THE INFLUENCE OF CAREGIVERS' FORMAL AND NUTRITION LITERACY LEVELS ON HEALTH CARE OF CHILDREN BORN TO ADOLESCENT GIRLS IN NDHIWA SUB COUNTY, HOMA BAY COUNTY

BY

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DECLARATION

This thesis is my original work and to the best of my knowledge has not been presented for a degree or any award in any other institution

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ABSTRACT

Child deaths have been a serious health challenge in Kenya and this is attributable to poor nutrition and frequent bouts of illness in children. Despite government efforts to curb this menace, data from the Kenya Demographic and Health Survey (2014) revealed that deaths among children aged 5 and below are still in elevation at 74 cases for every 1000 live deliveries compared to the expected standard of 25 cases for every 1000 live deliveries as per Sustainable Development Goal number 3. Previous studies associated these deaths to preventable diseases while giving little focus on the role of caregivers in lessening the worst effects of these illnesses. The current study thus analyzed the influence of caregivers' formal and nutrition literacy levels on healthcare of children born to adolescent girls in Homa Bay County. Specifically, the study examined how caregivers' formal and nutrition literacy influences feeding practices among children born to adolescent girls, how their literacy influences access to health services among children born to adolescent girls and to explain how these literacy levels influence engagement in playing activities with the under-fives. These aspects are flagged in the National Maternal, Infant and Young Child Nutrition Policy, 2013. The study was conducted in Ndhiwa, Homa Bay County which is amongst areas with high child mortality and teenage pregnancy cases. The study was anchored on descriptive design and correlational design allowing for a mixed method approach combining qualitative and quantitative data. It was guided by Ecological Systems Theory which suggests that the microsystem: the closest surrounding a child lives in, has a great impact to their overall growth. In a study population of 1470 caregivers and 497 Community Health Volunteers various data collection techniques were used in collecting both Quantitative and Qualitative data. Using Yamane's formula, applicable for a finite population, 204 caregivers were systematically sampled for responses. The researcher used the principle of maximum variation to conduct interviews with as many Community Health Volunteers as possible until they reached a point of saturation. Primary information was acquired through Questionnaires, Interviews, Focus Group Discussions and Observation whereas Secondary information was obtained from government documents, journals and books. Descriptive statistics was utilized in analyzing quantitative data from questionnaires. Regression analysis and Chi square tests were used to identify the relationship between independent and dependent variables. Statistical significance was established using a p-value of <0.05. The study used frequency tables, percentages and charts to summarise data. Qualitative data collected through interviews and focus group discussions was analyzed through coding, where themes were generated to capture the original content of the data. The findings of the study revealed an existence of a significant association between caregivers' formal and nutrition literacy and feeding practices where p-value was 0.000, less than alpha, 0.05. It was also established that formal and nutrition literacy is significantly associated with good health seeking practices of caregivers since these two forms of literacy help them improve their health seeking behavior. Finally, the findings from the Chi square tests on caregivers' formal and nutrition literacy versus engagement in playing activities with the under-fives showed p-value to be 0.000 which confirms existence of a significant relationship between these variables. In order to improve on the adopted policies including the National Maternal, Infant and Young Child Nutrition Policy (2013) and the Kenya Health Policy 2014-2030, the study recommends that the government enhances the provision of education for girls. This can be achieved through strengthening the implementation of the Kenya School Health Policy, 2018. Acquiring education will equip them with good child care practices during motherhood and have the capability to make the right decisions for their children.

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ACRONYMS AND ABBREVIATIONS

CHVs Community Health Volunteers

DHS Demographic Health Survey

EBF Exclusive Breastfeeding

HH Households

IYCN Infant and Young Child Nutrition

KDHS Kenya Demographic Health Survey

KNBS Kenya National Bureau of Statistics

MCH Maternal and Child Health

MNPs Multiple Micronutrient Powders

MUERC Maseno University Ethics Review Committee

NACOSTI National Commission for Science, Technology and Innovation

SDGs Sustainable Development Goals

UN United Nations

UNDP United Nations Development Program

UNICEF United Nations International Children's Emergency Fund

WHO World Health Organization

OPERATIONALIZATION OF TERMS

Caregiver: Refers to any person who provides care to young ones. In this study, caregivers include the mothers and the alternate caregivers who are responsible for the upbringing of the under-fives.

Adolescent girls: young girls aged between 10 and 19.

Literacy levels: Indicators that will be used to say that indeed caregivers are literate include; The capability to utilize language in reading, writing, listening as well as speaking. When someone is literate, they can pinpoint, comprehend, understand, generate, converse, work out and utilize materials in print and written form related to various settings.

Nutrition literacy: This refers to formal nutrition education and awareness acquired from sources such as health facilities, media platforms or person to person.

Formal literacy: This is a structured form of learning gained through attending secondary school and tertiary institutions.

Health care: This involves taking preventive or essential medical measures as a way of improving a person's wellbeing. In this study, there were specific indicators that the researcher considered in order to conclude that indeed caregivers' literacy levels influence the health care of under-fives. By defining the indicators, the researcher was able to isolate all the other factors that are likely to compromise the health care of these children. When looking at how literacy levels influence feeding practices, some of the indicators will include knowledge in exclusive breastfeeding, complementary feeding knowledge, methods, dietary diversity, meal frequency as well as quality and quantity of food. On the other hand, some of the indicators that point to access to health services will include; Adherence to immunization, knowledge of illness signs and the ability to seek health care assistance during illnesses. Lastly, some of the indicators to be looked at when examining how literacy levels influence engagement into play include; Provision of play materials, time allocated for play and how often the caregivers engage in playing activities with the under-fives.

Influence: This refers to a caregiver's capacity to affect a child's character, development or behavior.

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CHAPTER ONE

INTRODUCTION

1.1 Background

Internationally, a vast number of children die aged five and below and around 40% of those in this stage of development die before completion of one month period (World Health Organization [WHO], 2004). This study further showed that a considerable number of children pull through but face curtailed lives, incapable of developing fully. Lack of good diet and recurrent attack by diseases restrict the ability of children aged five and below to learn simple intellectual and social skills. According to Ferris et al., (2001), the child's development in all aspects of healthiness as well as individuality depends on caregivers' capability to comprehend, observe and react towards their bid for help and upkeep. In most cases, the caregivers are not aware of the actions to take so as to avoid or minimize the impact of diseases, nor the way to offer alternative practices to ensure the child's physical and mental growth is on the right track. Since children aged five and below depend on their caregivers for good health care, the formal and nutrition literacy levels of the caregivers may have an impact on health care of these children. Low nutrition literacy among caregivers may lead to inappropriate feeding practices such as limited dietary diversity and failure to adhere to acceptable diet. Due to these practices, children below the age of five become vulnerable to different types of malnourishments including being stunted, wasted as well as underweight hence increased child mortality (WHO, 2004). Therefore, this made it imperative to analyze how formal and nutrition literacy levels of caregivers influence health care they give to children below the age of five born to adolescent girls as one way of curbing child mortality, which is a serious health challenge. This was the aim of the current study.

Malnourishment in children aged five and below has been a dominant societal wellbeing challenge across the globe. This health concern has been singled out as a primary contributing factor to deaths of approximately 45% of children aged 0–59 months (WHO, 2011). Asia is one of the leading regions with a huge number of children aged five and below proven to be malnourished or emaciated (Black et al., 2013). A study by Chaparro et al., (2014) was conducted in South and Central Asia, a region where malnutrition is dominant. The aim of the study was to identify potential causes of malnutrition among children in this region, common in different regions in Asia with the same features. This study by Chaparro identified the significant causes of malnutrition to be inadequate dietary intake, low birth weight, poor breastfeeding practices, poor hygiene as well as poverty. Another research was carried out to identify some of the major issues related to malnourishment in children below the age of five in Bangladesh through the analysis of statistics gathered by Bangladesh Demographic and Health Survey (BDHS), 2014. This study by Talkuder (2017) showed that parents' level of education, affluence, dwelling environment, antenatal care seeking practices throughout prenatal period as well as delivery interval were considerably related to the dietary condition of children aged five and below. These studies (Chaparro et al., 2014; Talkuder, 2017) clearly outlined the contributing issues to malnourishment in children born to adults and non-adults and they also identified the existence of an association between parents' schooling and the dietary status of the children. However, the studies were entirely focused on Asian countries in general and did not show how caregivers' formal and nutrition literacy levels influence feeding practices among children under five years born to adolescent girls in African countries as one way of curbing malnutrition hence improving their health.

