarrhoea are major causes of child morbidity and mortality in Kenya. When a child has symptoms of these illnesses, prompt medical attention is critical (KDHS, 2014). The common illnesses for children under five years in Kwale County are; upper respiratory tract infection, malaria, diarrhoea, skin disease and pneumonia (KFSSG, 2016).

Respiratory tract infection is any infectious disease involving the respiratory tract. This type of infection is normally classified as an upper respiratory tract infection (URTI) or a lower respiratory tract infection (LRTI). LRTI such as pneumonia; tend to be far more serious conditions than URTI such as the common cold. Another serious condition in children is fever. Fever activates the immune system hence can suppress appetite and leads to re-location of nutrients away for growth (Dewey & Mayers, 2011; Orphan Nutrition, 2017). Malaria and other illnesses that cause fever contribute to high levels of malnutrition and mortality in children. Nonetheless, dehydration caused by severe diarrhoea and vomiting is a major cause of morbidity and mortality among young children. However the condition can easily be treated with oral rehydration solution (ORS). The Kenya policy on management of diarrhea in children under age five recommends the use of zinc with ORS (GOK, 2013).

Numerous factors contribute to the development of skin infection. These factors include poor skin health, low socio-economic status, low level of hygiene, overcrowding and lack of awareness on skin infection (Kotowaroo & Rajesh, 2013). Skin infections and infestations are common in orphanage environment if factors contributing to the development and higher frequency of skin infection prevail

(Kotowaroo & Rajesh, 2013). Where overcrowding is minimal and good hygiene practices prevail, the occurrence of skin infections tend to be minimal as shown by the findings of this study. This was also promoted by availability of water for bathing children among others as reported by respondents during the interviews.

Measles is a highly contagious, serious disease caused by a virus. The disease remains one of the leading causes of death among young children globally even though a safe and cost effective vaccine is available. Approximately 134,200 people died from measles in 2015-mostly children under the age of 5. Accelerated immunization activities have had a major impact on reducing measles deaths (WHO, 2016).

In the present study, the most common childhood illnesses reported by the majority of caregivers were those related to the acute respiratory tract infections (ARI), malaria and skin infection. The prevalence of diarrhoeal diseases and vomiting was not common and this observation could be associated with appropriate sanitary habits according to the KII's with the in-charges of the orphanages. A larger proportion of children had access to treated/boiled drinking water. Caregivers reported having an understanding for the need and importance of washing hands before feeding the children. The use of soap was found to be common during washing of hands. These factors minimised the risks of contamination. Generally, Kwale County has also seen a significant reduction (22%) of illnesses such as malaria and pneumonia as a result of mass distribution of nets and introduction of pneumococcal vaccine (KFSSG, 2016).

5.4.2 Health care practices in the orphanages

In the current study, the health care practices in the orphanages were found to be adequate. The study found that in the event of sickness, 73.5% of the children were either taken to orphanage dispensaries or civilian dispensaries/hospitals for medical

care. Through key informant interviews, it was established that the drug kits in the civilian hospitals and dispensaries were supplied by the Ministry of Health. One orphanage (Nice view) had a dispensary situated outside the orphanage ground. Future for children had a nurse while Kebene and Upendo had procedure rooms for checking mild medical conditions.

Caregivers preferred civilian dispensaries/hospitals because treatment was free. The drugs supplies were done by the government. In case where there were no drugs in the health facilities, the orphanage administration themselves or well-wishers purchased the drugs. Majority of caregivers were satisfied with the quality of health care within the dispensaries and the civilian referral hospitals.

Caregivers were also provided with insecticide treated mosquito nets in all orphanages except one orphanage (Kuluhiro) that usually use insect repellent spray to keep off mosquitoes. No nutritionist was attached in the facilities. However, the nutritionist in-charge of the sub-county visited the homes occasionally to ensure the homes have access to nutrition services.

5.5 Immunization status

Immunization is important because it protects children from serious illness and complications of vaccine preventable diseases which can include paralysis of limbs, hearing loss, convulsions, brain damage and death. Universal immunization against the six vaccine-preventable diseases (namely; tuberculosis, diphtheria, whooping cough, tetanus, polio and measles) is crucial in reducing infant and child mortality (MOH, 2016). The immunization coverage for the children in the orphanages was good. There was a higher coverage for children fully immunized compared to the Kenya national rate (71%).

Higher coverage in orphanages in Kwale County could be associated with the provision of services within the institutions and the referral systems where the services are not available. These services include Malezi Bora and national immunization days campaigns.

5. 6 Vitamin A supplementation and deworming coverage

Vitamin A is an essential micro-nutrient needed in small amounts by humans for the normal functioning of the visual system; growth and development, maintenance of epithelial cellular integrity and for immune system (FAO/WHO, 2001).

Vitamin A deficiency is a major contributor to children under five mortality and increases severity of infections such as measles and diarrheal diseases. Periodic dosing targeting infants and young children is one method of ensuring children at risk do not develop vitamin A deficiency (VAD). Children between 12-59 months old are supposed to receive vitamin A capsule twice in a year (MOPHS, 2010). Many countries have adopted multiple strategic approaches to prevent VAD namely food fortification, vitamin A supplementation and dietary diversification (WHO, 2017b).

Deworming has health benefits in children as worms impact negatively on the mental and physical development of children. Ample evidence have shown that deworming has a significant impact on health, education and livelihoods of treated children (Taylor-Robinson, 2015; WHO, 2017a). Worms fundamentally affect the quality of children's lives and negatively impact their access to health, education and livelihoods. Outcomes of deworming include decreased anaemia and improves nutrition, increases growth and weight gain, improves cognition and mental and physical development, increases resistance to other infections, supports more frequent school attendance, improves children's ability to learn better and be more active in

school. Periodic deworming is carried out in intervals of six months targeting children 12-59 months of age as a measure to improve micro-nutrient status especially iron (KNBS & ICF Macro, 2010).

