

**CHILD CARE PRACTICES AND NUTRITIONAL STATUS OF YOUNG CHILDREN
ADMITTED AT GAALKACYO GENERAL HOSPITAL, SOMALIA**

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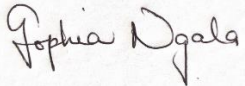
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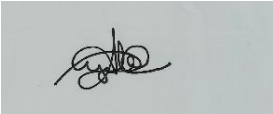
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ABBREVIATIONS AND ACRONYMS

AEZ	Agro-ecological Zones
DNS	Directorate of National Statistics (Somalia)
FAO	Food and Agricultural Organization
KDHS	Kenya Demographic and Health Survey
KII	Key Informant Interviews
MoH	Ministry of Health
NGO	Non-Governmental Organizations
PAHO	Pan American Health Organization
SOTER	Soil and Terrain
UNDP	United Nations Development Programme
UNICEF	United Nations International Children's Fund
USAID	United States Agency for International Development
WHO	Organization World Health

OPERATIONAL DEFINITIONS

Breastfeeding practices: Breastfeeding refers to giving of human breast milk to children while exclusive breastfeeding is feeding infants with breast milk only from 0– 6 months with no other liquids or solids except vitamin so mineral drops and medicines.

Child care Practices: Child care practices refer to child rearing practices by the mother and other caregivers for the wellbeing of their children under the age of five years. Such practices will include breastfeeding, infants and young child feeding and health seeking behavior.

Complementary Feeding: Complementary feeding refers to food given in addition to breast milk to an infant after 6months.

Nutrition: -is the intake of food, considered in relation to the body’s dietary needs. Good nutrition – an adequate, well-balanced diet combined with regular physical activity is a cornerstone of good health. Poor nutrition can lead to reduced immunity, increased susceptibility to disease, impaired physical and mental development, and reduced productivity.

Nutrition Status This is the body’s status of nutrition that is expressed according to certain scientifically tested parameters including weight, height, age or a combination of them. This study will involve Anthropometry to measure the nutrition status.

Malnutrition; It refers to over or under nutrition, nutrient imbalances or deficiencies. This study will focus on under nutrition.

Diarrhea: Diarrhea is defined by the World Health Organization as having 3 or more loose or liquid stools per day, or as having more stools than is normal for a person.

Anthropometrics: Anthropometry is widely used as a tool to estimate the nutritional status of populations and to monitor the growth and health of individuals. The three most frequently used anthropometric indices are weight-for-height, height-for-age, and weight-for-age.

Acute Malnutrition (Wasting) is inadequate nutrition over a long period of time leading to failure of linear growth. This phrase refers to the relationship between body mass and body stature of the child (W/H).

Stunted Height –for- age below -2 Z-score or below 80% of the median height for age for reference population (WHO, 2006)

Wasted Weight-for-height below -2 Z- score or below 80% of median weight for height for reference population (WHO, 2006)

Underweight - for- age below -2 Z-score or below 80% of median

Weight for age for reference population (WHO, 2006)

Household: Household refers to people who live together in the same homestead /compound and operate as a unit, including unrelated servants and relatives who share food from the same pot and share other resources of livelihood and are answerable to household head.

ABSTRACT

More than 34% of Somali children are in need of treatment for acute malnutrition. Chronic malnutrition rates, food insecurity limited livelihoods strategies have remained persistently high throughout Somalia (Somaliland, Puntland, and South-Central Somalia) varying according to zone and livelihood system. Recent studies have indicated that underlying causes, such as: lack of diet diversity, inadequate young child feeding patterns, improper hygiene practices, water and sanitation not utilizing health and education facilities are also major causes of continuous under nutrition. The objective of this study was to determine childcare practices of mothers/caregivers and nutritional status of children aged 6-59 months attending Gaalkacyo General Hospital-Somalia. A total of 169 respondents were randomly recruited for the study. A restructured questionnaire was used to collect socio-demographic characteristics data, dietary patterns was obtained using food frequency and 24-hour dietary intake and nutrition status was assessed using anthropometric data. Majority of the caregivers were aged 26-35 years (35.5 %), nearly 14.2% were aged 46-49 and small percentage (4.1%) of caregivers were 15-20 years old. Diet restriction was a common practice. The food avoided when child has diarrhea were milk and milk products (27.2%), porridge 10.1%, fruits/fruits juices 4.1% and foods cooked with oil 3.0%. About 64.5% of the children breast fed 8-12 times per a day. While 18.3% of the under-fives were breast fed 4-8 times per a day and 17.2% 4-6 times per a day. Almost all (95.9%) of respondents/caregivers were breastfeeding and gave colostrum to the children. At the time of the study, half of the children (56.8%) were still breastfeeding. The duration of breastfeeding ranged within 21 months (minimum of 6 months to a maximum of 27 months. The mean breastfeeding duration was 19.3 ± 5.5 months. All the children (100%) were weaned between 2 months and 6 months. The mean exclusive breastfeeding duration was 4.9 ± 1.3 . The prevalence of wasting was found to be 32.3%,

stunting 33.3, and underweight 32.3%.in children under-fives years from the study population. Positive correlation was found to exist between the child's age and wasting($r=0.074$). There was a significant difference between proportion of the children who were underweight and not underweight ($p=0.014$), stunted and not stunted ($p=0.047$). Children under-fives attending Gaalkacyo General Hospital were between 4 to five times likely to be malnourished the mother's education level correlated to the children's nutritional status with wasting at $r=0.064$, stunting $r=-0.030$ and underweight $r=-0.047$. There was strong correlation between household sizes and nutritional status with underweight being the highest at $r=0.84$, wasting at $r=0.021$ and stunting $r=-0.079$. Children's imbalanced diet correlated and significantly associated with underweight ($r=0.018$, $p=0.012$). Majority of the children (84.6%) eat Vitamin A rich fruits and vegetables and white tubers and roots (81.1%), other vegetables and fruits were 63.3%, iron rich foods intakes by 52.1%. Flesh meats consumed by 59.2% while the consumption of cereals was highest from grains, and eggs (54.4%). The many cases of wasting, stunting, and underweight are not limited to one gender as both male and female children are equally at risk of getting malnourished. The study area had water availability constraint, and water treatment was used as a purification mechanism to achieve safety of the water.

Conclusively, there is need for hygiene and sanitation practices to be taught at health centers more often especially for those who have children under the age of five. Institution-based training and community-based sensitization on the importance of children vaccination. Health institutions to have a follow-up plan for all the mothers attending antenatal clinic to curb defaulting. This will help in keeping in track with the mother's nutritional status that can affect the birth outcome of the child. Training of caregivers on the introduction and practice of mixed feeding should also be done. This should be extended to the young child feeding practice when the child is unwell

CHAPTER ONE: INTRODUCTION

1.1 Background information

There are different forms of malnutrition exist globally. Among adults, 1.9 billion people are overweight, while 462 million are underweight while in 52 million children under the age of five are underweight for their height. One in ten children is born with low birth weight and in other part of the world such as South Asia is one in four. 45% of deaths under five are associated with under nutrition and occur in low- and middle-income countries (WHO, 2019). The number of undernourished people in sub-Saharan Africa was 222million in 2016, while- 58.7 million of children had stunted growth in 2017, 13.8 million were suffering from wasting and 4million of them were severely wasted.6.6 million of children under-five were overweight (Onyango, Abdelhadi W., et al 2019). Past food insecurity crisis in Somalia placed more than 800,000 children at risk of acute malnutrition. in Somalia faced critical levels of Global Acute Malnutrition in 2020 and a total of 28suffered from severe levels of malnutrition. More than 34% of Somali children were in need of treatment for acute malnutrition. The coved 19 Pandemic led to increased levels of acute malnutrition as food access decreases and the ability to get aid to at-risk populations becomes costlier. With now increased humanitarian aid efforts and accessibility to milk, malnutrition levels have improved.

Childcare practices in some countries in Africa and Somalia

In Somalia, breastfeeding – including breastfeeding within the first hour of an infant’s life, exclusive breastfeeding for the first six months and continued breastfeeding for up to two years are extremely poor at 23 per cent, 5.3 per cent and 26.8 per cent respectively. This is due to Mother’s belief on sugar with water being a good first food for newborns that have just been born

and others food insecurity, for example, is a socioeconomic condition that leads to poor diets for all members of a household. (2018). Children are frequently exposed to semi-solids, solids, and animal milk either too early or too late, resulting in a lack of complementary feeding practices and also, mothers having limited access to information and being hard to be reached especially those who live in remote areas where there is no health facility. In Ethiopia, breast-feeding exclusively among children aged 0-59 months is uncommon (43%) and same in the country of Zambia (51 percent). When compared to Zambia, Ethiopia has a lower rate of supplemental food introduction (61%) than Zambia (90 percent). In Zambia, only 7% of children aged 6 to 23 months ate diets that met the minimum dietary diversity criterion of four or more food groups ingested per day, compared to 37% in Zambia. (Disha, A. D., et al, 2012).

In Somalia, breastfeeding within the first hour of life, exclusive nursing for the first six months, and continuous breastfeeding for up to two years - all had exceptionally low rates of 23%, 5.3%, and 26.8%, respectively. (2016, UNICEF).

Health care practices in Africa and Somalia

In Africa, health care systems lag behinds. Millions of deaths occur every year due to Poor funding has resulted in a lack of access to essential health care. According to the World Health Organization, Africa carries 25% of the world's disease burden, while its contribution of global health expenditures is less than 1%. (WHO, 2015). Furthermore, Africa produces only a small percentage of the medications utilized on the continent (less than 2%). The majority of Africans rely on under-funded public health care, while just a small percentage has access to well-funded, high-quality private health care. Universal access to adequate health care remains a pipe dream. Rwanda has established a national health insurance program that covers 91 percent of the Rwandan population. (Africa renewal, 2017).

In Somalia, health system is essential It has been privatized and is limited to major cities, leaving the poor majority in rural areas without access to cheap health care. The country's health systems are fragments, Moreover, the lack of unified health system governance has harmed national authorities' ability to regulate the private sector and collaborate with NGOs to deliver sciences to remote areas. Consequently, less than 30% of the Somalia populations have access to health services (Gele, 2020)

Factors influencing nutrition status in Africa and Somalia

Factors influencing nutritional status it's possible to classify it as both biological and non-biological. The most essential aspect is socioeconomic status. Poverty is one of the most important socioeconomic factors influencing nutrient intake, as well as nutrient requirements. Poverty forces people to live in environments that are less food secure and have higher health risks, such as exposure to environmental contaminants like lead and other heavy metals. Hookworms, in particular, are parasitic. Schistosomiasis, Malaria results in blood loss, which raises dietary requirements. In general, these parasites are more common in disadvantaged surroundings. Religion, cuisine, and social position are all socio-cultural elements that influence nutritional intake and needs. Religion and culture have an impact on what people consider to be edible foods, and hence on which nutrients are ingested and which nutrients may be required in higher levels (Cultural Foods, 2000).

Research indicates that malnutrition is a primary cause that leads to the development of poor health and even death in developing countries (Dewey et al., 2016). In the public health sector, child care practices and nutritional status continue to be among the leading causes of health problems. The predicament of malnutrition is related to instigating over half of the demises that have been seen among children worldwide and in higher attribution to the child deaths that occur in developing countries (Abuya et al., 2012). Despite the detrimental effects that arise from malnutrition, the

challenge was that it is hardly considered as an urgent matter of concern among most of the children. The reason was that the children who were affected usually do not face famine, and in other cases, the individuals show few or even no apparent signs of malnutrition. Discussing malnutrition requires a discussion about food and health, but these factors still are not right conditions that dictate the achievement of proper nutrition outcomes. In this case, to the children, these factors were the underlying determinants for the accomplishment of adequate nutrition (Bhutta et al., 2008).

Childcare practices, on the other hand, refer to the different behaviors that were exhibited by the caregivers. In such incidences, the practices translate to actions such as food security actions and the provision of healthcare resources (Brice, 2017). They will aid in achieved child growth and development. The significant aspects that can be experienced in care practices are outlined in the Care initiative, and they were as follows. They include the care for women, different feeding practices, breastfeeding, hygiene practices, food preparations, and facilitation of home health practices. Other behaviors are deemed essential for the elevation of good growth and development of children in society (Sen & Hook, 2012).