Sub-Saharan Africa remains to be a continent characterized by huge cases mortality among children below the age of five globally, with 76 cases for every 1,000 live deliveries in 2017 (WHO, 2018). These cases imply that out of 13 children born at the same time, one of them does not make it to five years of age which is 14 times greater compared to the standard proportion of 1 out of 185 in developed nations (You et al., 2012). Three-quarters of under-fives die as a result of infectious, postnatal as well as dietary related diseases as per the recent Worldwide Health approximates on Child Mortality as per the World Health Organization (WHO, 2018). Communicable illnesses which unfairly affect children from underprivileged backgrounds have been on the rise predominantly in Sub-Saharan Africa. In the year 2016, under-five mortality was associated with premature delivery problems, intrapartum-related complications, pneumonia illnesses, hereditary irregularities, diarrhea, newborn sepsis as well as malaria (You et al., 2012). This report further showed that children born from underprivileged homes are at a greater danger of dying before reaching five years old in addition to children born to parents with no tertiary education. These studies (You et al., 2012; WHO, 2018) clearly outlined the diseases prevalent in Sub-Saharan Africa, which highly lead to deaths of children aged five and below and also associated these deaths to poverty and lack of secondary or tertiary education among mothers. However, the studies were general to mothers of all ages and also gave little attention to the influence of caregivers' formal and nutrition literacy levels on access to health services among under-five children born to adolescent girls. The current research sought to fill this gap.

In Uganda, most under-five mortalities are as a result of Pneumonia, leading to approximately 1.6 million deaths annually (WHO, 2004). Previous research showed that pneumonia related mortalities can be avoided if caregivers are able to notice the signs and risk symptoms among

children suspected to be ailing from pneumonia, pursued cure on time and provided the sick children with suitable homebased attention together with observance to treatment and appropriate nutrition (Rudan et al., 2008). Demographics in Tanzania, another East African country showed that approximately 42% of children suffer from stunting (Tanzania Demographic and Health Survey [TDHS], 2010). When a child is stunted, they experience a slow physical and psychological growth as well as escalated ill health and possibility of death, minimal bodily power and less economic output in adulthood (Grantham-McGregor et al., 1996; Semba, 2008). Dietary challenges among children have been majorly caused by unsuitable feeding habits (Cernades et al., 2003). More research has proven that breastfeeding habits are affected by various variables such as beliefs, traditional customs, parents' awareness as well as past knowledge (Nkala & Msuya, 2011). These variables play out contrarily through societies hence impact on child wellbeing in different ways. These studies (WHO, 2004; Rudan et al., 2008; Nkala & Msuya, 2011; Cernades et al., 2003) pointed out preventive health care as well as proper feeding practices which involve exclusive breastfeeding to be essential for children's development. However, they did not show how caregivers' formal and nutrition literacy levels may influence engagement in playing activities with children below the age of five as a way of enhancing their mental and physical development. This study focused on this particular concern.

In Kenya, newborn deaths are at 74 cases for every 1,000 live deliveries while deaths among children aged five and below is at 52 cases for every 1,000 live deliveries (Kenya Demographic Health Survey [KDHS], 2014). Such rates imply that in every 26 children delivered nationally, one dies before celebrating their first birthday and out of the 19 born, one dies before the age of five. In addition, children from Nyanza region are at a higher risk of passing on during their first

five years as compared to the children from Central Kenya. Nairobi ranks second after Nyanza in cases of child deaths at a rate of 72 cases for every 1,000 live deliveries (KNBS & ICF Macro, 2010). As per the Ministry of Public Health and Sanitation, Kenya National Bureau of Statistics, ICF Macro and the 2010 Kenya Malaria Indicators Survey, child mortality cases are higher amongst children belonging to parents with unfinished primary education attainment at around 63 cases for every 1,000 live deliveries. Children aged 5 and below in those homes are at a higher risk of post-neonatal and child deaths with a rate of 20 to 22 deaths for every 1,000 live deliveries. Studies have further shown that mother's age during delivery of a child as well as the interval in which she delivers are contributing factors to newborn deaths. Children that belong to young mothers are at a higher risk of dying after birth due to preterm deliveries and intrapartum-related complications. This is also the case for the children delivered within short or long intervals from the last delivery (KDHS, 2014). These studies (KDHS, 2014; KNBS & ICF Macro, 2010) associated under-five deaths to a lack of formal education by mothers, mothers' age and birth interval. Though informative, the studies did not show how the formal and nutrition literacy levels of caregivers influence access to health services among the under-fives who are born to adolescent girls as a way of enhancing their health.

As a way of curbing child mortality, the Kenyan government adopted several policies in order to curb child mortality and attain Sustainable development goal number three. Some of the policies that the government adopted include the National Maternal, Infant and Young Child Nutrition Policy, 2013. This policy draws reference to other Kenyan policies and strategies on the needs of every child including the Kenyan constitution, Kenya Vision 2030, Food security and nutrition policy, National Nutrition Action plan 2012-2017, Early Childhood Development Guidelines,

among others. This policy protects, facilitates and encourages optimal Maternal Infant and Young Child Nutrition and creates an environment that fosters nutritional wellbeing, upholding the rights of children to be adequately nourished through appropriate breastfeeding and complementary feeding. The main policy objectives are; Ensuring appropriate and adequate complementary feeding for every child during the first five years of life with more attention on those aged two years and below with the aim of preventing under nutrition or over nutrition. Another objective revolves around supporting timely introduction to breastfeeding and recommending that infants be exclusively breastfed. Additionally, the Government of Kenya endorsed the Breastmilk Substitutes Regulations and Control Act in 2012 with the aim of protecting, promoting and supporting breastfeeding. The constitution recognizes child existence rights through inclusion of the same in various articles. Under the constitution, every child has a right to appropriate and basic nutrition, healthcare access, and play friendly education centers (KDHS, 2014).

According to the children ACT (2001), every child has a right to reachable, inexpensive and excellent health services. In the year 2010-2012, the government adopted a number of important policy advancements in the health sector. These policies include the Kenya Health Policy 2014-2030 which aimed at preventing, managing and controlling communicable and non-communicable diseases amongst the under-fives. The government also adopted strategies including an essential package for health which provides a comprehensive set of health services including under-five vaccination, Vitamin A provision, deworming in children below the age of five and expectant mothers as well as the cure of infancy diseases, conducting HIV Psychotherapy and testing, Insect-treated Nets utilization in Malaria control and enhanced Antenatal Care services. The National Health Sector Strategic Plan 2005-2012 (NHSSP II) was also put in place which sought to increase

uptake of immunization amongst children across the country. Besides, the government also put more emphasis in Malaria control through the Kenya Health Sector Strategic Plan KHSSP III 2013-2017 and commissioned the Division of Malaria Control (DOMC) to manage the execution of the National Malaria plan.

The government also adopted policies aimed at promoting leisure and games. These policies include the Early Childhood Development Policy (2006) whose aim was to promote psychosocial development through provision of adequate time, facilities for play and secure environment. Another policy that was adopted is the National Pre-primary Education Policy (2017) which advocates for provision of ample playing space and materials for pre-school children. Further, the National Children policy 2010, advocates for a child-friendly and sufficiently equipped communal gardens for playing activities so as to ensure continuous all-inclusive growth of children (National Council for Children's Services [NCCS], 2010). However, achieving Sustainable development goal number 3 remains a challenge with under-five deaths at a ratio of 74 cases for every 1000 live deliveries (KDHS, 2014). Therefore, caregivers' formal and nutrition literacy may have an implication to the overall growth of children aged below five years and achievement of the above policies. Lack of formal and nutrition literacy characterized by limited knowledge on exclusive breastfeeding, minimum dietary diversity as well as minimum acceptable diet may contribute to poor feeding practices. Additionally, poor health seeking behavior including failure to adhere to immunization and failure to recognize illness signs may lead to deaths of the under-fives. Lack of knowledge on the need to allocate enough time and provide play materials to the under-fives hinders their engagement in play which undermines their psychomotor development. The current study therefore sought to help in improving child health policies by providing crucial information

on ways to enhance the healthcare of children aged five and below as a way of curbing their mortality. Data collected was analyzed in line with the policies outlined above.