Findings for this study showed vitamin A supplementation coverage and deworming for the children in the orphanages were good. There was a higher coverage for children supplemented with vitamin A as well as deworming compared to the Kenya national rate. The higher coverage in orphanages could be associated with the provision of vitamin A supplementation services and dewormers within the institutions, referral systems and national immunization days.

5.7 Water accessibility and hygiene practices in the orphanages

The key water sources in Kwale County are piped water, dams, shallow wells, boreholes and rivers (KFSSG, 2017). Improved water sources, sanitation and simple act of washing hands at critical times, improvement of drinking water quality reduce diarrhoea cases (Centers for disease control and prevention [CDC], 2016). Hygienic disposal of waste ensures containment of excreta which are the primary source of diarrheal agents that are further transmitted through foods and fluids (Clasen et al., 2010; Wolf et al., 2014). Containment of excreta is the best means to prevent diarrhoea disease agents from proliferating and being transmitted. In the present study, sanitation and hygiene practices in the orphanages were generally good.

5.8 Nutrition status of preschool children in the orphanages

Undernutrition is a serious medical condition marked by a deficiency of energy, essential proteins, fats, vitamins and minerals in a diet (Black et al., 2003). All children have the right to adequate nutrition, which is essential for attainment of the highest standard of health (IFPRI, 2016). The nutrition status of children is important

as it determines the health, physical growth and development, academic performance and progress in life. However, at the close of millennium development goals and the dawn of the new sustainable development goals, Kenya's performance still faces challenges. In Kenya, the indicators of nutrition status paint a grim picture for children below five years of age. The KDHS (2014) report indicated that 26% of children (below 5 years) were stunted, 11% were underweight and 4% were wasted nationally.

The rates show that undernutrition in particular is a huge challenge in Kenya. Stunting is the predominant nutrition problem with high stunting rates of 35% in 2009 and a 9% reduction in 5 years to 26%. Wasting has reduced from 7% to 4%, while underweight children have reduced from 16% to 11% in 2014 (KDHS, 2014). Studies show that decline in Kenya's economic growth in 1990's, the rise in inflation, increased poverty levels and HIV/AIDS pandemic are major contributors to children's poor nutrition status (UNICEF, 2000). Although there is a slight improvement in nutrition status in Kenya (KDHS, 2014) and while the reductions are welcome in themselves, a comparison between real reduction against the ideal rate of reduction reveals that more work needs to be done.

Kwale County registered an increasing rate of Global Acute Malnutrition (GAM) from 8.4% to 9.1% in 2009 and 2012, respectively. Severe Acute Malnutrition (SAM) rate in 2012 stood at 2.7% (UNICEF, 2012b). The proportion of under-five children at risk of malnutrition reached 5.3% (KFSSG, 2017). According to 2012 County Government data, stunting rate was 34.2%, wasting rate 6.1% and underweight rate 19.3% (UNICEF, 2012b). Investments in the nutrition sector are only 8% of the national budget in County Integrated Development Plan (CIDP) 2013-2014).

The prevalence of the three forms of undernutrition in this study was lower than the Kenya national levels (KDHS, 2014). Wasting was higher than the WHO acceptable level of 2% and stunting lower than the acceptable levels of 17%. Underweight was lower than acceptable rates of 11% (WHO, 1995). Wasting, underweight and stunting rates were lower than the findings by Mwaniki & Makokha's study (2013) in the orphanages in Nairobi, Kenya. The study targeting children 5-8 years of age showed that stunting rate was 47.2%, underweight 33.2% and wasting was 9.2%. Furthermore, the study findings differ with those in Nigeria which showed that stunting rates were 34%, underweight rates were 19% and wasting rates were 18% (Obiakor-Okeke & Nnadi, 2014). However, the study findings agree to a study conducted in Uasin Gishu, Kenya which showed that nutrition status of children (0-5 years) living in institutional environment was good (Braitstein et al., 2013).

The study findings also revealed that boys were more stunted, underweight and wasted compared to the girls. A similar observation was noted in a study in Kenya that showed that boys were more stunted (39.4%) than girls (32.2%) (Mwaniki & Makokha, 2013). The findings indicate that probably the girl child gets more attention and care than the boy child.

The lower levels of undernutrition in this study may be associated with the provision of regular meals served in orphanages in Kwale County, Kenya. During Mwaniki & Makokha's study (2013), children were served three meals only. The lower levels of undernutrition in this study could also be attributed to the positive changes and strategies made in orphanages on health care practices, training of caregivers on childcare practices among others. The lower levels in nutrition status in comparison with national figures may as well be attributed to the smaller sample size in this study.

5.9 Relationship between nutrition status of preschool children and other study variables

Various factors interact to influence children's nutrition status. Undernutrition has its causes emanating from a number of complex factors for which specific interventions could be developed (Engell, 2013; Tsedeke et al., 2016; IFPRI, 2016; Wolf et al., 2014). Children with low height-for-age are stunted. This condition is usually associated with long term chronic undernutrition and long term factors such as frequent infection, poor dietary practices and poor healthcare practices (GOK, 2008, 2015; UNICEF, 2000). Underweight among preschoolers can reflect pre-natal undernutrition, infection and possibly inadequate attention by caregivers (WFP, 2010). A child's weight-for-height measure is an indicator of nutrition wasting and primarily reflects severe short term deprivation of food in his/her immediate nutrition history for example during episodes of disease such as diarrhoea or in times of food shortage (IFPRI, 2016).