Moreover, an application of community-based activities was important towards changing care practices and also improving on different nutritional status of children. The process requires the use of substantial resources that were in various mechanisms, such as time and funds. It is a process that allows for emergence of partnerships between communities, non-governmental organizations, governmental agencies, and also the involvement of other interested parties towards supporting nutritional programs in marginalized areas that are semi-arid and even arid. Such collaborations aim to make sure that there was a maximization of the standard of living (Bhutta et al., 2008; Abuya et al., 2012). The main activities to achieve the process include dealing with assistance in

food production, making sure that there was a provision of health services, and access to water projects, among other activities. Somalia was an example of a developing country that needs robust intervention mechanisms to overcome the challenges of childcare and nutritional issues.

1.2 Statement of the problem

A healthy and productive population emerges from good, diverse nutritious and safe foods. When a community ensures that women and children are well fed, the benefits that accrue are good health, educated people, children whose cognitive development are according to the expected milestones leading to long term and short term economic benefit throughout generations. Situational analysis of data from Somalia over the last decade indicates that under nutrition is a significant and enduring public health problem and a major factor in the failure to meet MDGs. (Somalia Nutrition Strategy, 2011-2013).

Chronic malnutrition rates, food insecurity (and unattainable livelihoods strategies) have remained persistently high throughout Somalia (Somaliland, Puntland, South Central Somalia) varying according to zone and livelihood system. Malnutrition is confounded with regular conflicts, displacement, lack of infrastructure and amenities, regular droughts, and floods. Recent studies have indicated that underlying causes, such as: lack of diet diversity, inadequate young child feeding patterns, improper hygiene practices, water and sanitation not utilizing health and education facilities are also major causes of continuous under nutrition (Somalia Nutrition Strategy, 2011-2013).

Less than five years of age children who present with malnutrition are admitted or treated under outpatient care for infections until they improve or gain their health back. The problem is that, almost the same children keep coming back to the hospital several times. There are several ways that the situation has been dealt with, however, this study is going to look at childcare practices,

nutrition status and factors affecting the children under five/and their households admitted in hospitals with malnutrition.

1.3 Justification

This study provides information relevant to the Somali and other countries in the region with similar political, social and health situation. The research findings may assist the Government and humanitarian agencies in addressing the nutrition and health issues in the Somali set up. The findings will contribute to the body of knowledge to help make informed policies on the nutritional and health status of children in difficult circumstances. In addition, the findings, of the study is expected to benefit the mothers and caregivers by helping them to improve their care practices, nutrition and health status of their children.

It is essential to realize that programs for advanced study have many objectives which were related to other programs in similar discipline therefore, these principles can also apply to the development and design of science and mathematics courses at all levels. The research study will have incorporated responses on the community members in Somalia and would be useful in improving the intervention mechanisms implemented in the child nutrition process. The review was essential as it helps in the provision of baseline data on care practices and dietary status of children between 6-59 months in hospital care located in Somalia's arid areas.

Finally, this study examines the identification and selection of research questions within NGOs to discover the role of their service transfer experience in generating relevant research agendas.

1.4 Aim of the Study

The aim of the study is to contribute towards better child care practices and improved nutritional status of their children between 6-59 months in Somalia.

1.5 Purpose

The purpose of the study was to determine childcare practices to establish their association with nutritional status of children less than five years' months attending Gaalkacyo General Hospital Somalia.

1.6 General objective

To determine the child care practices and nutritional status of children under five years attending Gaalkacyo General Hospital, Somalia

1.6.1 Specific objectives

1. To determine the socio-demographic characteristics of households with children under five years attending Gaalkacyo General Hospital Somalia
2. To determine if child care practices of Households (caregivers) of children under five years attending Gaalkacyo General Hospital
3. To assess nutritional status of children under five years attending Gaalkacyo General Hospital
4. To establish the association between selected socio-demographic characteristics with feeding practices and nutritional status of children under five years attending Gaalkacyo General Hospital.

1.7 Research Question

1. Does a socio-demographic characteristic of the study population of children between 6-59 months receiving services at Gaalkacyo General Hospital have an association with the child feeding practices?
2. What was the level of malnutrition among children between 6-59 months in Gaalkacyo General Hospital and how is it associated to the child feeding practices?
3. Does the child care practice of children between 6-59 months in Gaalkacyo General Hospital influences nutritional status in the study population?

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Globally in 2019, 144 million children under five years of age were estimated to be underdeveloped due to being too short for their age (stunted), 47 million were estimated to be too thin for their height (wasted) and 38.3 million were obese (overweight). Under nutrition is projected to be related with 2.7 million child demises annually or 45% of all child mortality. Approximately 42% of children aging 0–6 months old are solely breastfed. A small number of children take diets that are suitable and non-toxic balancing foods; in most countries less than a quarter of children aging 6–23 months old meet the standards of nutritional variety and nourishing they should have a frequency that is appropriate for their age. More than every year, 820,000 children under the age of five could be saved if all infants aged 0 to 23 months were exclusively breastfed.

Africa experiences malnutrition among its under-five year old population. The average incidence of overweight in under-five year old infants is 4.9% - the second lowest through all regions. The occurrence of stunting in under-five year old children is 30%, this is far greater than the global average of 21.9%. On the contrary, the Africa region's predominance of wasting in under-five year old children of 7.1% is lower than the global average of 7.3%.

Some 43.4% of newborns babies aged less than six months in the region of Africa are entirely breastfed, while the region's low birth weight average incidence of 13.7% is not more than the global average of 14.6%. Somalia experiences a malnourishment problem among its under-five year old children population. As of 2010, the national occurrence of overweight in under-five year old is 3% which has slightly decreased from 4.7% in 2007. The national occurrence of stunting in under-five year old children is 25.8%, which is more than the unindustrialized country average of

25%. Somalia's wasting incidences in under-five year old children of 15% is also more than the unindustrialized country average of 8.9%. In Somalia, 5.4% of newborns fewer than 6 months are solely breastfed; this is well underneath the average of Eastern Africa of 59.6%. There is not enough data on low birth weight.

Health and nutrition in children are closely linked and highly dependent on care practices (Smith and Haddad 2000). Care involves all actions and behaviors that interpret the existing food health and resources into virtuous child growth and development. Although child care is assumed to be exclusively a mother's domain it is in fact the domain of all the other caregiver's e.g. entire family community and the society at large (Smith and Haddad, 2000). Care denotes to practices and behaviors of caregivers: the mothers, father, sibling, community, society, and other care providers of health care, food, emotional support and stimulation required for child's existence growth and development (Tsehail, 2004). Care giving involves feeding, provision of shelter and emotional security, child stress reduction, clothing, feeding, bathing and supervision of child's bowel movement (toilet). Others includes preventing and attending to child's illnesses nurturing and showing affection interaction and stimulation playing and socializing protection from exposure to pathogens and providing safe environment for exploration, prenatal care, curative and preventive health or traditional health and provision of care by members of an extended family network (Tsehail, 2004)

Research has shown a solid linkage between parental nutrition knowledge and child care. Women who are well educated experience limited challenges when it comes to the health status of their children. They are well advance with types of illnesses that their children may experience hence capable of containing the situation. Maternal nutrition knowledge has been associated with nutrition status among children in different backgrounds including Jamaica (Honda, 2015); Bolivia

(Frost, and Haas, 2015); and Kenya (Kabubo-Mariara, Ndenge and Mwabu, 2014). However, there is limited information on the strategy that link women's education and the health of the child which has not yet been understood well (Abuja et al., 2011). According to Glower (2016) there are three links that affects child's health. They include; the very basic education of the mother is likely to transfer the knowledge about child health to future mothers. Women have been able to recognize different types of illnesses that can affect or affect their children through the skills and literacy that they have acquired in education system; hence they are able to seek treatment for their children. Thirdly the more the women spend time in education the more they are well acquainted with knowledge of malnutrition that can affect their children (Abuya et al. 2011). Different investigations have discovered a solid association between maternal nutrition knowledge, social status of finance and children nutrition status. This is based on the grounds that informed women will undoubtedly get firmer, advanced paying employments; to get married to men with higher education and higher pay; and to live in better localities, which have a positive impact on child nutrition health and survival (Frost, Frost and Haas, 2015). Studies have additionally discovered a relationship amongst maternal nutrition education and maternal despair, while maternal despair has been related with underprivileged health status of the child, including poor nutrition status (Lorant et al., 2013).

2.2 Social Characteristics of Maternal/Caregivers

2.2.1 Maternal Age

In rural areas, fertility rates were found to be higher between the ages of 20 and 24 expanses and 25-29 in the urban settings (KDHS, 2016/09). The age at which child bearing starts has important health implications for care practices of a child. A study conducted in Uganda showed that stunting and wasting were more common in children whose moms were younger. Then those of older

mothers (Efate, 2000). In yet another study done in Maraca slums in Uganda the level of stunting was higher among children of younger mothers compared to those of older mothers. This was attributed to the fact that older mothers have more and better experience in child care practices than their young counterparts (Nkwake, 2015).

2.2.2 Maternal Education

Childcare practices and education go hand in hand. Children of educated mothers have a great healthy growth and development and high chances of survival than children from mothers less educated (Augustine et al, 2014). A mother's level of education and access to information determines whether the mother understands care practices of a child such as the duration of breastfeeding when the child should be weaned which foods to initiate for the first introduction how foods can be best cooked for a child whether water will be boiled or treated for drinking why hands washing is important how a child contract diseases like diarrhea how diarrhea control treatment is administered at home and when a child will be weighed vaccinated and taken for health care services for growth monitoring and when sick (Augustine et al, 2014)

Maternal education is said to be linked with the level of care that is provided to the children. Education increases both the capability of a mother to earn more income and the capacity to gain the importance of child care giving. Educated mothers have better communicating abilities with their children than those mothers with diminutive or no education maternal education has been linked to increased levels of prenatal and postnatal care (Augustine, et al, 2014). On family planning it has been found that less educated women do not plan child births as opposed to the educated mothers who are able to plan the intervals between births (Martinez et al, 2012)

A study conducted in Zimbabwe found education to have a substantial undesirable effect on the duration of breastfeeding. The study indicated that the illiterate mothers breastfed their children

for a significantly longer period than mothers who had post primary education, (Gargamo et al., 2020)

2.2.3 Maternal Occupation

Women are forced to search for formal occupational employment to support family resources and expand quality of living in the family. Women who are not in the formal employment devote more time than men in all working activities in apart from child care. Mothers often must collect fire wood, fetch water and prepares food for the family and do farm work which could be productive or not (Intiful et al., 2020). Some studies recommend that when mothers work outdoor even on their own farms their offspring are more probable to be undernourished especially if they do not control income or if a child is not more than one year in age. Other studies have established that there are no negative effects on status of children nutrition from working mothers. On the other hand, some studies have established that there is a positive effect when the work of the mother was well paid (Intiful et al., 2020)

The results of a study carried out in Tanzania showed that the occurrence of childhood malnutrition was more in households of employed mothers than in the households of mothers who were housewives or self-employed. The prevalence of underweight was found to be more among children in well paid group of mothers than it was among children of mothers with low and no income. However, the same study observed that the levels of stunting were high among children of mothers with no income and also those with low income and middle income compared to those of high-income mothers (Maonga et al., 2016). In many developing countries women generally are involved in a lot of economic earning activities but are rarely involved in the control of income household resources and decision making. A study done in rural Bomet and Morang's Districts in Kenya showed that women are the major workers in agricultural farms. The same women are

however does not participate in decision making on how the yield would be sold and how the money from the farm sales would be used or allocated. The same study also showed that women especially those in the rural areas face many problems including gender inequality illiteracy legal and political discriminations. These are constraints that seriously limit women involvement in decision making on childcare practices and access to quality food supply through purchase as well as quality health care services and in all other spheres of life (Neyagawa., 2010)

2.3 Infant and Young Child Feeding Care Practices

The key cause of malnutrition in children is child care. Child care is demonstrated in the way a child is fed raised, guided and socialized. Nutritional care encompasses all processes and behaviors that interpret available food into good child health growth and development (UNICEF, 2012). In agreement with the Global Strategy on Infant and young child feeding, UNICEF's inclusive priority is to protect, promote and support optimal newborns and young child feeding practices. The anticipated results are better-quality nutrition status growth development health and eventually the survival of infants and young children (UNICEF 2016). Women who carry out activities related to care such as feeding of young children, psychosocial stimulation of children, breastfeeding, food preparation and storage, and support for their complimentary development are the ones that commonly do child care (Maonga et al., 2016).