In Homa Bay County, the approximated child death ratio is 57 cases for every 1000 children who reach the age of one year (Kenya National Bureau of Statistics and United Nations Children's Fund [KNBS & UNICEF, 2011). This report further showed that according to WHO guidelines, an estimated 15 percent of the under-fives are reasonably malnourished whereas about two percent are highly emaciated. Around one in every four children have a stunting problem while between 1 and 10 have severe stunting. Four percent of the children are reasonably wasted, whereas an estimation of 2 percent of the children are moderately weighty. According to a recent KDHS (2014) report on teenage pregnancy prevalence, Homa Bay County came in the second position nationwide with a 33% pregnancy rate after Narok County. A survey done in Ndhiwa sub-County with an aim of gathering community ideas on awareness, approach and livelihoods amongst caregivers and societies while focusing on motherly, newborn and under-fives' diet showed that many child death cases are due to scant knowledge on timely introduction to breastfeeding, exclusive breastfeeding and poor balanced feeding habits. The survey further showed that cultural and traditional methods played a significant role in undermining motherly newborn and under-fives' nutrition as well as healthcare habits in Ndhiwa sub-County (Homa Bay MIYCN Report, 2016). Given these mortality rates as well as poor nutritional status among children in this County coupled with high rates of teenage pregnancy, there was need to analyze the influence of caregivers' formal and nutrition literacy levels on health care of children born to adolescent girls and this was the focus of the current study.

1.2 Statement of the problem

The government is in pursuit of several interventions aimed at reducing child mortality. These strategies comprise of important guidelines of health as stipulated in the Kenya Health Sector Strategic Plan KHSSP III 2013-2017 and the National Infant and Young Child Nutrition (IYCN) aimed at improving health care of children aged five and below. Despite these efforts, deaths among children aged five and below are still in elevation at 74 cases for every 1000 live deliveries compared to the expected standard of 25 cases for every 1000 live deliveries as stipulated by Sustainable Development Goal number three, which emphasizes on curbing avoidable mortalities of infants and children aged five and below. Studies done in the past showed that mothers age during delivery and past experience are contributing factors to new born deaths. Children that belong to young mothers are at high risk of dying after birth due to preterm deliveries and intrapartum-related complications. Existing literature also identifies the existence of an association between parents' education level and health care they give to their children. It is therefore speculated that government efforts to reduce child mortality could be jeopardized by the literacy level of the caregivers. Low formal and nutrition literacy among adolescent mothers as well the alternate caregivers could be a contributing factor to inappropriate feeding practices such as limited dietary diversity and failure to adhere to the acceptable diet. Due to these practices, children aged five and below become vulnerable to various types of malnourishments, including cases of children being stunted or underweight hence increased child mortality.

Poor health-seeking behavior among caregivers may also be another challenge characterized by failure to seek treatment promptly during illness as well as adherence to prescriptions and vaccination amongst the under-fives. This delay in care-seeking may lead to most of the deaths as

a result of preventable and treatable conditions. Lastly, stimulation through play is essential to children aged five and below as it enhances their mental and physical development. In most cases, it is speculated that this birthright has been threatened by forces including failure of caregivers to allocate enough time for play, provision of play materials as well as engagement in playing activities with the under-fives. This insufficient engagement in play may therefore, slow down motor development of children hence compromising their overall health. This makes it of importance to analyze the influence of caregivers' formal and nutrition literacy levels on health care of children born to adolescent girls as this particular concern has not been adequately explored.

1.3 Objectives of the study

The main objective of the study was to analyze the extent to which caregivers' formal and nutrition literacy levels influence the healthcare of children born to adolescent girls in Ndhiwa sub-County, Homa Bay County.

1.3.1 Specific objectives were to:

1. Examine how the caregivers' formal and nutrition literacy levels influence feeding practices among children born to adolescent girls in Ndhiwa sub-County.
2. Assess how caregivers' formal and nutrition literacy levels influence access to health services among children born to adolescent girls in Ndhiwa sub-County.
3. Explain how the caregivers' formal and nutrition literacy levels influence engagement in playing activities with children born to adolescent girls as a way of enhancing their mental and physical development in Ndhiwa sub-County.

1.4 Research questions

1. How do the caregivers' formal and nutrition literacy levels influence feeding practices among children born to adolescent girls in Ndhiwa sub-County?
2. How do the caregivers' formal and nutrition literacy levels influence access to health services among children born to adolescent girls in Ndhiwa sub-County?
3. How do the formal and nutrition literacy levels of caregivers' influence engagement in playing activities with children born to adolescent girls as a way of enhancing their mental and physical development in Ndhiwa sub-County?

1.5 Research hypothesis

The study adopted both research questions and a hypothesis because it is a mixed method research involving Descriptive research design and Correlational research design. The adoption of these two designs provided the researcher with a broad understanding of how caregivers formal and nutrition literacy influences the health care they give to under-fives and be able to explain quantitative results using qualitative follow up data. The current study aimed at assessing the influence of caregivers' literacy on health care of under-fives. Therefore, there was need to establish association/correlation in order to establish whether there is influence or not. The researcher tested certain hypothesis listed below:

H_{01} There is no significant association between the caregivers' literacy levels and feeding practices among under-fives.

H_{02} There is no significant association between the caregivers' literacy and health care seeking among caregivers of children below the age of five.

H_{03} There is no significant association between caregivers' literacy levels and engagement in play with the under-fives by caregivers.

1.6 Significance of the study

The current study looked at the knowledge of caregivers on matters of healthcare of under-fives through its primary objective, which was to analyze the influence of caregivers' formal and nutrition literacy levels on the healthcare of children born to adolescent girls in Ndhiwa, Homa Bay County.

Outcomes of this study guided by the first objective on feeding practices of the caregivers can help stakeholders in the maternal and child health sector to understand the extent to which caregivers' literacy levels influence feeding practices among children aged five and below as one way of curbing malnutrition, which is a contributing factor to demise among children in this age bracket. The second and third objective on access to healthcare and engagement in playing activities will enlighten both the alternate caregivers and the adolescent mothers on the importance of health care seeking from a health facility as well as the need to engage in playing activities with the under-fives as a way of enhancing their mental and physical development.

Further, the findings of the current study can be useful to policy makers. By seeking a deeper understanding of the place of formal and nutrition literacy of adolescent mothers and alternate caregivers on the wellbeing of infants, it provides feedback useful in repackaging of infant mortality prevention strategies. The study also contributes to academic knowledge and adds to the literature in existence on child health. Additionally, the study highlights all emerging concerns that are significant for future research.

1.7 Scope of the study

The study was carried out in Ndhiwa sub-County, which is amongst the 7 sub-Counties situated in Homa Bay County in Nyanza region as articulated in the Kenya's 2010 constitution that was promulgated on 27th August 2010. It is located at the latitude of 0^0 27‟ South and 0^0 52‟ South, and between longitudes 34^0 12‟ East and 34^0 40‟ East. The sub-County has a total population of 172,212 people and covers an area of 171.4 km². The key economic activities in the sub-County include; Fishing and fish trade, Commercial businesses and Agriculture in products such as maize, millet, cassava and sun flower (Ndhiwa sub-County Integrated Development Plan, Okello, 2018). This study focused on the influence of caregivers' literacy levels on healthcare of children aged five and below born to adolescent girls and not children born to mothers of all ages. The specific aspects that the study looked into include feeding practices, access to healthcare and engagement in playing activities while focusing on how caregivers' literacy levels influence these aspects which are important for overall growth of children.