5.9.1 Dietary Practices and nutrition status of the preschool children

Appropriate dietary practices are associated with better nutrition status of children (Chea et al., 2017; Senbanjo et al., 2016). Children who did not meet recommendations for dietary adequacy in this study were more likely to be undernourished. Underweight and stunting in this study showed a significant relationship with the dietary practices. Wasting did not show any relationship. A study in Ghana showed similar findings where weight-for-age was significantly associated with dietary practices (Nti, 2011). A similar study in Nigeria also associated dietary practices with nutrition status of preschoolers (Obiakor-Okeke & Nnadi, 2014). Another study conducted in Kenya in preschool children also positively associated dietary practices with good nutrition status (Chea et al., 2017).

5.9.2 Morbidity prevalence and nutrition status of preschool children

It is well known that the relationship between child nutrition and infection is bidirectional in that frequent illness can impair nutrition status and poor nutrition can increase the risk of infection (Dewey & Mayers, 2011; Fekadu et al., 2015). In this study, reports of illness during the past 14 days of study were similar to the prevalence rates among children in general population in Kenya (KDHS, 2014). Children who were reported ill in the past 14 days in this study were more likely to be stunted, underweight and wasted respectively.

Numerous studies also compare with the study findings which showed a positive association between morbidity status and nutrition status of children (Clasen, 2010; Engell ., 2013; Wolf et al., 2014). It was established through key informant interviews that increased frequency of feeding during illness is practiced in orphanages in Kwale County, Kenya. The hypothesis that there is no relationship between morbidity status and nutrition status in preschool children living in orphanages was therefore rejected.

5.9.3 Institutional characteristics and nutrition status of the preschool children

Findings in this study showed that duration of stay in the orphanages was associated with the nutrition status of the children. Stunting and underweight showed a significant relationship with duration of stay in the orphanages. Furthermore, stunting showed a significant relationship with marital status of caregivers. Training of caregivers on childcare practices was also associated with the nutrition status of the children. A study in Nigeria also associated caregivers nutrition knowledge with good nutrition status of children they cared for (Obiakor-Okeke & Nnadi, 2014). The hypothesis that there is no significant relationship between institutional characteristics and nutrition status among preschool children in the orphanage was therefore rejected.

CHAPTER SIX: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 Summary of the study findings

This study was a cross sectional study aimed at establishing childcare practices, morbidity status and nutrition status of preschool children living in orphanages in Kwale County.

The results of this study showed that most of the respondents (caregivers) were young, married and of secondary level of education. Most of the caregivers were on full time employment in the institutions and had been in the orphanages for at least 36 months. They were also involved in subsistence projects in the institutions for income generation. Most institutions not only had favourable caregiver to child ratios, but also most of their caregivers had been trained on childcare practices.

All orphanages had fixed meal schedule and practiced group care. All preschool children consumed at least three meals per day. Staples such as *ugali*, bread, *mandazi,* maize and rice were observed as the main sources of energy. Supper was a more important source of energy compared to lunch. However the mean energy intake for children in orphanages didn't meet the energy requirements for all children. Consumption of meat, fruits and vegetables was low. Low consumption of fruits and vegetables could expose children to the risk of micronutrient deficiencies that take long to manifest. All children were served same quantities of food. The difference in energy intake was a result of poor appetite, illness among children as well as age.

The morbidity burden was not high among the preschool children living in orphanages. The most prevalent illnesses were acute respiratory infections (ARIs), malaria and diarrhoeal diseases. Caregivers exhibited an understanding and need for appropriate health care practices.

The prevalence of undernutrition based on the three indices (wasting 3.7%, underweight 8.6% and stunting 15.4%) was not only lower than the Kenya National rates for children 6-59 months old (KDHS, 2014) but also below the WHO (1995) recommended acceptable levels (with an exception of wasting) for the developing countries. Boys were more stunted, underweight and wasted than the girls.

Nutrition status (underweight) showed a positive significant relationship with institutional characteristics and dietary practices. Stunting showed a positive significant relationship with duration of stay of children in the orphanages, caregivers' marital status as well as training of caregivers on childcare practices. Underweight showed a positive significant relationship with duration of stay, adequacy of energy intake and training of caregivers on childcare practices. Wasting showed a positive significant relationship with training of caregivers on childcare practices. Stunting, wasting and underweight showed a positive relationship with morbidity status.

The results imply that the longer a child stays in the orphanage, the more likely the child would be stunted and underweight. Children who consumed adequate energy intake were less likely to be underweight and stunted respectively. Those children reported ill in the two weeks prior to the study and those whose caregivers had not been trained on childcare practices were more likely to suffer the three forms of under-nutrition (wasting, stunting and underweight).

The hypotheses in this study stating that there is no significant relationship between institutional characteristics and nutrition status of preschool children; there is no significant relationship between childcare practices and nutrition status of preschool children and that there is no significant relationship between morbidity status and nutrition status of preschool children living in orphanages were all rejected.

6.2 Conclusion

From the study, it can be concluded that good nutrition status can be equated with appropriate childcare practices and low morbidity burden. Majority of children living in orphanages in Kwale County had good nutrition status as depicted by the low levels of undernutrition. This was likely due to consumption of at least three meals per day, diversity of foods consumed, appropriate knowledge in caregiving among the caregivers in the orphanages, favourable caregiver to child ratios, good health care practices, adequate consumption of energy and other nutrients. This was also enhanced by the effect of the low morbidity burden noted among the children.

The prevalence of the three forms of under-nutrition in this study was lower than the national figures. In addition, the levels of undernutrition are also lower than the WHO acceptable levels with an exception of wasting which is higher than the WHO acceptable levels of under-nutrition. Several factors were associated with poor nutrition status among the children living in orphanages. These factors included duration of stay in the orphanages, institutional characteristics, episodes of illness and poor childcare practices. The study hypotheses were all rejected.

6.3 Recommendations

The following recommendations are made based on the study findings.