2.3.1 Breastfeeding

The world health organization (WHO) recommends that a new born baby is introduced to breastfeeding instantly after birth for about the first 30 minutes to approximately one hour, (WHO, 2010). Breastfeeding care practices are influenced by early initiation of breastfeeding and should start immediately from birth to stimulate and increases the production of breast milk hence the mother does not have to give other feeds to her baby, (UN et al, 2000). The first milk, the

colostrum's protects the baby from infections as it boosts the immunity of the baby. Evidence shows that 22% of neonatal deaths would be prevented if all infants were breastfed for the first hour of life. In Somalia, 52.3% of children start breastfeeding within the first one hour after birth, (WHO, 2010) Breastfeeding care practices are influenced by early initiation of breastfeeding and should start immediately from birth, (Breast milk contains unique immunological properties which protect children against infections and chronic diseases, (UNICEF, 2014)

In Somalia, breastfeeding is nearly universal with 97% of children born having been breastfed for a given period of time in most of the provinces. Overall, 58% of children are breastfed within the one hour after birth and 86% within one day after birth. About 42% of the children are said to be given prolaternal feeds either due to loss of mother or the mother's illness after delivery or when there is not enough milk in the breast

2.3.2 Exclusive Breastfeeding

Exclusive breastfeeding is unique and ideal for growing children up to 6 months. The first 6months of life is globally recognized as the most ideal period before introducing a child on other feeds (Mankind, 2012). It is recommended that even in the hottest driest climates, exceptional breastfeeding brings all the fluid a healthy newborn need to placate thirst and control dehydration and no excess fluids are needed, (Mankind, 2012). Exclusive breastfeeding is an effective preventive intervention for ensuring child survival although the practice is moving up slowly among Somalia mothers, (Mankind, 2012). Poor breastfeeding and infant feeding practices contribute to more than one thousand deaths per year, (Mankind, 2012)

Exclusively breastfed children are protected from common childhood illnesses infections i.e., diarrhea, upper respiratory tract infections and malnutrition. Breast milk has disease rebellious constituents that sustain the body with natural immune system which protect children against

infections and chronic illnesses. Breastfed babies have been found to grow well mentally, physically and psychologically when in close contact with their mothers, (UNICEF 2014)

The finest breastfeeding promotion as well as limited breastfeeding cannot be successfully practiced if the knowledge, attitude, and the cultural beliefs are not satisfactorily addressed. For a mother to exclusively breastfeed for up to six months requires both the mother and her infant to be in close vicinity for the six months' period and leaving articulated breast milk for separation of a short duration, (Pevera et al, 2011)

Children who have been breastfed well have fewer sicknesses and are improved and nurtured than those who are fed with other foods and drinks. If all children were fed with only using breast milk for the first six months of their life, the lives of an about 1.5 million newborns would have been saved every year and the wellbeing and development of millions of others would be significantly enriched, (UNICEF, 2016).

2.3.3 Complementary Feeding Practices

Balanced feeding practices are giving other foods to kids whether manufactured or locally prepared on top of breast milk after six months in order to placate nutritional requirements for a child. The right drink and food for newborns is however only breast milk alone for up to at least six months (WHO and PAHO, 2016). After six months, the newborn needs a diversity of foods to supplement breast milk, although breast milk on its own is enough to meet all dietary needs of a child, complementary feeds with appropriate solids are required to meet the additional requirements for energy and nutrients after six months, (KDHS, 2016/09). Children with or without mothers need a variety of additional foods after 6 months, and should continue with breastfeeding through its second year and beyond, (MoH 2012). A mother who may be employed or working away from

her home can continue breastfeeding when she is with the child, and make sure she breastfeeds as often as possible, (Dewey, 2016)

Introducing complementary foods when the child is six months old is to reduce the risk of malnutrition. Early introduction of complementary foods is common practice in Somalia. But children should be given solid or semi-solid complementary foods after six months and in addition continue breastfeeding till when the child is fully put on family diet. Children with or without mothers need a variety of additional foods after 6 months, and should continue with breastfeeding through its second year and beyond, Ministry of Health (MoH 2012). Mothers who may be employed or working away from her home can make sure she continues breast feeding as often as possible when she is with the child, (Dewey, 2016). Further early complementary feeding is discouraged because of high likelihood of food contamination. Again, the digestive system of a child is still premature and cannot handle complex or bulky foods, (Mapesa et al., 2020)

In Somalia, for example 24% of newborn, less than two months of age are given, complementary foods or liquids. At the age 4-5 months, 60% breast fed children are given solids or semi-solid foods. Early complementary feeding is discouraged because of high likelihood of food contamination. Again, the digestive system of a child is still premature and cannot handle complex or bulky foods (Intiful et al., 2020). This shows that complementary feeding practices are generally poor in most developing countries, exposing many vulnerable children to irreversible outcomes such as malnutrition and significantly increased risks of infectious diseases like diarrhea and pneumonia, (UNICEF 2016)

According to United States Agency for International Development/ Academy for Education Development, malnutrition is more common during this transitional period. Families may not be aware of special needs of infant especially the first-time mothers. Food complementary foods

preparation from a family pot is important and how to use foods available locally to feed a child. Families may also be too poor to provide sufficient nutritious foods to a child, (USAID/AED, 2012). The faulty feeding practices as warned by whom, begins by giving any other foods than breast milk before the recommended time, (WHO, 2010). The WHO further warns that starting complementary feeding too early or too late is a major cause of poor nutritional status of infants and young children, (WHO, 2010)

2.3.4 Feeding During Illness

Feeding practice is important during common childhood illnesses, such as diarrhea, pneumonia, HIV/AIDS, measles, fevers and malaria. These conditions lead to serious feeding complications and interfere with dietary status of children. Diarrhea is the most common and most often is caused by defective in infant breast-feeding practices predominantly unhygienic food preparation for a child and where a child is given foods other than breast milk. Early detection of these conditions helps to control the possibility of malnutrition, (WHO, BASICS/ UNICEF, 1999).

It is important to reassure a sick child to eat although sick children have no appetite giving a sick child food little by little at a time often is important United Nation Development Programme (UNDP et al, 2012). It is good to continue with exclusive breastfeeding to a sick child and giving extra fluid especially when the child has diarrhea to help inhibit dehydration. If sickness and reduced appetite continue for more than a few days, the child needs to be taken to any healthcare provider (health professional) for examination and treatment. The child is not effusively recovered from an ailment until the weight records about as much as when the illness began (UNDP et al, 2012)

2.4 Health Care Practices

2.4.1 Utilization of Health Services

Availability, accessibility, affordability and utilization of health care services are major care practices that impact on maternal and child health in most developing countries. However, utilization of health services does not mean seeking for curative services but also practicing health promotion and disease prevention behavior to ensure early detection and seek treatment in good time (WHO/BASICS/UNICEF, 1999). Where services are available affordability is very low due to high levels of poverty (MoH, 2015)

2.4.2 Nutrition status of children under five years

2.4.2.1 Nutrition status

An individual's nutritional condition is usually the result of a number of factors that interact at various levels. One of the primary criteria that has a considerable impact on nutritional status is the consumption of a suitable amount of food, both in terms of quantity and quality. Furthermore, an individual's eating habits are an important role in determining the development of disease, particularly chronic disorders such as coronary heart disease, hypertension, stroke, diabetes mellitus, and cancer. Furthermore, poor eating habits are linked to negative consequences such as low birth weight, malnutrition, impairment, poor quality of life, and mortality in both children and adults.

2.4.2.2 Immunization

Each year, 1.7 million children in the world die from preventable and immunolabel diseases (Nderitu et al, 2012). Offspring who are vaccinated are protected from illnesses such as (polio, measles) which most often lead to disability or death. It is necessary for the parents to know where, how, when and why many times the child should be vaccinated. Parents also should know that it

is harmless to vaccinate an infant even if the child has a sickness or a disability or is distressed from nutritional deficiencies (Nderitu et al, 2012).

It has been proven that communicable disease spread quickly among people living in crowded areas. For this reason, all children living in overfilled conditions predominantly in the informal settlements expatriate or disaster circumstances camps should be vaccinated instantly especially against measles and Tuberculosis (Nderitu et al, 2012)

2.4.2.3 Worm infestation in children

Worm infections (also known as helminth infections) are among the most frequent diseases among children in Asia, Africa, and Latin America who live in extreme poverty. In addition, worms infect a startling number of children in the United States and Europe. The four intestinal helminth infections of ascariasis, trichinosis, hookworm, and enter kinases, which are transmitted through contaminated soil, schistosomiasis, a water-borne infection associated with an aquatic snail intermediate host, and toxocariasis and cysticercosis, two zoonotic infections caused by parasitic helminth larvae, are the most common worm infections in children. To sum up

2.4.3 Water Sanitation and Hygiene Practices

Water sanitation and sanitation practices in homes/houses are important part of livelihood (KDHS, 2016/ 2014). Water is indispensable for life healthiness and requirement for human self-esteem in household (KDHS, 2016 / 2014). In extreme situations water may be insufficient and unavailable to meet basic needs (UNICEF, 2010). In such cases supply of nontoxic drinking water is of serious importance for survival (UNICEF, 2010). Poor hygiene water and hygiene have many other severe repercussions which are health related problems caused by poor hygiene and consumption of contaminated water (UNICEF, 2010)

United Nations Children's Fund estimates indicated that about 884 million people worldwide lack access to safe water and yet water is a fundamental requirement for good nutrition. UNICEF also projected that about 2.5 billion people lack access to suitable sanitation with only 18% of rural dwellers having access to adequate sanitation services, (UNICEF)

2.4.5 Gap of Knowledge

There are significant levels of severe malnutrition, stunting, and underweight, as well as nutritional shortages, balanced feeding, and inadequate breastfeeding habits. Several research in Somalia have focused on general malnutrition and undernutrition as a public health issue. Nonetheless, there is a scarcity of data on the impact of child care practices on nutritional status in children aged 5 to 59 months. As a result, child care practices are essential in the formulation of any intervention targeted at lowering malnutrition or other related conditions. Simultaneously, there is a paucity of evidence about child care and nutrition.

CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

3.1 Study Designed

The study applied an analytical cross-sectional design. It was being both quantitative and qualitative in nature and shall be based in Pediatric Department at Gaalkacyo General Hospital, Somalia.

3.2 Study Site Description

This study was being based at Gaalkacyo General Hospital, Somalia which is at Gaalkacyo with an estimated population of 245,000 inhabitants as of 2015 Directorate of National Statistics (DNS) 2017. Gaalkacyo General Hospital is a multispecialty hospital with an emergency unit, outpatient department and several inpatient wards, such as, maternal, pediatric and nutrition. At the outpatient departments there are three doctors who work six days per week, eight hours per day. According to the outpatient data of the hospital, the total numbers of patients who visit the center are about 150- 200 patients per day, mostly women and children. Those patients are divided into three categories: children, pregnant and lactating women, these divisions allow each patient to see an experienced doctor with their medical or clinic conditions. Gaalkacyo General Hospital is located in the center of the Gaalkacyo.

3.3 Livelihood strategies in the area

The Main economic activities that people in the area are involved include; distribution of imported foods and products as well as local products in wholesale and retail, remittances, the telecommunications sector, the Kat market, and a wide range of small-scale enterprises such welding, carpentry, health care and domestic work. Others keep livestock such camel and shoats.



Figure 1: Map of Gaalkacyo Town and Somalia-resources

Source: Google map: <https://www.climatestotravel.com/climate/somalia>

3.4 Eligibility of Respondents

3.4.1 Inclusion criteria

The Study population comprised of children between 6-59 months admitted in the Pediatric department of Gaalkacyo General Hospital, Somalia. Their mothers were the respondents in the interview. Mothers' voluntary agreement to participate in the study was obtained as informed consent.

3.4.2 Exclusion criteria

Children between 6-59 months of age with deformities or have Life threatening health conditions (chronic illnesses). Such as septic shock and altered consciousness on admission; children who do not who are not taken care of by legal parents or guardian.

3.5 Sample Size Determination

The sample size was calculated using Fischer et al (2012) formula:

$$N = (z^2 pq) / d^2$$

N= Estimated sample size

Z= value for the chosen confidence interval (1.96)

p= Prevalence estimate. The overall Prevalence estimate of children expected to be underweight is 12.6% (Ministry of Health, 2020) P= the estimated proportion of normal children- those who are not malnourished.

d²= Degree of desired precision for the estimate (usually 0.05)

$$\text{Hence } n = (1.96^2 \times 0.126 \times 0.874) / 0.05^2 = 169$$

Here for the total sample size will be 169

Attrition rate will be assumed to be 10% = **188**

3.6 Sampling Procedure

Purposive sampling was used to select Gaalkacyo General Hospital, since it was the largest public hospital in Gaalkacyo City. Sample random sampling was used to recruit mother and child pair from all 10 Wards.