The reason as to why the sub-County was chosen is that the National Adolescent and Youth Survey Report conducted by the National Council for Population and Development (NCPD) 2015, highlighted high poverty levels and early marriages as being the main causes of the high rate of teenage pregnancy in the region. This survey also listed Ndhiwa sub-County to be amongst the leading sub-Counties in abuse of adolescent girls due to the high population of fishermen along the shores of Lake Victoria. Another survey done in Ndhiwa sub-County with an aim of gathering community ideas on awareness, approach and livelihoods amongst caregivers and societies while focusing on maternal, newborn and under-fives' nutrition showed that many child death cases are due to scant knowledge on timely introduction to breastfeeding, exclusive breastfeeding and poor complementary feeding habits. The survey further showed that cultural and traditional methods

played a significant role in undermining maternal, newborn as well as under-fives' nutrition and also healthcare habits in Ndhiwa sub-County (Homa Bay MIYCN Report, 2016). The above factors therefore made the sub-County viable for study on the influence of caregivers' literacy levels on the healthcare of children born to adolescent girls.

1.8 Study limitations

The first limitation that the study faced was that of language barrier. The researcher minimized this through the use of research assistants from the sub-County who understood the dynamics of the local dialect and translation of data collection tools into the local language. The other limitation was associated with the study focus which only covered children aged below five and only those that are born to teenage mothers. Further, the study only covered certain issues around childcare such as feeding practices, healthcare access and engagement in play and not others. Issues that emerged that were outside the scope of coverage in this study were outlined as suggestions for further research.

1.9 Theoretical Framework

1.9.1 Ecological systems theory

The study was framed by the Ecological systems theory, which states that a child's growth is highly molded by their relations with the surroundings such as parentages, school, beliefs, and peers. Bronfenbrenner (1977) begun to advance his ecological philosophy as a modern approach to comprehending human growth. His concept went through important transformation ever since its initial initiation in the course of the late 1970s, as he continually modified the idea up to his demise in 2005. Although Bronfenbrenner advanced his approach to understanding human growth, it is widely utilized in different academic areas (Eriksson et al., 2018). The advancement of this theory

is therefore explained in various stages (Rosa and Tudge, 2013): since the environmental approach to human growth comprising the early stage (1973–1979), then later a powerful advocacy on the responsibility of the individual and progressive developments in the period between 1980 to 1993. Lastly, in the final stage between 1993 to 2006, the Process Person Context Time model (PPCT) was advanced and termed as the best suitable research strategy for the philosophy. Therefore, the current study was guided by the initial phase, which is an ecological approach towards human growth and the last stage, which is the Process Person Context Time model (PPCT).

Phase 1 (from1973–1979) - an ecological approach to human development

In the course of 1970, Bronfenbrenner termed his arising philosophy an ‘‘ecological approach to human growth’’ (Rosa and Tudge, 2013). According to him, ecology was termed as the relationship between humans and their surroundings. To grow and live on, the relationship amid an individual and their surrounding ought to be very close (Bronfenbrenner, 1975). During this first phase of the theory, Bronfenbrenner termed the ecological surrounding as consisting of hierarchies in four distinct stages. One of the systemic levels include the microsystem which involves associations between an individual and their close environ around them including the household, school environment and place of work (Bronfenbrenner, 1977). The mesosystem encompasses interconnections between most important surroundings encompassing an individual including associations between family and school, family and peers among others (Bronfenbrenner, 1977). The exosystems on the other hand deals with communal organizations, such as the workplace, communication networks and civic organizations. Such public organizations do not encompass the growing individual but impact on the close environment where the individual is found and hence impact on progress of that setting (Bronfenbrenner, 1977).

Finally, the macrosystem encompasses the plans of a certain community including rules and code of practice as well as unwritten guidelines and customs (Bronfenbrenner, 1978). Analyzing the structure of the above ecological systemic levels and their connections amid and within the levels and individual aspects were viewed as essential in comprehending and describing a progressive effect.

Phase 3 (the mid-1990s-2006) -a Process-Person-Context-Time (PPCT) model

Throughout this last stage, Bronfenbrenner concluded his model by advancing his thought on ‘‘proximal processes’’, currently known as ‘‘engine of growth’’. Proximal procedures comprise give-and-take relations between the growing individual and additional important persons, things and signs in their closest surrounding and these procedures may perhaps consist of events between a caregiver and a child or between a child and another child which may include things like reading, engaging in play and acquiring new expertise (Bronfenbrenner, 1995). Proximal processes were considered as being extremely dominant interpreter of human growth and Bronfenbrenner needed to demonstrate the way in which individual features, combined with facets of the surroundings impact proximal procedures (Rosa and Tudge, 2013). While stipulating about the role and progressive impact of proximal processes, Bronfenbrenner’s theory re-interpreted the microsystem. He contended that proximal process functions in microsystems and encompasses relations with three major aspects of the closest surrounding including individuals, items and signs. Individuals were more so known as ‘‘significant others’’ while embracing George Herbert Mead’s vocabulary (Bronfenbrenner, 1995).

Ecological systems theory was used by Adamsons et al., (2007) to examine the distinctions in fathers participation and worth of father and child relations between genetic parent and step-

parents and carried out the exercise by clearly connecting them to the four stages of the child's environment as per the theory. Fathers were viewed as the emerging people of concern since father participation and nature of father relations with their children were the results to be deliberated. Even though Adamsons et al., (2007) contend that the cross-cutting opinion of their assessment did not give way for the consideration of growth as a progression and that their interpretation of the procedure may be different from the one of Bronfenbrenner, their valuation of the worth of father-child commitment is a realistic depiction of a proximal process.

Riggins-Caspers and others (2003) also used the theory and outlined the critical suggestions of bio ecological concept guided by Bronfenbrenner and Ceci (1994). Their study objective was to evaluate biology-surrounding relations via psychopathologic influences of genetic and adoptive parentages and the adopted teenagers' problematic habits due to strict punishments to instill discipline. The writers expounded openly the associations amid variables in their research as well as all the components of Bronfenbrenner's concept. Proximal processes were evaluated by looking at the teenager's adoptive parents' strict corrective methods, which were established to be impacted upon by two major factors which are; personal features of the teenagers (their susceptibility to problematic conduct, as evaluated by their genetic parents' point of psychopathology) and also by the surrounding (less or modest standard of adoptive parentages' psychopathological nature). This study therefore used the Ecological Systems Theory to understand how the caregivers who form a significant part of the microsystem may influence through their literacy levels, health care of children aged five and below born to adolescent girls. Guided by the theory, the study also looked at how proximal processes such as parent-child interactions influence the overall development of children aged five and below. This was done by

identifying the level of interaction between caregivers and children through things such as playing and how the same affects child development.

Engler (2007) criticized the theory of not capturing the aspect of resilience. He argues that the approach does not show how individuals are resilient to the environment in which they live. Miller (2008) argues that it is the capability to be resistant that enables us to overcome life challenges, enables us to acquire power in difficult circumstances such as an individual's ability to endure stress. Every human is born with circumstances that call for struggle such as social ability, issue-solving expertise, life-threatening awareness, independence, as well as intellectual goals (Engler, 2007). The theory was also criticized by Ryan (2001) in that the person should be viewed in the sense of their exact situations. The capability of people to impact on their achievement should be the most important to put into consideration. A greater focus should be put on this before analyzing the ecological setting and its stages, which simultaneously affect and relate with the person and impact on their overall growth.

However, this criticism cannot be enough reason to discard the theory since Ecological Systems Theory tries to put into consideration almost every feature of human life and relations that have an impact on children's growth. Furthermore, Bronfenbrenner did not in any way suggest that the four components must be incorporated in every single study, however he emphasized that every study encompassing the PPCT approach ought to center on proximal processes, explain the way in which they are affected mutually by features of the growing person and also by the setting where the processes are taking place (Tudge et al., 2009).

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The current chapter looked at the available literature and introduced aspects of the influence of caregivers' formal and nutrition literacy levels on the healthcare of children born to adolescent girls. It discussed in detail the influence of caregivers' formal and nutrition literacy levels on feeding practices among children born to adolescent girls, how the formal and nutrition literacy levels influence access to health services and finally the influence of caregiver's formal and nutrition literacy levels on engagement into playing activities with the under-fives as a way of enhancing their mental and physical development.