6.3.1 Recommendation for practice

- The Ministry of Health should continually train the orphanage officers-in-charge on infant and young child feeding (mostly on emergency); as a way of improving such practices in orphanages and that systems support adherence.
- The orphanage's management in conjunction with the Ministry of Health should carry out monthly growth monitoring to detect early onset of

malnutrition among children 6-59 months of age for timely intervention to reduce on cases of malnutrition.

- The orphanage management should encourage research activities to improve the conditions in the orphanages.
- The orphanages' management should intensify the supervision of children during meal times to ensure adequate dietary intake and inclusive consumption of food. A watchful eye and gentle warning can save children from malnutrition caused by poor dietary intake.
- The community should be involved fully in supporting the orphanages. This is through both participatory and material support as sometimes resources in the orphanages are over-stretched.

6.3.2 Recommendations for policy

- The government should ensure that registered orphanages have adequate resources to adequately take care of the children.
- The Ministry of Health should deploy nutritionists to provide nutrition information to caregivers and their children. The nutrition officers should also facilitate the formulation of appropriate menus and to make in put to the budget allocation for provision of meals for the children. The nutritionist should ensure children are regularly growth monitored and that dietary diversity and meal frequencies are improved.

6.4 Suggestions for further research

A comparative study on childcare practices and nutrition status of orphanage and non-orphanage preschool children 24-59 months old.

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APPENDICES

APPENDIX A: INFORMED CONSENT FORM (PART A)

My name is Burhaan Bakari, a post-graduate student at Kenyatta University school of Applied Human Sciences. I am conducting a study to determine the childcare practices, morbidity status and nutrition status of children 24-59 months of age in orphanages in Kwale County, Kenya. This will be profitable in designing appropriate interventions to improve child feeding practices thus mitigating child malnutrition in the target area and other similar areas.

Purpose of the study

The purpose of this study is to determine the childcare practices, morbidity status and nutrition well being of pre-school children 24-59 months of age living in orphanages in Kwale County. This will provide us with knowledge on the various levels of malnutrition and health issues in the targeted area and use this knowledge to set up programs that will improve these issues.

Procedure that will be followed

The activities of the study include; interviews with staff from your institution and measuring the weight and height of the children in the institution. Participation is voluntary and your contribution to the study will be highly appreciated as you will be providing valuable information on how to improve health status of children.

Risks and discomforts

The study foresees no risks or harm to the participants. Kindly understand that some of the questions asked during the interview may make you uncomfortable and in such a case you may decline to answer them. Further, you are free to discontinue with the interview at any time if you decide to without any consequences.

Data security and confidentiality

All the information gathered by the research team will be used in confidence for the sole purpose of this research only. Any records relating to your identity will remain confidential and won't disadvantage you in anyway. Your name will not be divulged in any report of the results and you will receive a copy of this consent form.

Benefits of the study

By agreeing to participate in the study, kindly know that there will be no financial or personal benefits from the study. However, the information collected may help the institution improve its systems. You will also benefit by understanding the childcare practices, morbidity status and nutrition status of the children in the orphanages in Kwale County. Depending on the outcome of the results or in case nutrition status of the children will be found to have a problem, then advice on the appropriate action will be taken.

Care and protection of research participant

The study procedures will be carefully explained to the participants (caregivers or the children) to ensure and assure them that there are no risks associated with the procedure in a language they clearly understand. The weight and height of the participants will be taken by the trained nutritionist who will be part of the research team. Assent for children who cannot consent will be given by their caregivers.

Community consideration

The study will ensure that children found malnourished or ill will be given advice and will further be referred to the nearest health facility for treatment.

Informed consent form (Part B)

Please read the information sheet (Part A) or have the information read to you in a language you clearly understand before signing this form. By signing the end of this form, it means you have understood the purpose of the study and that you have agreed to participate. Kindly ask any questions you may have concerning the study. If you need more information in the future or between visits, or for any enquiries or issues related to the study, please contact the following;

Burhaan Bakari	OR	The chairman
Principal Investigator		Kenyatta University Ethical Review Committee
Kenyatta University		P.O Box 43844-00100, Nairobi
P.O Box 1333-80400, Ukunda		Tel: 8710901/12
Tel: +254710 889 480		Email: kuerc@ku.ac.k

Participant's consent

I……...the undersigned caregiver of……agree to participate in the study.

Thumb print/Signature……..... Date……

Interviewer's statement

I, the undersigned have carefully explained to the respondent the procedures, the benefits and the risks involved in participating in the study in a language he/she clearly understands.

Name of interviewer…….

Interviewer signature…….. Date…….

APPENDIX B: QUESTIONNAIRE

CHILDCARE PRACTICES, MORBIDITY STATUS AND NUTRITION STATUS OF CHILDREN 24-59 MONTHS OF AGE LIVING IN ORPHANAGES IN KWALE COUNTY, KENYA

SECTION 1: IDENTIFICATION INFORMATION

1.1 County Name: _____

1.2 Orphanage Number: _____

1.3 Orphanage Name: _____

1.4 Questionnaire Number: _____

1.5 Respondent ID: _____

1. 6 Respondent Name: _____

1. 7 Interview results:
1. Completed
2. Partially done
3. Refused

1.8 Interviewer Name:
1. _____
2. _____
3. _____

Date of interview: ____ /____/_____

1.9 Total eligible children 24-59 Months: _____

1.10 Questionnaire checked by: _____

SECTION 2: CAREGIVER'S SOCIO-DEMOGRAPHIC DATA

2.1 Name and ID of the caregiver		2.2 Age of the caregiver	2.3 Marital status 1=Married 2=Divorced 3. Single	2.4 Highest educational level attained 1=No formal education 2=Primary education 3=Secondary education 4=College/University	2.5 Sex 1=Male 2=Female
ID	Name				