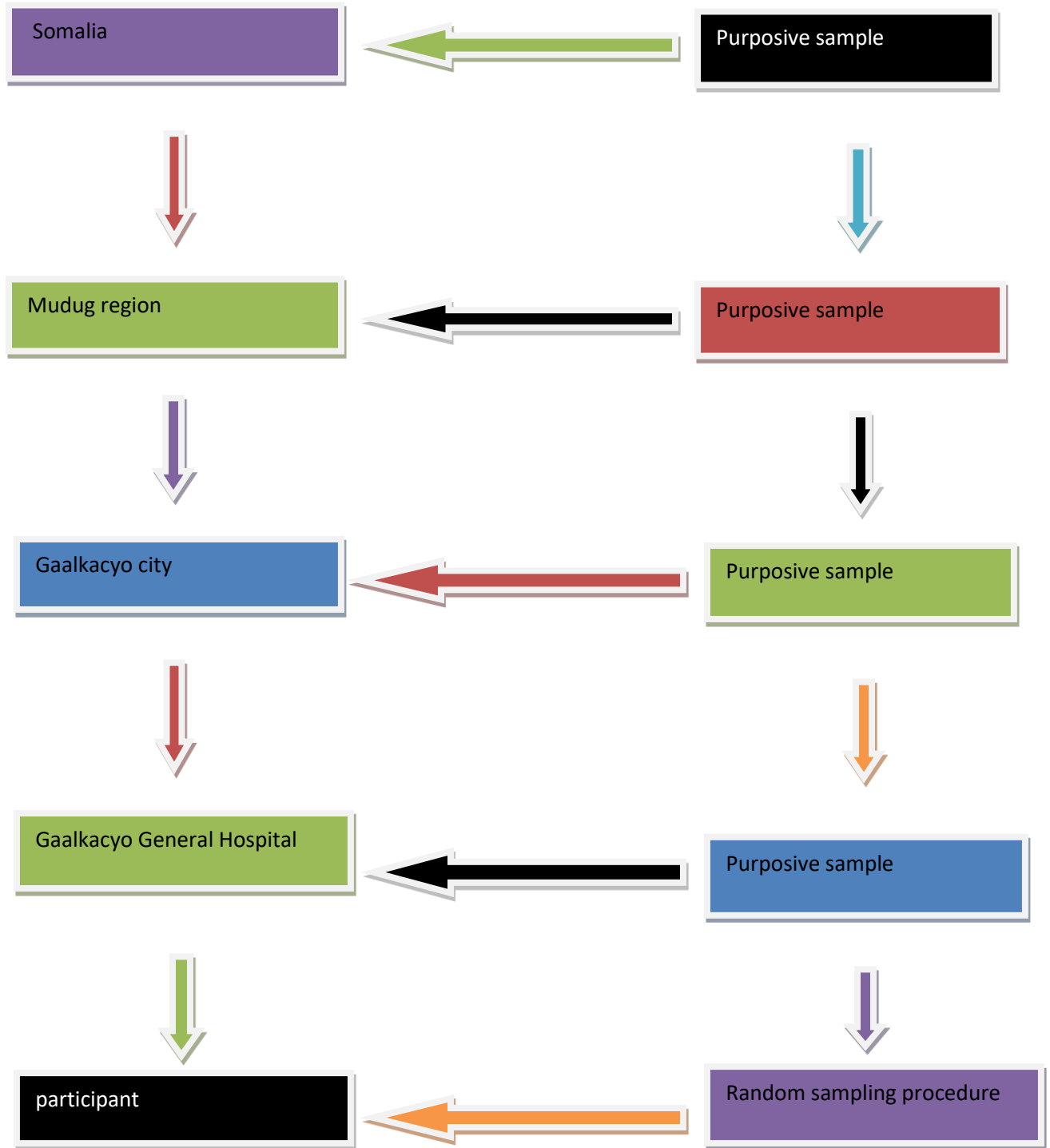


Figure 2: Sampling scheme of the sampling method for a study Gaalkacyo General Hospital, Somalia

3.7 Data Collection

3.7.1 Tools and Equipment for Data Collection

A structured pre-tested questionnaire was administered by trained research assistants to the study population. The equipment for taking anthropometric measurements of weight and height/length was Salter scale and Audiometer respectively. The Salter scale was used for weighing the children. A wooden audiometer was used for taking length/height of the children. Children younger than 2 years had their lengths measured while lying on the audiometer while those greater than 2 years measured standing. MUAC tapes were used to collect measurements of the mid-upper-arm circumference. The clinic cards were used to determine the age of the children in months and immunization status. One focus group discussion (FGD) (composed of 12 people), was carried out using a question guide collecting information on child feeding practices. One key informant interview was administered using a question guide collecting information on child feeding practices.

3.7.2 Data Collection Procedures and Methods

The interviewer approached the mother-child pair where the mother was the respondent. The interviewer will then create a rapport before explaining to the respondent what the research entails. The enumerator explained the purpose of the study, benefits, rights as volunteers and risks/discomforts expected. The respondent was then requested her to voluntarily accept to participate in the study. The interviewer assured the respondent of the confidentiality of the information given which encouraged free participation. Literate respondents signed the consent form on behalf of herself and her child. Illiterate respondents gave oral consent then proceeded to put thumb print. The consent form was attached to the questionnaire at all times. Data was collected from the mother/care givers in privacy to enhance accuracy of responses.

Structured questionnaire (appendix1) was administered collecting information on demographic information children, date of birth, age, and sex, Mothers information on: Marital status breastfeeding practice specifying duration initiation of breastfeeding, colostrum feeding of new born, infant and young child feeding practices complementary feeding, time of introduction of food other than breast milk, number of feeds administered to the child was recorded. A food frequency questionnaire was used to assess the adequacy of the diet fed to children.

3.8 Children anthropometric measurements were measured.

To determine the dietary patterns, food frequency and 24-hour dietary intake questionnaire was administered

1. Dietary pattern tools– Food frequency, 24-hour recall
2. Water safety – Water safety e.g., Boil drinking water, chemicals, nothing, cover, sieving etc.

3.8.1 Anthropometric measurements

a) Age and Sex Determination: Age was computed in months from the birth date from child's birth certificate or clinic card. The clinic cards were used to check child's status of immunization for age. The sex of the infant was reported by the mother or caregiver of the child.

Mothers were asked their ages and those who have identification cards issued them for verification.

b) Height Measurement- A audiometer (wooden length board) was used to measure recumbent length of the index child by making the infant lie flat on the length board facing upwards. One research assistant ensured the infant lay properly and with the assistance of the mother press the feet of the child to ensure they are straight. The measurements were taken twice and mean of two readings recorded. The two-height reading should differ by less or equal to 0.1cm

c) Weight Measurement- Weight was measured to the closest 0.1kg while utilizing a Salter scale and a weighing scale. The children were weighed twice with minimum clothing, (only a light vest and without shoes). Two measurements will be taken to obtain the mean value for analysis.

The differences between the two readings had to be less or equal to 0.5 kg

d) MUAC Measurement – Mid-Upper Arm Circumference (MUAC) is the circumference of the left upper arm, measured at the mid-point between the tip of the shoulder and the tip of the elbow (olecranon process and the acromion). MUAC was used for the assessment of Acute malnutrition, the following are the cut of points: <11=severe, 11-12.5=moderate and >12.5=normal

F) Morbidity pattern; the mother's/care givers were asked with the use of a questionnaire, whether the child had been sick in the last seven days. They were asked to specify which sicknesses the child had been suffering.

3.8.2 Recruitment and Training

Four research assistants were recruited, they were already working as nutrition interns in Gaalkacyo General Hospital, and they were fluent English and Somalia speakers which facilitated communication between them and respondents. One requirement was having basic knowledge in taking of anthropometric measurements of the study children. They were trained for two days on the administration of the questionnaire and taking of anthropometric.

3.8.3 Pre-test of question guide and study techniques

Pretest was carried out at Hayat Hospital, targeting with 15 mother and child pairs and the information collected used to modify questions improving the validity and reliability of the tools. The pretesting helped the researcher ensure that people understand the questions, and that there was no misinterpretation of questions and the questionnaire captured information intended. Pre-testing helped in determinative spent per interview.

3.9 Data Quality Assurance

The principal investigator calibrated scales every morning before onset of work to guarantee accuracy of the estimations of the measurements. The principal investigator supervised of the enumerators as the research progressed. The enumerators got appropriate training from the principal investigator in order to minimize mistakes in recordings. To keep away from parallax amid reading of measurements a normal of two ensuing readings on a similar newborn child was taken amid weight measurement. The completed questionnaire was cross-checked and examined after measurements by the principal investigator to guarantee accuracy of information consistency of answers and the validity of the measurement recorded.

3.10 Data Management and Analysis

Data was analyzed using the Statistical Package for Social Sciences (SPSS). The nutritional data was analyzed using ENA for SMART.

The information gathered for the research was analyzed using the Statistical Package for Social Science (SPSS) (version 20). The Emergency Nutrition Evaluation (ENA) for SMART programming (version 2020) was utilized for the anthropometric information analysis. The WHO 2012 development reference values were utilized as the standard for calculating weight for age z-score (WAZ), height for age z-score (HAZ), and weight for height z-score (WHZ). Before carrying out the anthropometric calculation for WAZ, HAZ, and WHZ, the data was cleaned to eliminate the outliers as characterized by Emergency Nutrition Assessment (ENA) programming (version 2020). SPSS version 20 was used to analyze associations (Correlations, Regression and Chi-square) between the different variables

3.11 Ethical Consideration

Ethical clearance was obtained from the ethics committee of Gaalkacyo General Hospital and the University of Nairobi, Permission was also obtained from Ministry of Health Office and the Hospital Administration. Permission was obtained specifically to get information on worm infestation from the hospital records belonging to Gaalkacyo General Hospital. To limit the uneasiness and inconveniencies the research team clarified the objectives, purposes, and conceivable advantages of research study in a non-threatening manner and socially important manner. The participant was given opportunity to ask questions prior to participating by signing a consent form. Safety of the children was guaranteed by taking care not to accidentally drop children during anthropometric measurements. The respondents were assured of confidentiality and protection of all information given to enumerators during the interviews. Participants were informed on their freedom to leave the study when they please.

CHAPTER FOUR: RESULTS

4.1 Socio-demographic characteristics of households of study population with children attending in Gaalkacyo General Hospital

A total of 169 caregivers with children aged 6 –59 months attending Gaalkacyo General Hospital were recruited into the study. Majority of the caregivers were aged 26-35 years (35.5 %), followed by 28.4% aged 36-45 years and 17.8% aged 21-25. Caregivers aged 15-20 were 4.1%) and the caregivers aged 46-49 were 14.2% (p-value=0.00). About 71.6% of caregivers were married while 20.1% divorced and 8.3% separated (p=0.00) Slightly more than a third (38.5%) of the caregivers had lower primary level of education while 24.9% secondary level, 13.6% Tertiary university level of education and 23.1% of caregivers never gone to school. Slightly over a third were housewives (39.6%), with 13.6% depended on a salary while 10.1% operated business, 1.2% lived off livestock products, 0.6% did farming and 34.9% were unemployed. The majority (32.0%) of households had an average monthly income of \$100-150. Those who earned between 50-100\$ were 22.5%-, 150-200\$ were 23.1%, about 14.2 % earned 200-250\$ and as 7.7% earned 250-300\$. The mean household size was 5.3, with a minimum of 2 members and a maximum 10 (**Table 4.1**).

Table 4.1: Socio-economic and demographic characteristics of households of study children attending in Gaalkacyo General Hospital.