2.2 An overview of the health care of children below the age of five

According to the UN statistical report released in 2020, deaths among children aged five and below can be described as the likelihood of a child to pass on between the process of birth and precisely below the age of 5, in every 1,000 live births. In 2020, approximately 5 million children aged 5 years and below passed on. This translates to 13,800 children aged five and below passing on daily in the year 2020. Internationally, communicable illnesses such as pneumonia, diarrhea and malaria are the main cause of mortalities amongst the under-fives along with preterm deliveries as well as intrapartum-related problems. The study further showed that globally, deaths among children aged five and below decreased by 61%, from 93 cases per 1,000 live deliveries in the year 1990 to 37 in the year 2020. In spite of this notable improvement, enhancing child survival is still an issue of urgent concern. In the year 2020 alone, approximately 13,800 mortalities amongst under-fives

deaths took place on daily basis, an impossibly high rate of largely avoidable child mortalities. The report also argued that mortalities in children aged five and below is amongst the severe health problems presently facing the international community. The report further indicated that mortality among infants reflects both the specific problems affecting children aged five and below and the structural aspects that impact on the health of entire populations (Sharrow et al., 2022).

According to UNICEF (2006), almost 7 million children aged five and below continue to pass on annually around the globe and more than 95 percent are clustered in only two continents; Africa and Asia. This report further shows that although the African region has about 24 percent of the world's children aged five and below of population, it accounts for almost 50% of global deaths amongst the under-fives and in contrast, only one percent of deaths of children aged five and below takes place in Europe. There are only four nations; Cape Verde, Eritrea, Mauritius and Seychelles which are relatively small and are almost attaining SDG goal three, which advocates for curbing avoidable mortalities of infants and children aged five and below.

Sub-Saharan Africa is the continent having a huge number of deaths amongst newborns and one of the continents with the least improvement. The continent, which contributes to approximately 38 percent of newborn mortalities across the globe had the highest infant mortality ratio of 34 cases for every 1,000 live deliveries in the year 2011 (WHO, 2018). Newborn mortalities contribute to approximately a third of deaths of children aged five and below globally (1.1 million newborns pass on aged one month old). Despite Sub-Saharan Africa having managed under-five deaths to the tune of 39% from 1990 to 2011, the highest cases of child mortality are still recorded in Sub-Saharan Africa, with a ratio of 1 in every 9 children passing on before the age of five 16 times greater than the usual situation for industrialized nations (1 in 152) (You et al., 2012).

Newborn illnesses contribute to 25% of mortalities in the continent, with diseases such as pneumonia, malaria and diarrhea being the most common. Undernutrition is related to 50% of mortalities among children (UNICEF, 2008). Undernutrition is highly prevalent in the Sahel region as well as the Horn of Africa due to long-lasting and serious food shortage. According to UNICEF (2005) ecological health is a significant contributor to the food shortage pandemic. Other contributing factors are AIDS and measles particularly in Southern Africa. Approximately 90% of Worldwide AIDS-associated pediatric illnesses and mortalities take place in Sub Saharan Africa. HIV and AIDS is associated with most of the deaths amongst under-fives in South Africa where it is associated with half of the cases as per UNICEF (2008).

Child mortality has been a major health concern in Kenya with about 7 million children aged five and below passing on every year as a result of avoidable and curable illnesses. Undernutrition causes 1/3 of the deaths while illnesses including pneumonia, diarrhea and malaria have been associated with most of the deaths among children aged five and below (KDHS, 2014). However, it has been established that a huge number of children may perhaps survive every year if preventive measures comprising medication for treating pneumonia, oral rehydration remedy for diarrhea as well as the giving out insecticide-treated nets (ITNs) to curb malaria were made widely accessible to every new born (KNBS & ICF Macro, 2010). Even though neonatal mortalities among children aged five and below have gone down since the year 1990, predominantly as a result of policies in infancy vaccination and an effort to curb malaria, Kenya still ranks the 39th state with a huge number of mortalities in the Globe. As a result, Kenya is not anywhere near attaining SDG number 3 (KDHS, 2014; Banke-Thomas et al., 2017). Nearly 35% of deaths of children aged five and below occur when these children are newly born whereas 1/3 of all neonatal deaths are associated

with serious illnesses and other factors including birth complications, premature deliveries as well as hereditary abnormalities. Roughly two-thirds of deaths among children aged five and below are post-neonatal and the major contributing factors to these mortalities are diseases such as pneumonia and diarrhea. In addition, Kenya has a third of children aged five and below experiencing stunting, due to a long-lasting malnourishment. Furthermore, 1 out of 6 children aged five and below is wasted. Prolonged famine has led to serious problems for children in Kenya, enhancing malnourishment levels, illnesses and death rates (Arunda et al., 2017).

2.3 Influence of literacy level on feeding practices

Malnutrition cases amongst children aged five and below is a significant public health concern around the globe (WHO, 2011). It has been attributed to most of the deaths, with approximately 45% of all mortalities in children aged five years and below (Black et al., 2013). Across the globe, the pervasiveness of various types of malnourishments including the state of stuntedness, wasting and underweight in under-five children were 24.7%, 7.8% and 15.1% correspondingly in the year 2014 (WHO, 2014). Even though under-five malnourishment is still common across the globe, it is more dominant in third World nations (Mahgoub et al., 2006). For instance, the level of prolonged malnourishment was around 39.9% in the African region, while the rates of underweight cases were approximately 26.6% in the South-East Asia region (WHO, 2014).

Asia had the largest number of children aged 5 and below who were either malnourished or wasted with a percentage of about 21.9% and 11.2% correspondingly in the year 2011. Nevertheless, due to the population density in this part of the World, Asia also has the highest number of under-fives who are stunted, wasted or malnourished (Black et al., 2013). However, these cases of malnutrition are prevalent in South-Central Asia. The problem of malnourishment in this part alone is capable of barring the world from attaining Sustainable Development Goal number 3 and possibly the

modern global 2025 targets for nutrition (Black et al., 2013). Therefore, to uncover the factors associated with malnutrition in this region, Chaparro et al., (2014) carried out a study in South and Central Asia. This study established that malnutrition was associated with poor dietary intake, low birthweight and maternal nutrition status, poor breastfeeding habits, inadequate complementary feeding habits, unhygienic surroundings and lack of accessibility to health care, poverty and food insecurity as well as gender inequality and women's status. Another study by Talkuder (2017) was conducted to establish some of the factors that cause malnutrition in children below the age of five by analyzing Bangladesh Demographic and Health Survey, (2014) data. The study by Talkuder established that there is need to increase the level of education of the parent, improve the nutrition status of the mother and increase amenities which provide antenatal care package so as to attain improved nutrition standards among children aged five and below in Bangladesh. These studies (Chaparro et al., 2014; Talkuder, 2017) clearly outlined some of the major factors leading to malnutrition and have also recognized the presence of an association between parents' education and the nutrition status of children. However, these studies did not show how caregivers' formal and nutrition literacy levels influence feeding practices among children aged five and below as one of the ways of curbing malnutrition hence improving their health.

The African region has one of the highest prevalence of undernutrition globally whereby it is associated with around 39.4% of stunting, 24.9% of the malnourished and 10.3% of the emaciated under-fives (WHO, 2010). The 2015 Millennium development goals (MDG) report showed that Sub Saharan Africa accounts for a third of all malnourished children internationally, emphasizing that malnourishment is still a significant health challenge for children aged five and below in the continent, thus making it necessary for urgent intervention. Studies from this region show that

breastfeeding highly contributes child nutrition and growth. Newborn physical growth throughout the initial post-partum stage is highly impacted upon by newborn feeding practices (UN, 2015). A number of strategies have therefore been introduced to enhance suitable newborn feeding such as the ideal period of exclusive breastfeeding (EBF). The guidelines of the World Health Organization advocate for exclusive breastfeeding during the initial six months of a new born (WHO, 2008). This directive is founded on proof of the necessity of proper nourishment in the first months after delivery and its importance in attaining proper healthiness. The advantages of the same comprise curbing of illnesses and contamination in young age (Mihrshahi et al., 2007; Hannon et al., 2000) and enhanced mental and physical skills growth (Sacker et al., 2006; Kramer et al., 2008). Breastfeeding habits are affected by number of variables such as traditional values, level of awareness of the mother and past knowledge (Amal et al., 2007; Nkala & Msuya, 2011). These studies (Mihrshahi et al., 2007; Hannon et al., 2000; Sacker et al., 2006; Kramer et al., 2008) highlighted the significance of exclusive breastfeeding (EBF) to the development of under-fives through boosting immunity. Though informative, the studies did not clearly explain how caregivers' formal and nutrition literacy levels may influence feeding practices among children born to adolescent girls as a way of enhancing good health amongst this group.