SECTION 3: CHILD'S DATA

3.1 Age group	3.2 Child's ID and name *(Start with the youngest to the oldest. Insert the names of the children and ensure that numbering is continuous)*		3.3 Approx.*Age Enter months for children under 5 years Duration of stay (in months……..)		3.4 Child's age verified by 1=Health card 2=Birth certificate 3=Baptism card 4=Calendar of events 5=Recall	3.5 Sex 1=Male 2=Female	3.6 Number of parents alive 1=One 2=Two 3=None
	ID	NAME	Date of birth dd/mm/yy	Age (months)		Sex	
0 – 6 months	1						
	2						
	3						
	4						
6 – <24 months	ID	Name		Age (in months)		Sex	
	5						
	6						
	7						
	8						
24 – 59 months	9						
	10						
	11						
	12						

SECTION 4: HEALTH CARE PRACTICES

SECTION 4A: IMMUNIZATION COVERAGE: ASK FOR ALL CHILDREN LESS THAN 59 MONTHS

	Name of the child	Sex of the child M=1 F=2	Age in months Copy from section 3	Has the child received Vitamin A supplement in last 12 months? 0=No 1=Yes(card) 2=Yes(recall) 4=Do not know	If YES, How many times in the last 12 months?	Has the child received deworming medicine in the last 6 months?	BCG 0=No 1=Yes(card) 2=Yes(by scar) 4=Do not know	OPV1 0=No 1=Yes(card) 2=Yes(recall) 4=Do not know	OPV2 0=No 1=Yes(card) 2=Yes(recall) 4=Do not know	OPV3 0=No 1=Yes(card) 2=Yes(recall) 4=Do not know	PENTA 1 0=No 1=Yes(card) 2=Yes(recall) 4=Do not know	PENTA 2 0=No 1=Yes(card) 2=Yes(recall) 4=Do not know	PENTA 3 0=No 1=Yes(card) 2=Yes(recall) 4=Do not know	Measles 0=No 1=Yes(card) 2=Yes(recall) 4=Do not know
1														
2														
3														
4														

SECTION 4B: MORBIDITY STATUS AND HEALTH SEEKING BEHAVIOUR (ASK FOR ALL CHILDREN LESS THAN 59 MONTHS)

Name of the child	Sex of the child	4.1 In the last 2 weeks including today, has the child been sick *Yes-Ask the caregiver to describe illness* *No-Skip to section 5*	4.2 Describe the major signs 1=Not sick 2= Watery diarrhea 3=Vomiting 4=Fever 5=Chills 6=Cough/Sore throat 7=Difficulty in breathing 8=Malaria 9=Intestinal parasites 10=Eye infection 11=Malnutrition 12=Stomach ache 13=Bloody diarrhea 14=Tooth ache 15=Skin infection 16=Measles 17=Coughing blood 18=Flu 19=Headache 20=Accident 21=Others(Specify)---	4.3 Was anyone (Doctor, nurse, health worker or traditional healer) consulted for the major illness during the last 2 weeks 1=Yes 2=No	4.4 If no, why was no one consulted for the major illness? 1= Illness mild 2=Blanket prescriptions 3=No money hospital visit/drugs 4=Drugs not available 5=Facility too far 6=Staff with bad attitude 7=Long waiting time 8=Staff not qualified 9=Others(specify)	4.5 (Timely seeking of health care). How long did it take to seek the care? 1= 1day 2=2 days 3=3 days 4=7 days 5=More than 7 days	4.6 If diarrhea is YES. Was [name] given any of the following CIRCLE THE RESPONSE 1= A fluid made from a special packet called ORS? 2=A home-made sugar-salt solution 3=Another home-made liquid such as porridge, soup, yoghurt, coconut water, fresh juice, tea 4=Zinc 5=Others(specify)	4.7 When the child was sick, did you seek assistance 1=Yes 2=No	4.8 If yes, where did you first seek assistance? (*enter code*) 1=Traditional healer 2=Community health worker 3=Private clinic/pharmacy 4=shop/kiosk 5=Public health facility 6=Mobile clinic 7=Relative or friend 8=No assistance sought 9=Herbs/home remedy 10=Prayer 11=Others (specify)…

SECTION 4C: WATER CONSUMPTION

6.1What is your main current water source for household use? (*Probe for the <u>Main</u> source*) 1=River 2=Lake 3=Tap water 4=Borehole 5=Unprotected well 6=Protected well 7=Public pan 8=Tanker 9=Dam 10=Lagga 11= Protected springs 12=Unprotected springs 13=Rain water 14=Other(specify)	6.2 Where is that water source located? 1=In own dwelling 2=In own yard 3=Elsewhere *If 1skip to 6.6*	6.3 How long does it usually take to go to the main source of water and come back (In minutes) _____	6.4 On average, how many LITRES (20 litre jerrycans) of water does the household use per day? . NUMBER OF 20 LITRE JERRYCANS _____	6.5 How much do you pay for a 20lt jerrycan (*Enter zero if water is free*). *Enter in Kenya shillings*	6.6 What is your main source of drinking water? (*Probe for the <u>Main</u> source of drinking water*) 1=River 2=Lake 3=Tap water 4=Borehole 5=Unprotected well 6=Protected well 7=Public pan 8=Tanker 9=Dam 10=Lagga 11= Protected springs 12=Unprotected springs 13=Rain water 14=Other(specify)	6.7 Do you do anything to the water before drinking it? 1=Boiling 2=Use traditional herbs 3=Use chemicals 4=Filters/Sieves 5=Decant 6=Nothing
6.1.1 Is the water adequate for all the household use? 1=Always 2=Sometimes 3=Rarely				Per 20litre jerrycan _____ Per month _____ (FOR ONLY WHO PAY ON A MONTHLY BASIS) Free_____		