Characteristics	N=169	percentage %
Age respondents		
15_20	(7)	4.1
21_25	(30)	17.8
26_35	(60)	35.5
36_45	(48)	28.4
46_49	(24)	14.2
Marital status		
Divorced	(34)	20.1
Married	(121)	71.6
Widowed	(14)	8.3

Mother education Level

never been to school	(39)	23.1
Primary	(65)	38.5
Secondary	(42)	24.9
Tertiary university	(23)	13.6

Occupation

Salaried	(23)	13.6
Business	(17)	10.1
Farmer	(1)	.6
Household work	(67)	39.6
Livestock	(2)	1.2
Unemployed	(59)	34.9

Approximate monthly Income

50_100	(38)	22.5
100_150	(54)	32.0
150_200	(39)	23.1
200_250	(24)	14.2
250_300	(13)	7.7
>300	(1)	.6

Household size	minimum	maximum	mean	std deviation
	2.0	10.0	5.314	1.9524

Footnote: All the numbers in parenthesis are the actual number of respondents in the various categories

4.2 Demographic characteristics of children attending Gaalkacyo General Hospital

Information regarding children was obtained from caregivers and a review of the child's Health card. Over a half (55.2%) of the children were girls while 44.8% were boys. Birth spacing was determined using the age gap between the index child and the older child. The mean birth age between index child and older child was 19.8 ± 8.3 with a minimum of 8 months and maximum of 48 months respectively (Table 4.2)

Table 4.2: Demographic characteristics of children attending in Gaalkacyo General Hospital

Demographic Characteristics	N=169	Percentage %		
Clinic card	(161)	95.3		
Sex				
Male	(76)	55.2		
Female	(93)	44.8		
The birth spacing between this child and immediate older				
Child birth Spacing	Minimum	Maximum	Mean	Std. Deviation
	8.0	48.0	19.882	8.3344

Footnote: All the numbers in parenthesis are the actual respondents in the various categories

4.3 Morbidity pattern and treatment of children attending in Gaalkacyo General Hospital.

About 73.4% of the children were reported to have been sick in the previous seven days from date of data collection. About 29.0 % had pneumonia, followed by 27.8%, with diarrhea, common cold 10.1%, malaria 3.0%, measles 2.4%, and typhoid 1.2%. Majority of children (61.5%) were getting treatment for any ailment at the Hospital, while 11.8% were consulting chemist or drug store. The food avoided, therefore not given to children suffering diarrhea were milk and milk products (27.2%), porridge 10.1%, fruits/fruits juices 4.1% and foods cooked with oil 3.0%. In the various categories, the proportions total more than 100 because children could exist in two categories or more (Table 4.3).

Table 4.3: Morbidity pattern and treatment of children attending in Gaalkacyo General Hospital.

Morbidity pattern	N=169	Percentage %
Has the child been sick in the past seven day	(124)	73.4
Type Illness		
Diarrhea	(47)	27.8
Common cold	(18)	10.7
Malaria	(5)	3.0
Measles	(4)	2.4
Pneumonia	(48)	28.4
Typhoid	(2)	1.2
Where treatment was sought		
Bought drug chemist or drug store	(20)	11.8
Hospital	(104)	61.5
Food avoided when child have diarrhea		
Food avoided	(75)	44.4
Porridge	(17)	10.1
Foods cooked with oil	(5)	3.0
Fruits/fruits juices	(7)	4.1
Milk and milk products	(46)	27.2

Footnote: All the numbers in parenthesis are the actual respondents in the various categories

4.4 Immunizations status of children attending in Gaalkacyo General Hospital

The immunization status of children was obtained from their clinic card. Where the card was not availed the immunization, information was given by the respondents/caregivers. About 79% of the children were fully immunized. Bacilli Chalmette Guerin (BCG) immunization, 97.3% of study children had been given. Almost all the children, 97.3% had Oral Polio Vaccine (OPV) immunization at birth. The proportion of children given: OPV1 98.2%, OPV2 93.5%, OPV3 91.7%, and measles vaccine 46.7%. Concerning diphtheria, pertussis and tetanus (DPT) immunization, 49.1% received the first (DPT1) dose, 47.9% the second (DPT2) dose while 91.7% got the third dose of (DPT3) (Table 4.4).

Table 4.4: Immunization's status of children attending in Gaalkacyo General Hospital

Immunization status	N=169	Percentage %
Immunization record or card for last child	(150)	88.8
BCG	(169)	100.0
OPV0	(169)	100.0
OPV1	(166)	98.2
OPV2	(158)	93.5
OPV3	(155)	91.7
Measles	(79)	46.7
DPT1	(83)	49.1
DPT2	(81)	47.9
DPT3	(80)	91.7
Full immunized	(79)	46.7

Footnote: All the numbers in parenthesis are the actual respondents in the various categories

4.5 Weight at Birth of children attending in Gaalkacyo General Hospital

Most (82.8%) of the children were weighed at birth. The Children mean birth weight was 3.22kg with a minimum of 3.0kg and maximum 3.5kg. About 46.7% of the mothers took their children for growth monitoring and child survival services while those who didn't took their children cited such as lack of economic (21.9%) and knowledge (31.4%). About 94.1% of the respondents reported that their children sleep under insecticide treated nets (Table 4.5).

The duration of time that had elapsed since giving the children dewormers were: 7-12 months 52.7% respondents while 23.1% respondents quoted 12-24 months and 8.3%, a period of 24-59 months. The remaining 16.0% respondents did not deworm their children (**Figure 3**).

Table 4 .5: Birth Weight of children attending in Gaalkacyo General Hospital

Characteristic	N=169	Percentage%
Was your child the weighted at birth	(140)	82.8
Do you take the child every month for growth monitoring and promotion at health facility	(79)	46.7
Reason for not taking children growth monitoring		
Lack of economic (money)	(37)	21.9
Lack of knowledge	(53)	31.4
Child sleep under insecticide treated net	(159)	94.1

Footnote: All the numbers in parenthesis are the actual respondents in the various categories

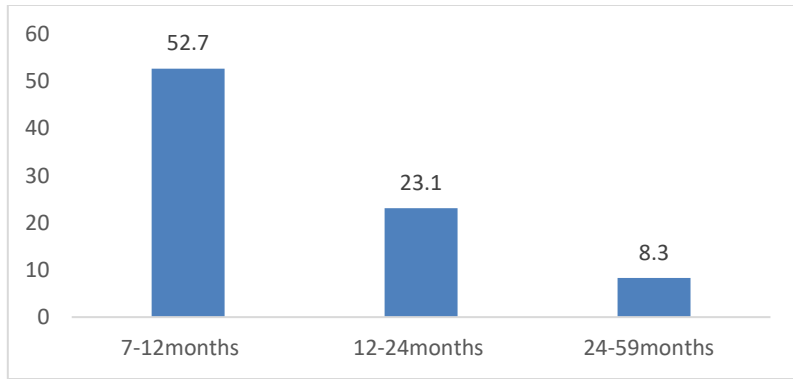


Figure 3: Percentage of children given deformers (age in months) who are attending Gaalkacyo General Hospital

4.6 Respondents child feeding practices whose children attending in Gaalkacyo General Hospital

Most of the children 64.5% breastfed 8-12 times per a day while 18.3% breast fed 4-8 times and 17.2% 4-6 times per a day respectively. About 95.9% of respondents/caregivers breastfeeding colostrum to their children. The children who were still being breastfeeding were 56.8% while the duration of Breastfeeding child is minimum (6.0), maximum (27.0), and mean breastfeeding duration 19.30 ± 5.59 . The children started being weaned at 2.0 months minimum and 6.0 months' maximum. The mean duration of child breastfeeding was 4.87 ± 1.28 . (Table 4.6)

Table 4 .6: Respondent's child feeding practices whose children attending Gaalkacyo General Hospital

Feeding practice pattern	N=169	Percentage %
Times child breasted		
4 6 times per a day	(29)	17.2
4 8 times per a day	(31)	18.3
8 12 times per a day	(109)	64.5
breastfeed colostrum's	(162)	95.9
Child still breastfeeding	(96)	56.8
Duration of Breastfeeding child (Months)		
Minimum	Maximum	Mean
6.0	27.0	19.308
		Std. Deviation
		5.5923

Started Weaning					(169)	100.0
Mean age (months) Started weaning	Minimum	Maximum	Mean	Std. Deviation		
	2.0	6.0	4.870	1.280		

Footnote: All the numbers in parenthesis are the actual respondents in the various categories

4.7 Complementary feeding of children attending in Gaalkacyo General Hospital

About 69.8% of the respondents stated that the first foods introduced to children were milk and milk products, 20.1% cereal-based gruel porridge, 5.3% glucose water and 4.7% fruit/fruit juice.

Sick children are being taken care of by family members (82.2%), friends (15.4%) and daycare (2.4%).

The number of times children were fed per day was 3 times (20.1%) 4 times (21.3%), 5 times (31.4%), 6 times and above (27.2%) (**Table 4.7**).

Table 4 .7: Complementary feeding of children attending in Gaalkacyo General Hospital

Complementary feeds/caretaking	N=169	Percentage %
First food introduced to the child		
Milk and milk products	(118)	69.8
Cereal based gruel porridge	(34)	20.1
Fruit juices	(8)	4.7
Glucose water	(9)	5.3
Number of times the child is fed in a day		
3 times	(34)	20.1
4 times	(36)	21.3
5 times	(53)	31.4
6 times and above	(46)	27.2

Footnote: All the numbers in parenthesis are the actual respondents in the various categories

4.8 Distribution of age by sex of children attending Gaalkacyo General Hospital

The proportion of the children in the study population was females 93% while males 76%. The highest proportion of study children were in the age range of 47.5% while the lowest proportion 54.5% (Table 4.8).

Table .4.8: Distribution of age by sex of children attending Gaalkacyo General Hospital

Age months		Sexy of child				
Age	Male	%	Female	%	Total N	%
6-17	(47)	47.5	(52)	52.5	99	58.6
18-29	(16)	59.3	(11)	40.7	27	16.0
30-41	(8)	30.8	(18)	69.2	26	15.4
42-53	(2)	33.3	(4)	66.7	6	3.6
54-59	(6)	54.5	(5)	45.5	11	6.5
Total	(79)	46.7	(90)	53.3	169	100.0

Footnote: All the numbers in parenthesis are the actual respondents in the various categories

4.9 Nutrition status of children under-five years attending Gaalkacyo General Hospital

The prevalence of Global Acute Malnutrition (GAM) was 26.10%. Children were moderately malnourished while 12.40% severely malnourished (SAM). There was a significant difference in prevalence of wasting between boys 12.7% and girls 18.9% but the difference was not significant ($p=0.366$).

4.9.1 Wasting

The total percentage of children in Gaalkacyo General Hospital aged 6-59 months who were wasted 26.10 (20.8 - 32.2 95% C.I.) moderately wasted 13.70% (9.8 - 18.8 95% C.I.). While the severely wasted children were 12.40 % (8.7 - 17.3 95% C.I.)

4.9.2 Stunting

The total percentage of stunted children in this study was calculated based on their age in Gaalkacyo General Hospital aged 6-59 months old who were stunted was 33.3 % (25.9 - 41.6 95% C.I.). Moderately stunted children were 23.7 % (17.3 - 31.5 95% C.I.) severely stunted were 9.6 % (5.7 - 15.8 95% C.I.).

4.9.3 Underweight

Slightly more than a third was underweight 32.3 % (25.6 - 39.9 at 95% C.I.) of children aged 6 to 59 months in Gaalkacyo General Hospital were underweight. In the in the same age group, slightly fewer than three-quarters of the children (73.9%) were normal, while 26.1 % (19.9 - 33.4 at 95% C.I.) of the children aged 6-59 months old were moderate and 6.2 % (3.4 - 11.1 at 95% C.I.) of the children were severe underweight

Table 4. 9: Nutritional status of the children aged 6-59 months attending Gaalkacyo General hospital

Indicators of nutritional status	Prevalence %	95% Confidence interval (CI)	
Weight-for-length (Wasting)	26.10 (20.8 - 32.2	13.70% (9.8 - 18.8	12.40 % (8.7 - 17.3
Length-for-Age (Stunting)	33.3 % (25.9 - 41.6	23.7 % (17.3 - 31.5	9.6 % (5.7 - 15.8
Weight-for-age(underweight)	32.3 % (25.6-39.9	26.1 % (19.9 - 33.4	6.2 % (3.4 - 11.1

4.10 Household water sources and water treatment methods of the study population

The main source of water for the household is tap 65.1%. Slightly over a third got water from boreholes (33.7%) and very few households got water from a pool (1.2 %.). Slightly more than half (58.6%) of the respondents reported boiling their drinking water while 21.3% did not treat their water before drinking. Two groups of the same proportion of 10.1% used chemicals such as chlorine or filtered their water before drinking (Table 4.10)

Table 4.10: Characteristic of household water sources and water treatment attending in Gaalkacyo General Hospital

Water sources/treatment	N=169	Percentage %
Source of water		
Borehole	(57)	33.7
Shallow well	(2)	1.2
Tap	(110)	65.1
Water Treatment		
Boil	(99)	58.6
Filter	(17)	10.1
Nothing	(36)	21.3
Use of chemicals	(17)	10.1

Footnote: All the numbers in parenthesis are the actual respondents in the various categories

4.11 Sanitation and hygiene practices of household with children attending Gaalkacyo General Hospital

Majority (88.8 %) of the households used ordinary pit latrines for human excreta disposal systems, the rest of the households used potty 2.4%, household closets toilet 5.3% and flying toilets 3.6%. All respondents/caregivers reported washing hands after visiting the toilet.