Tanzania has approximately 42% of minors who are stunted (WHO, 2008). When a child is stunted, they experience delayed physical and psychological growth and increased illnesses and deaths, minimal bodily power as well as minimal economic output in adulthood (Grantham-McGregor et al., 1996). Nutritional difficulties in children are majorly due to unsuitable feeding habits (Cernades et al., 2003). Most importantly, breastfeeding is advantageous. Nevertheless, EBF where the newborn exclusively feeds on breast milk only without supplementary food stuffs or

beverages is proven to produce advantages for mutually mother and infant (WHO, 2008). Though breastfeeding is a routine for a number of mothers around the country, not much is clear concerning the genuine habits of newborn feeding, their impact on newborn nutritious status and the indicators of breastfeeding (Semba, 2008). These studies (WHO, 2008; Cernades et al., 2003; Grantham-McGregor et al., 1996; Semba, 2008) once more highlighted the importance of exclusively breastfeeding and good practice of complementary feeding to the development of children aged five and below. However, they did not lay emphasis on the level of awareness among caregivers on EBF and versatile diet of children and how their formal and nutrition literacy levels may influence feeding practices among children under this age bracket who are born to adolescent girls.

In Kenya, cases of children who are stunted are approximately over 35%, whereas those malnourished are approximately 16% (KNBS and ICF Macro, 2010). Together with elevated child death cases, these predicaments have continuously weakened the administration's determinations to deliver excellent healthcare and to curb the high cases of deaths and malnourishment (Kabubo-Mariara et al., 2008). The strategic plan of 1999-2004 saw the Ministry of Health purpose to curb malnourishment in children aged five and below by 30%. The plan also purposed to scale down the ratio of illnesses in children below five years and death cases associated with dominant infancy illnesses and undernourishment from 70 to 40 percent and eradicate vitamin A insufficiency among children in that age bracket (MOH, 2006). The Government also adopted the National Maternal, Infant and Young Child Nutrition Policy (2013) which aimed at protecting, facilitating and encouraging ideal maternal, infant and young child nutrition and establish a setting which seeks to foster nutrition wellness, upholding the rights of children to be sufficiently nourished. Regardless of this hard work, the minimal improvement in solving the key factors of childhood

malnourishment, illnesses and deaths persistently decelerates the achievement of the objectives. Under-five deaths remain high, at the ratio of 74 cases for every 1,000 live deliveries in 2008-09, even though this is a decline from 115 cases for every 1,000 deliveries in the year 2003 (KNBS and ICF Macro, 2010). In Siaya County, a study done on a small sample (n=175) carried out on children aged five years and below revealed that most children who were stunted and emaciated in Siaya were mainly below the age of two. This was majorly associated with a premature introduction to complementary foods. It was also established that breathing illnesses were common amongst this group as well as other communicable diseases (Bloss et al., 2004). These studies (KNBS and ICF Macro, 2010; Kabubo-Mariara et al., 2008) highlighted some adverse effects of malnutrition including stunting and being underweight. However, they did not show how formal and nutrition literacy levels of caregivers influence feeding practices among children under five years as a way of curbing malnutrition. The current study focused on this particular concern.

2.4 Influence of literacy level on access to health services

The Children Rights Convention of 1989 under Article 24 outlines the right of the minors to be able to acquire the uppermost achievable quality of health. It explicitly states that its State parties shall take proper measures to curb infant and under-five mortality. This has been declared in other conventions as well, particularly the International Covenant on Economic, Social and Cultural Rights (ICESCR) Article 12 (2) (a), which advocates for the reduction of infant mortality as well as the healthy growth of children. Article 24 of the Children Rights Convention further calls for nation states to take suitable measures to guarantee the delivery of needed health support and wellbeing for every child, with more attention given to the expansion of key health care to curb illnesses and malnourishment (Umozurike, 1997).

Deaths amongst the under-fives is a complex predictor of a nation's progress and clear indication of its main concern and standards. Internationally, usually close to 26,000 children aged five and below pass on every day majorly from avoidable diseases (UNICEF, 2005). Almost all of these children originate from less developed nations. Over a third of these children do not make it past one month of age and in most cases, they pass on while at home and where they are unable to acquire crucial health services (UNICEF, 2008). Globally, out of 136 million children delivered in 2011, around five million passed on before one year of age and an extra two million are estimated to pass on before getting to the age of five (UN, 2009). Approximately 7 million babies under the age of five are still dying annually in the world and more than 95 per cent are clustered in only two continents; Africa and Asia (UN, 2009). These mortality rates of children aged five and below are due to a small number of illnesses and conditions. Forty-three per cent of these death cases occur among infants aged 0-28 days, specifically newborn babies and are in most cases associated with premature birth complications, birth asphyxia, trauma as well as sepsis. From one month of age until the age of five years, many of the of deaths are caused by communicable diseases such as pneumonia, diarrhea, malaria as well as HIV/AIDS (WHO, 2013). These studies (UNICEF, 2005; UNICEF, 2008; WHO, 2013) clearly outlined various diseases responsible for under-five deaths while stating that most of the under-five mortality cases are as a result of avoidable and curable illnesses. However, not much was said on how caregivers' formal and nutrition literacy levels influence access to health services among under-fives born to adolescent girls.

Sub-Saharan Africa still records the high cases of under-five deaths across the globe. Communicable illnesses, which in most instances affect children from underprivileged

backgrounds still persists predominantly in Sub-Saharan Africa (UNICEF, 2006). The major factors contributing to mortalities amongst the under-fives include premature delivery complications, pneumonia, hereditary abnormalities, diarrhea, newborn illnesses and malaria (WHO, 2018). Therefore, advancing control and management of these illnesses is pivotal in enhancing neonatal and child existence. Mortalities among infants are due to illnesses and disorders that are related to standard of health attention during childbearing. Moreover, a decrease in newborn deaths is depended on improving health care, guaranteeing that each delivery is handled by a trained healthcare provider and ensuring that clinic care is accessible during emergencies (You et al., 2012). These studies (UNICEF, 2006; WHO, 2018; You et al., 2012) outlined diseases associated with under-five deaths in Africa and also advocated for preventive measures as a way of curbing child mortality. However, they did not focus on the influence of caregivers' formal and nutrition literacy levels on access to health services among under-fives born to adolescent girls nor the awareness of the caregivers on uptake of preventive healthcare as a way of curbing the prevalence of the highlighted diseases.

In Uganda, Pneumonia is the major illness contributing to deaths amongst children aged five years and below causing roughly 1.6 million mortalities annually (WHO, 2004). These diseases are amongst the most significant barriers to the achievement of SDG goal 3 which advocates for curbing avoidable neonatal mortalities and mortalities amongst children aged five and below and stipulates that all nations should purpose to eradicate newborn mortality to as low as 12 deaths in every 1,000 live deliveries and under-five deaths at 25 cases for every 1,000 live deliveries by 2030 (You et al., 2012). Pneumonia deaths could be prevented if caregivers were aware of the signs and risky signs in children suffering from pneumonia, pursued cure on time and provided

suitable homebased care to the children comprising observance to treatment and appropriate feeding (Rudan et al., 2008). Identifying the signs of pneumonia is the initial stage in curbing mortalities in children below the age of five and caregivers have a crucial duty of recognizing pneumonia related symptoms, its danger signs and instantly pursuing proper care for ill children. Studies show that failure to understand signs and symptoms of childhood illness prevents or slows down care seeking (Rosenstock, 1966). These studies (WHO, 2004; Rudan et al., 2008; Rosenstock, 1966) attributed under-five deaths to ignorance and improper home care by caregivers while the current study laid more emphasis on how the caregivers' formal and nutrition literacy levels may influence access to health services among the under-fives born to adolescent girls.