SECTION 4D: SANITATION

7.1 Does your household (home) have access to a toilet/latrine facility? 1=Yes 2=No*(IF NO, GO TO QUESTION 7.3)* 7.1.1 Observe if latrine is in use 1=Yes 2=No	7.2 If yes, what type of toilet facility do you have? 1=Traditional pit latrine 2=Ventilated improved pit latrine 3=Flush toilet 4=Other specify _____	7.3 If No, where do you go (defecate)/use? (*probe further*) 1= Bush 2= Open field 3= Behind the house 4= Out of the compound 5=Other (specify) _____	7.4 How is children's faeces disposed (*Probe and OBSERVE*) 1= Disposed off immediately (and hygienically) in a toilet 2= Disposed off immediately in the nearby bushes 3= Not disposed (scattered in the compound) 4= Bury 5=Other (Specify) _____	7.5 On what occasion(s) do you wash your hands? *Record ALL that applies* *Se e codes for 7.5 below* _____ 7.5.1 Observe for presence of a hand washing facility next to the latrine in the compound. 1=Yes 2=No 7.5.2 What do you use to clean (wash) your hands? (*Multiple responses*) 1=Water only 2=Water and soap 3= Water and ash 4=Other (specify) _____ 7.5.3 Observe for strategic presence of soap/ash at hand washing facility 1=Yes 2= No 3=No strategic hand washing facility
7.5 1=After using the toilet/defecating; 2=After attending to a child who has defecated; 3=Before feeding a child (including before breastfeeding a child), 4=Before eating or preparing a meal; 5=After handling animals; 6=After changing sanitary pads; 7=When washing the face; 8=When bathing; 9=Others specify…….				

SECTION 5: FOOD CONSUMPTION AND DIET DIVERSITY

9.1 Food group consumed Were the foods consumed 1. Usual? 2. Not usual (Circle the response)	9.2 Did the child consume any food from the groups below in the last 24 HOURS? Enter code 1 = Yes 2 = No	9.3 If yes how many times was the food consumed in the last 24 hours (*Include any snacks consumed*) 0=None 1=Once 2=2 times 3=3 times 4=4 times 5=5 times or more	9.4 Weight (g)/ Amount	9.5 Over the last 7 days, how many days were the following foods consumed by the child 0=None 1=1 day 2=2 days 3=3 days 4=4 days 5=5 days 6=6 days 7= 7 days	9.6What is the main source of the food item consumed (*Please insert the appropriate code*) 1=Own production 2=Purchases 3=Gifts from friends/family 4=Food aid 5=Traded or bartered 6=Borrowed/ 7=Gathering/wild 8=Others specify
Type of food					
1. Cereals and cereal products (e.g. sorghum, maize, spaghetti, rice, bulga wheat, bread, millet, chapatti)					
2. Vitamin A rich vegetables and tubers: Pumpkin, carrots, yellow fleshed sweet potatoes					
3. White tubers and roots: Potatoes, white yams, cassava or foods from roots, white sweet potatoes,					
4. Dark green leafy vegetables: Dark green leafy vegetables including wild ones + locally available Vitamin A rich leaves such as, pumpkin leaves, kunde leaves, sukuma wiki, spinach, managu, mrenda					
5. Other vegetables (e.g. tomatoes, biringanya, onions, cabbages)					
6. Vitamin A rich fruits: Ripe mangoes, papayas, + others locally available like watermelon					
7. Other fruits like oranges, tamarinds, wild fruits					
8. Organ meat (Iron rich): Liver, kidney, heart, tongue or other organ meats or blood based foods, spleen					
9. Flesh meat and offal's (matumbo): Meat, poultry, (cow, goat, camel, sheep, game meat, e.t.c.)					
10. Eggs					

11. Fish: Fresh or dried fish or shell fish or smoked, salted, fried					
12. Pulses legumes or nuts (e.g. beans, lentils, green grams, cowpeas, dried peas, groundnuts, macadamia nuts)					
13. Milk and milk products (e.g. goat, camel, cow's milk, donkey's milk, powdered milk)					
14. Oils/fats (e.g. cooking fat or oil, butter, margarine, goat's fat, sheep's fat)					
15. Sweets: Sugar, honey, sweetened juice, soda/sugary foods such as sweets, glucose					
16. Breast milk					
17. Plain water					
18. Water with glucose or sugar					
19. Fruit juice					
20. Beverages (tea, coffee); Condiments & spices like royco, garlic, dhania, *tangawizi*, *cloves*, *cinnamon*					
21. Foods made with red palm oil, red palm nut or red palm nut pulp sauce					
22. Micro-nutrient powder sprinkles					
23. Others (Specify)….					
9.7 List the food items that the child consumed 1= Alone 2=In pair 3=With older children (number)					

SECTION 6: NUTRITION ASSESSMENT

	FILL IN FOR ALL THE CHILDREN 0-59 MONTHS					**Measure ONLY the children aged 6-59 months**			
Child ID	Child name	Sex 1=M 2=F	Date of Birth (dd/mm/yyyy)	Age verified by card 1=Yes 2=No	Age in months	Weight (To the nearest 0.1Kg)	Height (To the nearest 0.1 cm)	Method of assessment 1=Lying 2=Standing	Bilateral Oedema 1=Yes 2=No