More than three quarter (79.3%) of the respondents reported that they disposed the refuse by burn burying and putting in the dustbins while the remaining (20.7%) threw their refuse in the bush/ throw at the dumping (**Table 4.11**).

Table 4.11: Sanitation and hygiene practices of household children attending in Gaalkacyo General Hospital

Characteristic	N=169	Percentage %
Type of toilet/latrines		
Plastic bags	(6)	3.6
Closet	(9)	5.3
Pit latrines	(150)	88.8
Putty	(4)	2.4
Disposal refused at home		
Burn bury or put in the dust bin	(134)	79.3
Throw in the bush throw at the dumping	(35)	20.7
Wash hands		100.0

Footnote: All the numbers in parenthesis are the actual respondents in the various categories

4.12 Psychosocial support given to children attending Gaalkacyo General Hospital

All the respondents had time to sit, carry and talk to the child. Over half of the respondents (58.6%) of them talk to their child when they have a chance while 41.4% cited every time. Majority of them talk to their child 1-5 times a day (63.9%), 6-10 times a day quoted by 30.8%, 11 times a day by 2.4% and 2.9% talk to their child every time. All children are washed & bathed. Most were taken care of by their mothers (77.5%) while 22.5% of the children were taken care of by siblings.

Of the children, 86.8% were non-anemic while 13.2% were anemic. The mean hemoglobin level of children was 9.825 ± 1.9907 (Table 4.12).

Table 4.12: Psychosocial support given to children attending Gaalkacyo General Hospital

Psychosocial support/ anemic status				N=169	Percentage %
Have time to sit and just carry the child				(169)	100.0
Talk to your child				(169)	100.0
When					
Every time				(70)	41.4
When got a chance				(99)	58.6
How often					
11 times				(4)	2.4
1_5 times a day				(108)	63.9
6_10 times a day				(52)	30.8
All the time				(1)	2.9
Child washed				(4)	100.0
Myself				(131)	77.5
Siblings				(38)	22.5
Anemia status					
Anemia test				(52)	30.8
Hemoglobin	minimum	maximum	mean	std. deviation	
	2.2	13.0	9.825	1.9907	

Footnote: All the numbers in parenthesis are the actual respondents in the various categories

4.13 Dietary diversity of the diet of children attending Gaalkacyo General Hospital

The children were served 3 meals: breakfast 89.9%, while equal proportion of children served lunch 91.7% and dinner 91.7%. Slightly above half of the children eat snacks (59.2%) at mid-morning break while 45.6% between lunch and dinner (**Table 4.13**).

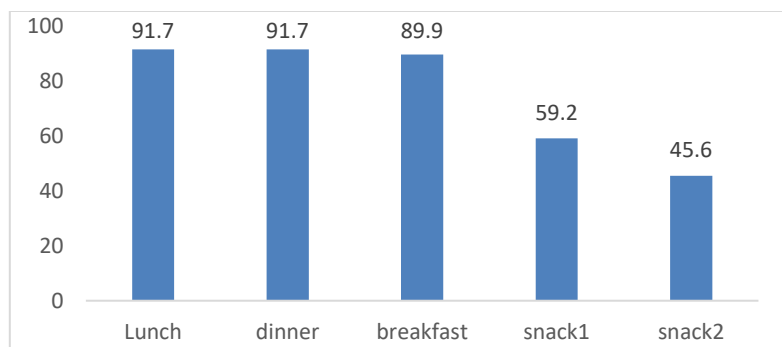


Figure 4: Number meals consumed by children attending Gaalkacyo General Hospital (%)

4.14 Food group given to children attending Gaalkacyo General Hospital

Majority of the children (84.6%) eat Vitamin A rich fruits and vegetables and white tubers and roots (81.1%), Other vegetables and fruits were 63.3%, iron rich foods intakes by 52.1%. Flesh meats consumed by 59.2% while the consumption of cereals was highest from grains, and eggs (54.4%) Other fruits and vegetables (57.4%) respectively (**Figure4.14**)

Table 4.14: Food groups given to of children attending Gaalkacyo General Hospital

Food groups	N=169	Percentage %
Vitamin A rich fruits and vegetables	(143)	84.6
White tubers and roots	(137)	81.1
Vegetables and fruits	(107)	63.3
Eggs	(92)	54.4
Other fruits and vegetables	(97)	57.4
Iron rich food	(88)	52.1
Flesh meats	(100)	59.2

Footnote: All the numbers in parenthesis are the actual respondents in the various categories

4.15 Exclusive breast-feeding practices of women with children attending Gaalkacyo General Hospital

Majority (84.6%) of the mother had knowledge of exclusive breast feeding. Most of them (72.2%) stated the right time to give breast milk was within one hour of delivery, 18.9% after one hour, 6.5% after giving butter and 2.4% after the newborn has lived for 24 hours. Low number of respondents (8.2%) discards the colostrum while 91.8% gave to their child (Table 4.15).

Table 4.15 Exclusive breast-feeding practices of women with children attending Gaalkacyo General Hospital

Exclusive breastfeeding practices	N=169	Percentage %
Exclusive breast feeding	(143)	84.6
Right time to give breast milk		
After_24_hours	(4)	2.4
After giving some butter	(32)	18.9
After one hour	(11)	6.5
Within an hour	(122)	72.2
Colostrum's		
Discard	(30)	17.8
Immediately	(139)	82.2

Footnote: All the numbers in parenthesis are the actual respondents in the various categories

4.16 Nutritional knowledge of mother/caregivers of children attending Gaalkacyo General Hospital

Breast milk being enough for the infant during the first 6 months of life was suggested by close to half of the respondents (48.5%). Most (84%) believed that Exclusive breast feeding for the first 6 months acts prevention for infant from respiratory and diarrheal disease. Some of the women (40.8%) suggested prolaternal feeding as needed for an infant before starting breast milk.

About 71.6% of the women/caregivers knew the advantages of breast milk constitution only 40.8% women/caregivers stated that foods and fluids should be given to children under 6 months. Other

women/caregivers suggested breast milk only 45.0% (infant formula food or animal (5.9%) and infant formula food or animal (5.9%) should be given to children under 6 months of age. (Table 4.16).

Majority (71.6%) of the mothers had knowledge of advantage of breast milk constitution. Close to half (49.7%) suggested breast milk, formula milk, solid food and water should be given to the infants. Others stated breast milk only (34.3%), formula milk (11.8%), solid food (1.8%) and water (2.4%).

Immunization of the children being the best way to protect the infant against infectious diseases, imbalanced diet causing malnutrition and colostrum containing antibody to protect the newborn was digested by the majority of the respondents, 75.5%, 87.6% and 84.0% respectfully.

Breastfeeding being beneficial to mother’s health was agreed by (58.6%), disagreed by (7.7%) and strongly agreed by (33.7%). About 42.6% mother/caregivers agreed that breastfeeding provides health benefits that cannot be provided by formula, 44.4% others strongly agreed. Very few 8.3% disagreed and 1.2% strongly disagreed that breast milk provided benefits. Slightly more than a fifth (24.9%) suggested formula feeding was better than breastfeeding. Nearly all the respondents (91.7%) stated exclusive breastfeeding being important for the children. Some respondents (87.6%) stated that exclusive breastfeeding prevent children from diarrhea, while a similar proportion of mother/caregivers (86.4%) believed that breast milk prevents cancer. (Table 4.16)

Table 4.16: Nutritional knowledge of Mothers of children attending Gaalkacyo General Hospital

Nutrition Knowledge				N=169	Percentage
					%
Right time to start complementary foods	Minimum	Maximum	Mean	Std. Deviation	
	5.0	12.0	6.905	1.7017	
Breast milk alone being enough for an infant during the first 6 months of life				(82)	48.5
Exclusive breast feeding for the first 6 months used to prevent diarrheal and respiratory disease for the infant				(142)	84.0
Prolateral feeding needed for an infant before starting breast milk				(69)	40.8
Foods and fluids recommended to give a child under 6 months					
Breast milk and or plain water				(83)	49.1

Infant formula food or animal	(10)	5.9
Only breast milk	(76)	45.0
Knowing the advantages of breast milk constitution	(121)	71.6
Should be the food for a child		
All the below	(84)	49.7
Breast milk	(58)	34.3
Formula milk	(20)	11.8
Solid food	(3)	1.8
Water	(4)	2.4
Immunization of children is the best way to protect the child against infectious diseases	(128)	75.7
Imbalanced diet is the cause of malnutrition	(148)	87.6
Colostrum's is a Mather's early milk which contains antibodies to protect the newborn against disease	(142)	84.0
Breastfeeding is beneficial to a mother's health		
Agree	(99)	58.6
Disagree	(13)	7.7
Strongly agree	(57)	33.7
Breastfeeding provides health benefits for infants that cannot be provided by formula		
Agree	(78)	46.2
Disagree	(14)	8.3
strongly agree	(75)	44.4
strongly disagree	(2)	1.2
Formula feeding better than breastfeeding	(42)	24.9
Exclusive breastfeeding important	(155)	91.7
Exclusive breastfeeding prevent child from diarrhea	(148)	87.6
breastfeeding protects the women by the breast cancer	(146)	86.4

Footnote: All the numbers in parenthesis are the actual respondents in the various categories

4.17 Mother's attitude of children attending in Gaalkacyo General Hospital

Majority of the respondents (82.2%) gave good opinion about breastfeeding the baby on demand while 7.1% suggested being not good and 10.7% were doubtful. In expression to leaving the child to someone else, slightly above half (59.2%) stated was good, 29% not good, 11.2% were not sure and 0.6% gave a likely opinion. The child will not likely get malnourished if not fed or fed once a day (56.2%), will likely get (24.3%) and 19.5% were indecisive. Malnutrition is a serious issue for the child's health (88.8%), not serious (5.3%) and 5.9% of the others were hesitant. Giving different types of the food throughout the day was stated well by 78.1%, 9.5% declared not good and 12.4% were unsure. Difficulty was experienced in feeding infants for the first 6 months as was stated by 48.5% of the respondents, 33.1% found in normal while 18.3% were in doubt. 49.7% strongly agreed on giving breast milk to infant immediately within an hour as being important, 38.5% just agreed and 11.8% disagreed. Discarding the first milk or colostrum is important before giving breast milk to a new born was disagreed by many (52.7%), agreed by 30.8% and strongly agreed by 16.6%. Starting complementary foods to a child before six months was rendered not important (27.2%). Almost close to half was doubtful on whether breastfeeding increases mother's weight, 26.6% agreed and 23.7% disagreed. Mothers should stop breastfeeding if they take on any type of medications was disagreed by 37.9%, agreed by 18.3% and 43.8% were doubtful. Nearly all mothers (98.2%) were happy with breast feeding the babies and 68.6% of them had confidence to breastfeed them and strongly agreed while 31.4% strongly disagreed (Table 4.17).

Table 4.17: Mother's attitude towards breastfeeding children attending Gaalkacyo General Hospital

Breastfeeding practices	N=169	Percentage %
Opinion about breastfeeding the baby on demand		
Good	(139)	82.2
Not good	(12)	7.1
Not sure	(18)	10.7

Breastfeeding- about expressing breast milk and leaving it behind for someone to feed your child

Good	(100)	59.2
Likely	(1)	.6
Not good	(49)	29.0
Not sure	(19)	11.2

How likely you think your child will become malnourished if not fed or fed once in day

Less likely	(95)	56.2
Likely	(41)	24.3
Not sure	(33)	19.5

Opinion, do you think malnutrition is a serious issue for the child's health

Not serious	(9)	5.3
Not sure	(10)	5.9
Serious	(150)	88.8

It is good thing to give different types of food for the child throughout the day

Good	(132)	78.1
Not good	(16)	9.5
Not sure	(21)	12.4

How difficult was it to feed your child exclusively for the first six months

Difficult	(82)	48.5
Not difficult	(56)	33.2
Not sure	(31)	18.3

Giving breast milk for a newborn immediately within an hour after birth is important

Agree	(65)	38.5
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Disagree	(20)	11.8
Strongly agree	(84)	49.7
Discarding the first milk or colostrum's is important before giving breast milk to a newborn		
Agree	(52)	30.8
Disagree	(89)	52.7
strongly disagree	(28)	16.6
Starting complementary foods to a child before six months is important	(46)	27.2
Breastfeeding can increase the mother's weight		
Agree	(45)	26.6
Disagree	(40)	23.7
Strongly	(84)	49.7
Mothers should stop breastfeeding if they take any type of medication		
Agree	(31)	18.3
Disagree	(64)	37.9
Neutral	(74)	43.8
Happy with breast feeding baby	(166)	98.2
After the birth of your baby, have confidence to breastfeed		
strongly agree	(116)	68.6
strongly disagree	(53)	31.4

Footnote: All the numbers in parenthesis are the actual respondents in the various categories

4.18 Distribution of Socio-demographic/childcare practices/nutrition knowledge of mother's/care givers by nutrition status of children attending Gaalkacyo General Hospital

Inter-variable Pearson correlation analysis showed that there was poor relationship between the nutritional status of children (stunting, wasting, and underweight). Positive correlation was found to exist between the child's age and wasting ($r=0.074$), But significantly associated with stunting ($r=-0.184$, $p=0.017$) and underweight ($r=-0.074$, $p=0.0336$). The mother's education level correlated to the children's nutritional status with wasting at $r=0.064$, stunting= -0.030 and underweight $r=-0.047$. There was strong correlation between household sizes and nutritional status with underweight being the highest at $r=0.84$, wasting at $r=0.021$ and stunting= -0.079 . Children's imbalanced diet correlated and significantly associated with underweight ($r=0.018$, $p=0.012$). ($p>0.05$) (Table 4.18).