In Kenya, over 7 million children aged five and below pass on annually as a result of avoidable and curable illnesses. Illnesses including Pneumonia, diarrhea and malaria are still the major cause of child mortality, while undernutrition is associated with more than 1/3 of the mortalities. Over the years, the government adopted various policies including the Kenya Health Policy 2013-2030 whose objective is to eliminate communicable diseases by use of vaccines. The government also introduced the National Health Sector Strategic Plan 2005-2012 (NHSSP II) and Kenya Health Sector Strategic Plan (KHSSP III) to increase immunization coverage amongst the under-fives and prevent diseases in children within this age group. Despite the adoption of these policies, Kenya still ranks the 39th nation with the highest number of mortalities worldwide (KDHS 2014; Banke-Thomas et al., 2017). This therefore, means that Kenya is not anywhere near attaining the SDG goal three which advocates for curbing avoidable neonatal mortalities and deaths amongst the under-fives (Ziraba et al., 2009). However, a huge number of children may perhaps survive annually if demonstrated efforts including medication for pneumonia treatment, oral rehydration

remedy to ease diarrhea and giving out of insecticide-treated nets (ITNs) to curb malaria were commonly accessible (Ukachukwu, 2009). These studies (KDHS, 2014; Ziraba et al., 2009; Ukachukwu, 2009) advocated for preventive health care as a way of dealing with under-five deaths while giving little attention to the influence of caregivers' formal and nutrition literacy level on access to health services among under-fives.

2.5 Influence of literacy level on playing activities

Play is paramount to an ideal child's physical and mental growth that the United Nations High Commission for Human Rights (2006) acknowledges it the right every child for survival. Play is a critical element in children's routine and it enhances a comprehensive growth among children (Bell & Wolfe, 2004). Playing enables children to grow physically, mentally, acquire important social skills as well as ensuring they prosper academically. Socializing while engaging in various play activities enables children to improve on their social skills. The children really enjoy engaging in various games since it gives them a chance to discover and find out for themselves. Engagement in play also allows them to familiarize with social expertise in a specific game whereby they are capable of solving challenges within their environment while playing (Fisher, 1992). Play further gives children a chance to utilize their creativeness as they advance their thoughts, bodily, intellectual and mental strength. Play is also crucial to strong intellect advancement. Participation in playing activities enables minors to interact and connect with their surrounding at a very tender age. Play also enables children to generate and explore an environment they can familiarize with, facing challenges head on while undertaking grown-up chores, occasionally with the help of other children or their caregivers (Bell & Wolfe, 2004). Most of these studies (Bell & Wolfe, 2004; Fisher, 1992;) were carried out in Western countries and not in African countries and they focused on the importance of play to healthy brain, physical and emotional development of children.

However, not much was said on the influence of caregivers' formal and nutrition literacy levels on engagement into playing activities with under-fives as a way of enhancing their physical and mental development.

Research done by the American Academy of Pediatrics (2014) in the US showed that play strengthens a child's terminology and verbal expertise and demonstrates to the children the importance of joint effort, sharing and compassion. Innovative undertakings give children a chance to express their emotions. Caregivers should let children try out different play surfaces and materials. They should inspire them to embrace the procedure of making as opposed to the outcome only. This form of flexible art provides children with an opportunity to express themselves and get rid of anxiety with less limitations. Play further illustrates to a child the way to involve themselves with their surrounding during a very tender age. Play is therefore both an educative and fun activity. Play can promote children's social skills advancement by giving them a chance to engage in activities that entail turn taking, partaking and collaborating. Caregivers should therefore offer a variety of age-appropriate brainteasers and panel games for homebased play. Turn taking gives children a chance to participate in role-playing which enhances physical and mental development since it entails mutually spoken and non-spoken communication. This study pointed out essential ways through which play builds imagination as well as enhancing emotional development. However, the study did not show how caregivers' formal and nutrition literacy levels may influence engagement into playing activities among under-fives as a way of enhancing their development (American Academy of Pediatrics, 2014).

Conversely, studies have also shown that this birthright is in most cases infringed by various factors, including child labor practices and abuse, war as well as cases of violence and scarce resources accessible to minors living in poorer settings (Burdette & Whitaker, 2005). Nonetheless, even children from wealthy backgrounds with enough play materials as well as serene environs might not sufficiently engage in playing activities. Every child has a right to a chance to develop to their full potential. Caregivers therefore need to reflect on every aspect that inhibits the ideal growth and push for conditions that give children a chance to effectively gain benefits that come with engaging in playing activities (Bell & Wolfe, 2004). Regardless of the advantages of play for mutually children and caregivers, the duration allocated for play is noticeably reduced for children from all backgrounds (Shankoff & Philips, 2000). Such time restrictions have also impacted on playgroup children, whose playing duration has been reduced in their timetables to give way for more classwork. Presently, many children in school are provided with minimal free time and reduced physical activities. A number of institutions have condensed the duration devoted to art and design and physical learning to concentrate on strictly class work. These changes could have consequences on the capability of children to take in new ideas since children's intellectual capability is improved through clear and substantial alteration in duties (Burdette & Whitaker, 2005). These studies (Bell & Wolfe, 2004; Burdette & Whitaker, 2005; Shankoff & Philips, 2000) pointed out time restrictions as well as insufficient resources to be some of the things limiting play amongst the under-fives. The current research focused on how the levels of formal and nutrition literacy among caregivers may influence engagement into playing activities among under-fives as a way of enhancing their mental and physical development.

The Geneva Declaration on the Rights of Children (1986) acknowledges engagement in play among children as an important activity in enhancing children's social expertise. As a result of this affirmation, the syllabus creators in Kenya announced in the nationwide objectives of education that play enhances social expertise and offers chances for effective advancement of their abilities and individual growth. Guiding principles state that schooling allows children to embrace living and learning by engaging in playing activities. The government of Kenya also adopted policies including the Early Childhood Development Policy (2006) and the National Pre-primary Education Policy (2017) whose aim was to promote under-fives' psychomotor development through allocation of enough time, play materials and secure environment for play. Studies from Kenya show that playing also allows children to interact and know the way to deal with various behavior among their playmates as they cultivate a solid connection. When playing, children get to know about divergent emotions with their playmates while sharing opinions. As they play, they practice characters that they would want when they are fully grown (Njoki, 2007). Play enables children to build the ability to handle worries and tensions they encounter in life. Games therefore give children a chance to release and conquer uncertainties and nervousness which pile pressure on them. Play therefore, can be said to be among the essential means of learning by the under-fives. Play is an important requirement for children to grow their social expertise. Play transcends political, social and religious borders (Mahindu, 2011). These studies (Njoki, 2007; Mahindu, 2011) were quite informative on importance of play to growth and development of children. However, not much was said on the influence of caregivers' formal and nutrition literacy levels on engagement into playing activities with under-fives as a way of enhancing their development.

CHAPTER THREE

RESEARCH METHODOLOGY

This section discussed in detail the research design, study area, target population, sampling and sampling procedure, data collection techniques, data analysis and presentation, validity and reliability of instruments and finally ethical considerations.

3.1 Research design

The study used descriptive design and correlational design in order to address research questions appropriately and test hypotheses as well. These two designs allowed for adoption of a mixed method approach combining qualitative and quantitative data. The qualitative aspect helped in explaining quantitative results from the survey. The researcher did a follow up data through focus group discussions, observation and oral in-depth interviews in order to the behavior, attitudes and perspectives that related data generated from the close-ended questions, allowing for triangulation of data from the two strands. Similarly, the two designs were useful in identifying the interrelationship between different variables. Descriptive research design encompasses collection of data to respond to questions about the present status of the topic under study (Kumar, 2018). This design gave the researcher a chance to describe how literacy levels of the caregivers influence feeding practises, access to health services and playing amongst the under-fives as a way of enhancing their overall development. The design was most suitable since it made enough provision for protection against bias and maximised reliability of the research study (Gay, 1980). Furthermore, the design provided data of both qualitative and quantitative nature from a cross-section of the population chosen which allowed for a multifaceted method of collection and analysis of data. The multidimensional approach for data collection allowed the researcher to have

a broader view of information on how formal and nutrition literacy levels of the caregivers influence healthcare of children born to adolescents.