APPENDIX C: KEY INFORMANT INTERVIEW GUIDE WITH THE OVERALL IN CHARGE OF THE ORPHANAGE

THEMES	ISSUES TO BE DISCUSSED
The respondent	1. What is your position in the institution? 2. How long have you worked in this institution?
The institution	1. When and why was it started? 2. Who are the sponsors 3. How many children are in the facility currently? Are their parents alive? What is the recommended capacity? 4. How do you enroll the children? Average monthly of children 0 – 59 months?
Institutional characteristics	1. How many caregivers are in the institution currently? What is the caregiver to child ratio? Are caregivers in rotating shifts? 2. Do you have fixed immunization schedule for the children? 3. Are caregivers trained? If yes, what form of training? On what disciplines? (*Probe for training on nutrition-child feeding practices and health care practices?).* 4. In your view, does this (The above 3 questions) affect nutritional status of the children?
Sources of income	1. What is the main source of income for running the orphanage? Is there any other source? 2. Do you receive any other type of non-financial support? If yes, what form of non-financial support? 3. What is the source of this non-financial support
Dietary practices	1. How many times do the children feed per day? 2. Is there a fixed meal schedule for each day? 3. If yes, what are the meals given to the children on each day of the week? 4. What are the foods that the children frequently eat for: breakfast, lunch, supper or any other meal? 5. What considerations does the facility put in place as far as feeding the children are concerned? *(Probe for the type of food, frequency of feeding, feeding of sick children)* 6. What are the challenges facing ; a. Types of foods offered to the children b. Frequency of feeds c. Consistency and diversity of meals 7. Do you think inappropriate dietary practices affect child nutrition status?

Health care services	1. What particular problems do the children face in this institution? 2. What health care services are available to the children? How does the facility ensure quality of care for any sick children *(Probe for health services available in the orphanage-availability of drugs, equipment, supplies)* 3. Does the institution have health care staff? If yes, what is the number? Their roles? Do you consider them adequate? 4. Are there any mortality. In your view, what are the possible causes?
Water and sanitation	1. How accessible and available is water to children? *(Probe for source, supply, safety and quantity per head).* 2. How does the facility ensure safe disposal of waste *(Probe for disposal pits and waste baskets). Relate this specifically to childcare issues.* 3. How many times are children bathed daily (whole body)? 4. How many times are their teeth brushed daily?
Children welfare	1. Are there special occasions when children get special food? What are these occasions? *Probe for parties or birthday celebrations.* 2. Are all the children given the same meals daily? *Probe for children below 5 years, boys, and girls.* Which are these meals? *3.* Do you feel that the services available in terms of feeding, health and general welfare of the children are adequate? What else could be done to improve on the welfare of the children?*(Probe on the role of government)* 4. In your view, should children stay in orphanages? 5. Are there institution policies on child feeding, nutrition and health services?

APPENDIX D: OBSERVATION CHECKLIST

	5=Excellent	**4= Good**	**3= Fair**	**2 = Poor**	**1= Worst**	**6=Not Applicable**
Personal hygiene of the caregiver (cleaning of hands when handling food, clean attire, nails)						
Cleanliness of utensils used for feeding the children (cups, plates, nursing bottles. No food stuck on the utensils, washed in clean water)						
Proper food preparation methods (especially handling and cooking of vegetables)						
Treatment of drinking water.						
Storage of water and food in clean covered containers						
Maintenance of the surrounding (Is the compound clean? presence of a facility for waste disposal, Water programme points, Ventilation).						
Sleeping area (adequate, clean, availability of beds, beddings and insect treated nets)						

APPENDIX E: SELECTED ORPHANAGES (FOR THE STUDY) IN KWALE COUNTY

Designation	Name of the orphanage	Location of the orphanage
A	Kuluhiro Ra Mwana Memorial Children's Home (Saed Khurshid)	Kinango sub-county
B	Faraja (Wema) Children's Home	Msambweni sub-county
C	Upendo Children's Village	Msambweni sub-county
D	Dorcas Children's Home	Kinango sub-county
E	Amadeus Children's Home	Msambweni sub-county
F	Nice View Children's Village	Msambweni sub-county
G	Makobe Children's Home	Matuga sub-county
H	Footprints Children's Home	Matuga sub-county
I	Future For Children	Msambweni sub-county
J	Kebene Children's Home	Msambweni sub-county
K	Diani Children's Village	Msambweni sub-county
L	Nyumba Ya Watoto	Msambweni sub-county
M	Henny's Children's Home	Matuga sub-county
N	Tsimba Children's Home	Matuga sub-county

APPENDIX F: CLASSIFICATION OF UNDER NUTRITION.

	Moderate under nutrition	**Severe under nutrition**
Weight - for- height Z-score % of median	Between -2 and -3 Z-score Between 70 to 79% (moderate wasting)	Below -3 Z-score Below 70% (severe wasting)
Height - for - age Z-score % of median	Between -2 and -3 Z-score Between 85 to 89% (moderate stunting)	Below -3 Z-score Below 85% (severe stunting)