Table 4.18: Distribution of Socio-demographic/childcare practices/nutrition knowledge of mother's/care givers by nutrition status of children attending Gaalkacyo General Hospital

Socio-demographic/ Childcare practices Nutrition knowledge	WAZ		HAZ		WHZ	
	R	p=value	r	p=value	r	p=valu e
Age in months	-0.103	0.183	-0.184	0.017	0.074	0.0336
Sex of the children	-0.136	0.078	-0.022	0.778	-0.136	0.077
Household size	-0.021	0.789	-0.079	0.310	0.84	0.276
Marital status	-0.040	0.607	0.014	0.854	-0.083	0.285
Mother education level	0.064	0.411	0.030	0.694	0.047	0.541
Child been sick in the past seven day	0.70	0.364	0.120	0.120	-0.070	0.367
Child last given deformeders	0.010	0.904	-0.60	0.077	0.052	0.537
Imbalanced diet	0.056	0.417	0.063	0.417	0.018	0.012
Breastfeeding	-0.030	0.700	-0.037	0.637	-0.006	0.937
Colostrum's	0.059	0.448	0.061	0.433	-0.018	0.813

Footnote: WAZ means underweight, HAZ means stunting while WHZ means underweight

4.19: Distribution of nutrition status by morbidity pattern of children under the age of five attending Gaalkacyo General Hospital

There was a significant difference between proportion of the children who were underweight and not underweight ($p=0.014$), stunted and not stunted ($p=0.047$) while wasted children were not significantly different from non-wasted ($p=0.130$). Children under-fives attending Gaalkacyo General Hospital were 4 times likely to be underweight and wasted than not. While children under-fives were attending Gaalkacyo General Hospital were 5 times more likely to be stunted than not. (Table 4.19)

Table4.19: Distribution of nutrition status by morbidity pattern of children under the age of five attending Gaalkacyo General Hospital

Nutrition Status	Yes%	No %	P-value	OR	95%C. I
Underweight	Sick				
	Yes	No			
Malnourished	37.9	17.8	0.014	0.354	0.152-0.825
Not Malnourished	62.1	82.2			
Stunting	Sick				
Malnourished	41.1	24.4	0.047	0.463	0.215-0.998
Not Malnourished	58.9	75.6			
Wasted	Sick				
Malnourished	18.5	8.9	0.130	0.428	0.139-1.316
Not Malnourished	81.5	91.1			

CHAPTER FIVE: DISCUSSION

5.1 Socio- demographic characteristics of households with children under the age of five attending Gaalkacyo General Hospital

Majority of the respondents were youth while teens mother caregivers were the lowest proportion in the group. A study on knowledge, attitude and practices of mother/caregivers of Shebelle zone, Somali region, observed mean age of the mothers/caregivers was 28.70 (\pm 7.88) years, similar to our study finding (Guled, A. R., et.al. 2016). Marital evaluation of study groups indicated that majority of the respondents were married. Guled, A. R et. al., (2016) in a similar study found that majority (87.5%) of the mothers/caregivers was married. These findings were also consistent with results of the same study conducted in Bondhere district which established that 76.1% of caregivers are married, 13.4% were divorced, 6% were single while the least of the population group were reported to be widowed (Turyare et al., 2021). More than a third of the caregivers had a lower primary level of education. These findings are an improvement from earlier findings which reported that 47.8% of individuals did not undergo formal education, 4.8% completed primary school education, and 5.1% went through secondary school, while 3.9% of them went past secondary school level (The Directorate of National Statistics, Ministry of Planning, Investment and Economic Development & Somalia., 2020). The study established that the main sources of income were salaried employment. These figures are a representative of the high rate of unemployment in Somalia which stand at 13.1% (Ibrahim & Nairobi, 2019). Household income was a significant determinant in evaluating the availability of food and access to healthcare services.

The majority of households had an average monthly income from all sources survived on one dollar a day. These are similar findings as those published by Ibrahim ,(2019). The mean household size was relatively large. A similar study in Somalia region, researching on

mother/caregivers found mean family size was 5.76 (\pm 2.1). Large household size is widely regarded as a risk factor for malnutrition in developing countries (Ajao, K.O., et.al.,2010),

Birth spacing was used to determine the effects of religious teachings on the use of birth control methods such as the use of contraceptives (Egeh et al., 2019). The study therefore exhibited that the birth spacing between one child and another was wide. The Birth spacing may be attributed to religious beliefs, and the parents' view on the effects of contraceptives (Gonie et al., 2018) To measure the livelihood system in households with children under the age of five, the study used malnutrition and morbidity trends to assess the health status of the respondents (Martin-Canavate et al., 2020).

5.2 Child care practices of Households (caregivers) of children under five years attending Gaalkacyo General Hospital

Certain foods were made unavailable to children when they were sick. This is a common practice in Somalia. For example, when children experienced symptoms of cold and cough, they would be restricted from consuming sugary foods, spicy, and oily foods (Abas et al., 2020). These practices are however, not in line with the WHO guidelines that recommends increased frequency of breastfeeding for children under 6 months to improve on liquid intake, and increase intake frequency of high dense foods for children between 6 and 59 months (USAID, AED, 2006).

The immunization status of the study children was slightly less than three quarters. A similar study found sub-optimal uptake of childhood vaccination in the Gaalkacyo District, Somalia, an average immunization coverage was about sixty percent (Abdullahi, F. M 2020).Our study vaccination status of children is a massive improvement from an earlier report (World Health Organization, 2018) that showed that by 2015, only 42% of children in Somalia were immunized against Diphtheria, tetanus toxic, and pertussis. Bacilli Chalmette Guerin (BCG) immunization, majority

of study children had been given as confirmed by presence of a scar on the left hand. With regard to Oral Polio Vaccine (OPV) immunization at birth, 97.3% children had been given. Majority of the children had already received OPV1, OPV2, OPV3 and measles vaccine. According to the United Nations Children Fund (UNICEF), for a country to be considered compliant in health operations, it must have a child vaccination coverage of 90% and above (Abdullahi et al., 2020). This has however not been implemented especially in the sub-Saharan Africa due to constraints in the healthcare systems. The average national estimated coverage for the six main child vaccines stand at 60%, which is below the recommended figures (Stewart et al., 2018).

Most of the children were weighed immediately after birth. This is a common practice among women as illustrated by (Guled et al., 2016) . Almost all the children slept under insecticide treated net. In order to reduce cases of malarial infestation among children, this is an improved usage compared to earlier surveys which showed the use of mosquito treated nets at 60% (Mohamed et al., 2020). About half of the children who are infants were dewormed. Deworming has been a common practice in Somalia especially among children as it prevents prevalence of anemia (Nordstrand et al., 2019) This study found that a suboptimal number of children were breastfeed. The WHO recommends exclusive breastfeeding for the first six months after childbirth. This practice is associated with improved child health and survival (world health Organization and United Nations Children’s Fund, 2021).

5.3 Nutritional status of children under five years attending Gaalkacyo General Hospital

The nutritional status of children was poor. High poverty levels, poor feeding practices, and lack of nutritional knowledge on infant and young child feeding are considered some of the bottlenecks that contribute to these findings (Kennedy et al., 2015) The proportion of the wasted and stunted was similar. However, there was no significant difference in prevalence of wasting between boys

and girls. These findings are however, not consistent with earlier studies that were conducted in other parts of the country that reported the prevalence of wasting, underweight and stunting at 11%, 16%, and 18% respectively (I.Ibrahim, 2019). In regard to the continental prevalence of malnutrition, and its subsequent contribution to children mortality rates, findings from the study show that there is more that needs to be done to reduce these forms of malnutrition. The standout point is addressing the issues of food insecurity (Bain et al., 2013).

5.4 Association between selected socio-demographic characteristics, feeding practices and nutritional status of children less than five years

The survey established that the main source of water for households was tap water. Water purification was a common practice in the area as it was applied to make the water safe for household use. These findings are correspondent to findings from a study that despite the proximity of the area to the Indian ocean, the quality and quantity of water in the area is of concern due to lack of financial and technical capabilities in the implementation of policies and regulations that touch on water (Dr.Mahesh Kumar Akkaraboyina 1, 2018). Of the various local methods of water purification, majority of the respondents indicated that they use boiling technique for purification of their drinking water while very few used chemicals such as chlorine to treat the water before drinking and or filtered their water before drinking, while slightly over a fifth did not treat their water before drinking. Treatment of water was due to their positive mindset on the effectiveness towards achieving safety of this water (Mafuta et al., 2021) However, these local water purification technologies may not be feasible enough to prevent water borne illnesses in the households with children under the age of five. This is because other factors such as demographic factors, economic, and environmental variables may negatively impact the quality of water for a population (Johnson et al., 2008). There was a high prevalence of diarrheal diseases among children reported in this study.

The finding could be attributed to the inefficiency in the water purification techniques as well as lack of enough water among the households (Johnson et al., 2008). Majority of the households used ordinary pit latrines for human excreta disposal systems, the remaining used different means such as putty, household closets, in houses toilet and flying toilets (Patrick et al., 2021). All respondents/caregivers reported washing hands after visiting the toilet. This is a common practice as the results were consistent with a similar study which was conducted in Somalia indicating a high level of responsible hygiene through hand washing (Stewart et al., 2018) Child morbidity in sub-Saharan Africa has been associated with hygiene status of households. Waste disposal is a determinant in child health since it shows the level of exposure to diarrheal diseases (Kwasu .O.B, 2005).

CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

Child morbidity rates in the region are high. Children vaccination rates was still very low compared Child malnutrition rates, that is, wasting, stunting, and underweight was relatively are highly in the study area.

Caregivers in Gaalkacyo area have low levels of education and this consequently affect the child feeding practices. The end result of this is the poor nutritional intake by children between 6 and 59 months. Some common practices that are affected when a child is sick by caregivers in Gaalkacyo, such as restricting certain types of food negatively affect the nutritional intake of the children, and is not in line with the WHO guidelines that when a child is sick, they need to be fed more frequently.

Malnutrition among children in the age bracket of 6-59 months in Gaalkacyo is very prevalent. The many cases of wasting, stunting, and underweight are not limited to one gender as both male and female children are equally at risk of getting malnourished.

The study area had water availability constraint, and water treatment was used as a purification mechanism to achieve safety of the water.

6.2 Recommendations

From the findings, the study suggests the following measures to be implemented;

1. Hygiene and sanitation practices need to be taught at health centers more often especially for those who have children under the age of five.
2. Institution-based training and community-based sensitization on the importance of children vaccination.

3. Health institutions to have a follow-up plan for all the mothers attending antenatal clinic to curb defaulting. This will help in keeping in track with the mother's nutritional status that can affect the birth outcome of the child.
4. Training caregivers on the introduction and practice of mixed feeding. This should be extended to the young child feeding practice when the child is sick.

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APPENDICES

Appendix 1

QUESTIONNAIRE FOR THE STUDY OF CHILD CARE PRACTICES AND NUTRITIONAL STATUS OF CHILDREN (AGED 6-59 MONTHS) IN GALKAIO GENERAL HOSPITAL, SOMALIA

District..... Location.....

Date of interview

Part 1: Socio-economic Characteristics

1. Age of the respondent

1. 15-20 2. 21-25 3. 26-35 4. 36-45 5. 46-49 6. And above

2. Marital status

1. Married 2. Single, 3. Divorced, 4. Separated, 5. Widowed

3. Mother's/care giver's level of education

1. No education 2. Primary 3. Secondary 4. Tertiary/University

4. Occupation of the Mather/care giver

1. Unemployed 2. Household work. 3. Business. 4. Salaried 5. Farmer

6. Others (specify.....)

5. Household Size (persons) 3, __ 4, __ 5, __ 6, __ 7, __ 8, __ 10__ and (Other specify.....)

6. What is approximate monthly Family income?

1. 50\$-100\$ 2.100\$-150\$ 3. 150\$-200\$ 4.200\$-250\$ 6.250\$-300 7. Others (Specify)

Part 2: Child Information (Clinic Card: Yes___No___)

7. Child's DOB..... Childs Age in Months.....

Sex..... Male..... Female.....

The birth spacing between this child and immediate older child in..... Months

Part 3: History of child’s Illness and care practices

8. Has the child been Sick in the Past seven day? 1. Yes 2. No if yes, what was the child suffering from?

- 1. Diarrhea 2. Measles 3. Pneumonia 4. Malaria 5. Common cold
- 6. Other (specify.....)

9. If the child was Sick, where did you seek treatment?

- 1. Hospital 2. Bought drug (chemist or drug store) 3. Others (specify....)

10. Are there foods that are withheld from the child during diarrhea or others illness?

- 1. Yes 2. No

If yes, name the foods that you withhold?

- 1. Milk and Milk products 2. Fruits / Fruits juices 3. Porridge 4. Foods cooked with oil 5. Others (specify.....)

Part 4: Immunization/ Growth Monitoring

11. Is there an immunization record or card for your last child?

- 1. Yes, seen the card 2. Yes, not seen the card 3. No

12. Please check for the completeness of the immunizations listed below on the card and tick accordingly. If the card or book is not available, ask the mother whether the child was received the following immunization and put the answer in the space provided.

Immunization	YES (1) Given	NO (2) Not Given	Do Not Know
BCG			
OPV 0			
OPV 1			
OPV 2			
OPV 3			
DPT 1			
DPT 2			
DPT 3			

Measles			
Full immunized			

Any others specify.....

13. From the above immunization information, is the child full immunized for Age?

1. Yes 2. No

14. Was your child weighted at birth?

1. Yes 2. No 3. Don't know

If yes how much did the child weight in kg.....

15. Do you take the child every month for growth monitoring and promotion at health facility?

1. Yes 2. No

If not, what is the reason?

1. Lack of knowledge 2. Lack of economic 3. And others (Specify).....

16. Does your child sleep under insecticide treated net?

1. Yes 2. No 3. Do not have a net. 4. Others..... If not why?.....

17. When was the Child last given dewormers?

1. 7-12months 2. 12-24months 3. 24-59months

Part 5: Feeding practices

18. How frequently should a mother breastfeed her infant?

1. 8-12 times per a day
 2. 4-8 times per a day
 3. 4-6 times per a day

19. Did you breastfeed your child colostrum's?

1. Yes 2. No

20. Is your child still breastfeeding?

1. Yes 2. No

21. How long do you want to breastfeed this child?..... (Months) 2. Not breast feeding

22. Have you started giving your child others food apart from breast milk

1. Yes 2. No

If yes, at what age did you begin your child other foods apart from breast milk?

1. 1-5 months 2. 6- Months 3. 7 months

23. Which food did you first introduce to your child?

1. Milk/ milk products 2. Fruit juices 3. Glucose water 4. Cereal based gruel (porridge) 5. Other

(Specify.....)

24. Who takes care of the child when you are sick or away from home?

1. Family members' 2. Friend/house helps 3. Leave at local day care center

25. How frequently do you feed this child per day?

1. 3 times 2. 4 times 3. 5 times 4. 6 times and above

Part 6: Water source and sanitation

26. Where do you get water for domestic use?

1. Borehole 2. Tap 3. Other (specify)

27. What do you do to the water before drinking?

1. Boil 2. Filter 3. Use of chemicals 4. Nothing 5. Other

(Specify.....)

Part 7: Sanitation and hygiene practices

28. What type of toilet/latrines is available where you stay?

1. Pit/ CDF Latrine 2. Closet 3. Putty 4. Flying Toilet 5. Other

(Specify).....

29. How do you dispose refuse at home?

- 1. Burn, Bury or put in the dust bin
- 2. Throw in the bush, throw at the dumping site

30. During which occasions do you wash your hands?

- 1. Yes
- 2. No

Part 8: Anthropometry index children

31. Measure and record the weight and height of the child aged under-fives that the mother has consented (IF the mother has two children under five, measure both)

Measurement	Age in month	/ /
	Weight in kg	
	Height in cm	
	MUAC in cm	

Part 9: Psychosocial support

32. Do you have time to sit and just carry the child?

- 1. Yes
- 2. No

33. Do you talk to your child? When? How often

- 1. Yes
- 2. No

If yes,

When.....

How often?

- 1. 1-5 times a day
- 2. 6-10 times a day
- 3. > 11 times
- 4. All the time

34. Do you wash your child yourself or give it to be washed by persons or siblings?

- 1. Yes
- 2. No?

If yes specify.....

35. Anemia Status of children aged from 6 to 59months that recoding in the Hospital

1. Hb.....

Part 10: DIETARY DIVERSITY QUESTIONNAIRE

How many meals 1 has the (NAME) index child had in the last 24 hours (from this time Yesterday to now)

26. Please I would like to ask you about the foods and drinks (meals and snacks) that your child ate yesterday during the day and at night (24 hours), whether at home or outside the home. Please recall all foods and beverages that the child ate starting with the first food eaten in the morning. Write down all food and drinks mentioned by the respondent. When the respondent has finished, probe for meals and snacks not mentioned.

Breakfast	Snack	Lunch	Snack	Dinner	Snack

DIVERSITY OF FOOD FOR THE INDEX CHILD

Food groups with example

Ask the mother or caregiver if the child has eaten food from any of the list below during the day and night?

		yes	no
1.	Cereals: Millet/Sorghum/Maize porridge?		
2.	Cereal products: Spaghetti, pasta, rice, bread, mandazi, posho, chapatti or other foods made from grain like: Sorghum, Millet, and Wheat?		
3.	Vitamin A rich vegetables and tubers: Pumpkins, carrots, orange or yellow fleshy sweet potatoes?		
4.	White tubers and roots: Sweet Potato (white), white Yams, Cassava, Irish Potato or any other foods made from roots?		
5.	Other vegetables: Cabbage, Eggplants, Tomatoes, Onions, Green Pepper, Mushroom, Okra, celery?		
6.	Vitamin A rich fruit, ripe mangoes, papayas + other locally available vitamin A rich fruit?		
7.	Other fruits: Bananas, Oranges, Lemons, Tangerines, Pineapples, coconut?		
8.	Organ meat (iron rich: Liver, Kidney, heart, gizzard or other organ meats?		
9.	Fresh meats and offal's: Meat, poultry, offal (e.g., chicken/poultry, goat meat, beef)		

Part 11: Mothers Knowledge of breastfeeding

37. Do you know about exclusive breast feeding?

1= yes 2= No

38. Right time to give breast milk?

1. after giving some butter 2. Within an hour 3. After one hour 4. After 24 hours

39. What do you do with the first milk or colostrum?

1. Discard 2. Immediately

40. What is the right time to start complementary foods?

1. Months or less 2. 4 months 3. 5 months 4. 6 months 5. 7 months or above

41. Is breast milk alone being enough for an infant during the first 6 months of life?

1. Yes 2. No 3. I don't know

42. Is exclusive breast feeding for the first 6 months used to prevent diarrheal and respiratory diseases for the infant?

1. Yes 2. No 3. I do not know

43. Is prolaternal feeding needed for an infant before starting breast milk?

1. Yes 2. No 3. I do not know

44. What are the foods and/or fluids recommended to give a child under 6 months?

1. Only breast milk 2. Breast milk and/or plain water 3. Infant formula food or animal milk? 4. Others (specify)

45. Knowing the advantages of breast milk constitution?

1. Yes 2. No 3. I don't know

46. What should be the food for a baby?

1. Water 2. Breast milk 3. Formula Milk 4. Solid food 5. All the above

47. Immunization of children is the best way to protect the child against infectious diseases?

1. Yes 2. No

48. Imbalanced diet is the cause of malnutrition?

1. Yes 2. No

49. Colostrum is a mother's early milk which contains antibodies to protect the newborn against disease?

1. Yes 2. No

50. Breastfeeding is beneficial to a mother's health?

1. Strongly agree 2. Agree 3. Disagree 4. Strongly disagree

51. Breastfeeding provides health benefits for infants that cannot be provided by formula?

1. Strongly agree 2. Agree 3. Disagree 4. Strongly disagree

52. Is formula feeding better than breastfeeding?

1. Yes 2. No

53. Is exclusive breastfeeding important?

1. Yes 2. No

54. Can exclusive breastfeeding prevent child from diarrhea?

1. Yes 2. No

55. How long exclusive breast feeding should be continued?

1. Yes 2. No

56. Breastfeeding protects the women by the breast cancer?

1. Yes 2. No

Part 12: Mather's attitude Questions about Nutrition

57. What is your opinion about breastfeeding the baby on demand?

1. Good 2. Not Good 3. Not sure

58. What is you're feeling about expressing breast milk and leaving it behind for someone to feed your child?

1. Good 2. Not Good 3. Not sure

59. How likely do you think your child will become malnourished if not fed or fed once in a day?

1. Likely 2. Less Likely 3. Not sure

60. In your own opinion, do you think malnutrition is a serious issue for the child's health?

1. Serious 2. Not serious 3. Not sure

61. Do you think it is good thing to give different types of food for the child throughout the day?

1. Good 2. Not Good 3. Not sure

62. How difficult was it for you to feed your child exclusively for the first six months?

1. Difficult 2. Not difficult 3. Not sure

63. Giving breast milk for a newborn immediately within an hour after birth is important?

1. Strongly agree 2. Agree 3. Disagree 4. Strongly disagree

64. Discarding the first milk or colostrum is important before giving breast milk to a newborn?

1. Agree 3. Disagree 4. Strongly disagree

65. Starting complementary foods to a child before six months is important?

1. Yes 2. No

Breastfeeding can increase the mother's weight:

1. Agree 2. Neutral 3. Disagree

66. Mothers should stop breastfeeding if they take any type of medication:

1. Agree 2. Neutral 3. Disagree

67. Mothers should stop breastfeeding if they take any type of medication:

<p>Dowladda Puntland ee Soomaaliya Wasaaradda Caafimaadka</p> <p>68. Are you happy with breast feeding your baby? 1=Yes 2=No</p> <p>69. After the birth of your baby, did you decide to breastfeed? 1. Strongly disagree 2. Strongly agree</p>	 Puntland Government of Somalia Ministry of Health	<p>حكومة بنت لاند الصومالية وزارة الصحة</p>
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Ref. Nom .52.Rho. 2020 / Regional health office / Xafiiska Isuduwaha 16 / JAN / 2020

TO: MUDUG REGIONAL HOSPITAL

SUBJECT: ETHICAL APPROVAL

This is to certify that the proposal submitted by:

Investigator: Mr Abdifitah Said Egal

Reference No: MoH /MRHO/52/2020

Full profile Title

CHILD CARE PRACTICE AND NUTRITIONAL STATUS OF CHILDREN

(AGED 6 -59 MONTHS) IN GALKAIO GENERAL HOSPITAL, SOMALIA

To be under taken in in Galkaio General Hospital

Mudug, Puntland, Somalia

Start date 17- JAN 2020

Finishing 16 - FEB - 2020

Thanks

Abdinasir Ibrahim Ahmed

Regional Health Officer

Ministry Of Health

Mudug, Puntland, Somalia



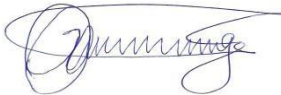
Appendix 3

RE: ABDIFITAH SAID - A56/35768/2019

Mr. Abdifitah Said is an MSc. student, in the Department of Food Science Nutrition and Technology, University of Nairobi, pursuing Master's degree in Applied Human Nutrition. As part of his degree, he is required to conduct a research on a topic of his choice.

Mr. Said is currently doing research on "**Child care practices and nutritional status of children (Aged 6-59months) in Gaalkacyo General Hospital, Somalia**".

Any assistance extended to him in light of this information will be highly appreciated. Thank you,



DR. G.O. ABONG'

Chairman,

**Department of Food Science,
Nutrition and Technology.**