APPENDIX G: WORK PLAN FOR THE STUDY

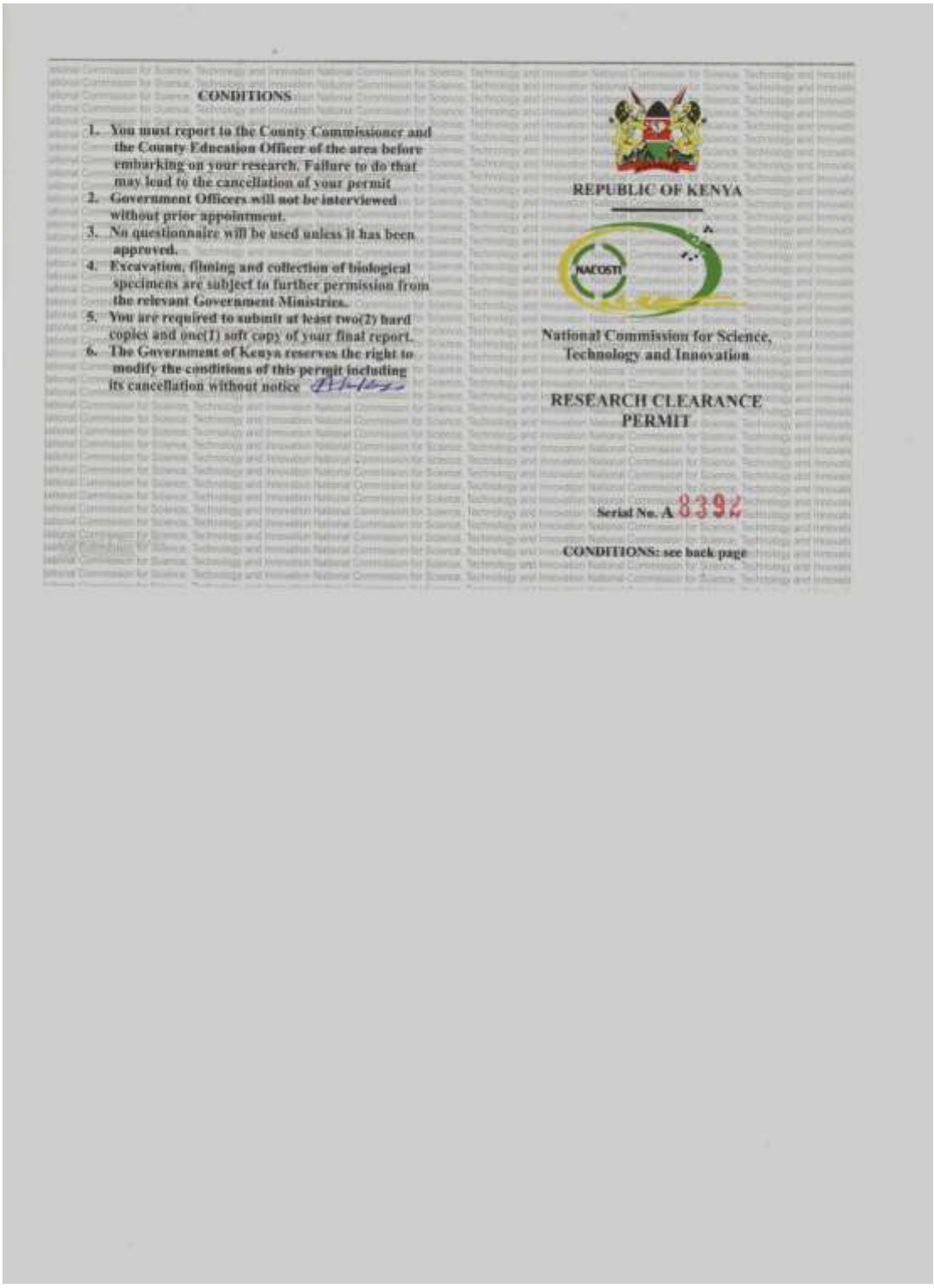
Activities	**Period**
Presentation of concept paper	April, 2013
Proposal development	May, 2013 - April, 2014
Defending proposal at the Department	May, 2014
Proposal presentation at the School	July, 2014
Submission of proposal to Graduate School	March, 2015
Submission of proposal for ethical review	May, 2015
Application for research permit from NACOSTI	February, 2016
Preparation for field work	April , 2016
Pretesting of research instruments	April, 2016
Data collection	May - June, 2016
Data entry and analysis	July - October, 2016
Writing Thesis	November, 2016 - May, 2017
Presentation of the findings and review of Thesis	June, 2017
Thesis defense	March, 2018
Review of Thesis	April, 2018
Graduation	July, 2018

APPENDIX H: STUDY BUDGET

ITEM/ ACTIVITY	QUANTITY REQUIRED	UNIT COST	TOTAL COST (KSHS)
Personnel			
Assistants (allowances)	4 (16 days)	4 (16 @ 1,000)	64,000
Equipment			
Digital bathroom scale	1	6,000	6,000
Height/Length board	3	3,000	9,000
Measuring jugs	5	100	500
Stationary			
Black cartridge	5 cartridges	1800	9,000
Note books	1(dozen)	70	100
Flash disk	1	400	400
Biro pens	5	20	100
Stapler/stapler pins	1	350	350
Clip boards	3	50	150
Printing papers	10 reams	500	5,000
Printing/Photocopying			
Copies of concept paper (10 pages)	10	50	500
Research tools			3,000
Printing, photocopying and binding the report	4 (156 pages)		500
Communication			
Internet services		2,000	2,000
Air time		5,000	5,000
Research permit		1,000	1,000
Transport			
Pilot survey	2 days	500	1,000
Transport during data collection	16 days	500	8,000
Data analysis			
Data entry			5,000
Data analysis			15,000
Statistician			20,000
Thesis writing			
Printing, photocopying and binding			2,000
Sub-total			**157,600**

Contingency	10% of the total budget		**15,760**
Total			**173, 360**

APPENDIX I: RESEARCH PERMIT



CONDITIONS

1. You must report to the County Commissioner and the County Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit
2. Government Officers will not be interviewed without prior appointment.
3. No questionnaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
5. You are required to submit at least two(2) hard copies and one(1) soft copy of your final report.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice

REPUBLIC OF KENYA

NACOSTI

National Commission for Science, Technology and Innovation

RESEARCH CLEARANCE PERMIT

Serial No. A 8392

CONDITIONS: see back page

THIS IS TO CERTIFY THAT:
MR. BURHAAN BAKARI MOYO
of KENYATTA UNIVERSITY, 0-80400
Ukunda,has been permitted to conduct
research in *Kwale County*

on the topic: *CHILDCARE PRACTICES, MORBIDITY PATTERNS AND NUTRITIONAL STATUS OF PRE-SCHOOL CHILDREN (24-59 MONTHS)LIVING IN ORPHANAGES IN KWALE COUNTY*

for the period ending:
1st April,2017

.....
Applicant's Signature

Permit No : NACOSTI/P/16/30001/9211
Date Of Issue : 4th April,2016
Fee Recieved :ksh 1000

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for Director General
National Commission for Science, Technology & Innovation