According to Kombo and Tromp (2006), qualitative and quantitative methods of research are complementary and suitable hence they ought to be used in combination in order to maximise the strengths and minimise the limitations of each other. In this study, the researcher ensured data gathered from questionnaires was enriched with data from oral in-depth interviews and focus group discussions. This approach therefore, enhanced the triangulation of data from both sources that are qualitative and quantitative by use of different methods to collect data on the study topic. For instance, Questionnaires containing structured and unstructured questions were used to gather quantitative data on the three objectives. Qualitative data was gathered using Interviews which contained questions on health seeking behaviour of the caregivers and Focus Group Discussions which covered issues including feeding practises, health seeking behaviour as well as engagement into playing activities. The same was observed where the researcher looked at the presence or absence of playing materials as well observing the caregivers' feeding practises and meal frequency. This utilization of different techniques of data collection increased the accuracy of the information gathered.

This study also employed correlational research design since it intended to test significance of certain variables. In this type of a research design, a researcher uses a correlation statistical test in describing and measuring the degree of association between two or more variables. The level of association between variables is classified using a correlation coefficient (Asamoah, 2014). Therefore, in order to assess the influence of caregivers' formal and nutrition literacy on health care, the researcher tested significance using correlational methods of regression. The study used Chi-square tests to measure influence of caregivers' formal and nutrition literacy on health care.

The Chi-square tests enabled the researcher to establish the relationship between literacy level which was the independent variable and depend variables which were the objectives of the study. By use of crosstabulations, the researcher established the association between these variables. Chi-square statistics enabled the researcher to test significance using a P-value of <0.05.

3.2 Study area

In Homa Bay County, the approximated child death ratio is 57 cases for every 1000 children who reach the age of one year (Kenya National Bureau of Statistics and United Nations Children's Fund [KNBS & UNICEF], 2011). As per a recent KDHS (2014) report on teenage pregnancy prevalence, Homa Bay County was ranked the second position nationwide with a 33% pregnancy rate after Narok County. Ndhiwa sub-County was therefore selected as the study area due to its high prevalence of adolescent pregnancy as compared to all other sub-Counties in Homa Bay County (Homa Bay County Health Records, 2019). The National Adolescent and Youth Survey Research conducted by the National Council for Population and Development (NCPD) 2015, pinpointed high poverty levels and early marriages as being the major contributing factors to the alarming rates of adolescent pregnancy in Ndhiwa. This survey also listed Ndhiwa sub-County as one of the leading sub-Counties in abuse of adolescent girls due to the high population of fishermen along the shores of Lake Victoria. Another survey done to gather community perceptions, attitude and habits amongst caregivers while focusing on maternal, newborn and under-five nutrition showed that some of the major factors for under-five mortality were insufficient knowledge on timely introduction to breastfeeding, exclusive breastfeeding and poor complementary feeding habits. The survey further showed that cultural and traditional practices by caregivers played a big role in undermining maternal, newborn and under-five nutrition and health seeking behavior leading to high levels of child mortality in Ndhiwa sub-County (Homa Bay MIYCN Report, 2016).

The above factors therefore, made the sub-County viable for study on the influence of caregivers' formal and nutrition literacy levels on the healthcare of children born to adolescent girls.

3.3 Target population

The study was carried out in Ndhiwa sub-County, Homa Bay County. From a reconnaissance survey, it emerged that the sub-County had a huge number of teenage pregnancy cases and another report showed the existence of high levels of child mortality (Homa Bay MIYCN Report, 2016). In addition, most causes of child mortality in Ndhiwa sub-County were associated with insufficient knowledge on exclusive breastfeeding as well as complementary feeding in children aged five and below. According to the County Health Information Officer, there were 1470 recorded cases of adolescent pregnancy in Ndhiwa sub-County in the year 2020. Therefore, the target population was 1470 caregivers of children born to adolescent girls. This included both adolescent mothers and alternate caregivers. This particular group was of interest because they are the primary health care providers of children aged five and below who are born to adolescent mothers. They are the group of people who have first-hand information on the three objectives of the study including feeding practices of the under-fives, access to health services among children within this age bracket as well their level of engagement into playing activities with the under-fives. Further, adolescent girls were of interest because their newborns have high chances of being born premature and to pass on during the first month of life. The under-fives born to adolescent mothers are at a higher risk of passing on compared to those born to mothers aged 20 and above. They are at a high risk of malnourishment hence low psychological and physical growth. Another group of people who had first-hand information on the healthcare of the under-fives were the Community Health Volunteers (CHVs), especially those working in the households with children under five years

born to adolescent girls. According to the County Health Information Officer, there were 497 Community Health Volunteers in Ndhiwa sub-County.

3.4 Sampling Frame

A sample frame refers to a list of all items in a population from which units are drawn for the sample. The researcher obtained a list of the 1470 households and 497 Community Health Volunteers from the sub-County office.

3.4.1 Inclusion and Exclusion Criteria

Households in Ndhiwa sub-County with children aged five years and below born to adolescent girls and those who agreed to take part in the study were included. Households which had no children aged five years and below born to adolescent mothers and those with children below the age of five but were unwilling to participate in the study were exempted.

3.5 Sample Population

The sample size for the current study was determined using Yamane (1967) formula which is appropriate for finite populations. The population in the study area contained a countable number of sampling units, that is, all households in Ndhiwa sub-County with children under five years born to adolescent girls. Yamane's formula was therefore, applicable because it is designed to produce information about particular characteristics of the finite population. He argued that, when confidence level is 95% and p = 0.7, the sample size should be:

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

In this case, n was the sample size and e was the level of precision. This method was therefore used for the study population where N=1470 with ± 7% precision. Taking 95% confidence level and p=0.5, the sample size was:

$n = \frac{1470}{1+1470(0.7)^2}$ =204 Households

This therefore means that 204 caregivers were picked to form the sample size for the current study. The principle of data saturation was used in purposively sampling the Community Health Volunteers (CHVs) who participated in the oral in-depth interviews. The researcher used the principle of maximum variation to conduct interviews with as many CHVs as possible from a population of 497 until a point of saturation was reached. These CHVs together with the caregivers formed the sample population for the study.

3.6 Sampling Techniques

3.6.1 Purposive sampling

According to Kumar (2019), purposive sampling is based on researcher's decision on who can offer paramount information to attain the study goals. A researcher only involves individuals who in his or her view can provide the essential facts and are prepared to participate and contribute towards the same. This sampling technique provided a chance for careful picking from the population targeted people to include in the study who were the Community Health Volunteers. According to the County Health Information Officer, there were 497 Community Health Volunteers in Ndhiwa sub-County. The list obtained from sub-County office was used by the researcher to identify the Community Health Volunteers in-charge of the 204 households. The principle of data saturation was used in purposively sampling the Community Health Volunteers who participated in the oral in-depth interviews. By use of in-depth interviews, these respondents

gave their responses on the three objectives including influence of caregivers' literacy level on feeding practices amongst the children aged five and below, access to health services among under-fives born to adolescent girls and how their literacy levels influence engagement in playing activities as a way of enhancing mental and physical development of children. This enabled the researcher to capture different perspectives regarding the three objectives of the study.

3.6.2 Systematic sampling

According to Murthy & Rao (1988), Systematic sampling encompasses selecting of elements positioned at a predetermined interval known as the sampling interval. The study therefore used this sampling method to come up with 204 households from the sampling frame of 1470 households.

$$Sampling\ interval = \frac{Total\ number\ of\ basic\ sampling\ units\ in\ the\ population}{\text{Number of sampling units needed for the sample}}$$

The sampling interval for the study therefore was:

$$Sampling\ interval = \frac{1470\ \text{households in total population}}{204\ \text{households for my sample}} = 7$$

The researcher obtained a list of the households from the Sub County office then selected respondents at the 7^{th} unit interval until the researcher attained the number required. By use of this sampling technique, the 204 households were selected from the list obtained from the sub-County office and with the help of CHVs mapped and identified for data collection.

3.7 Data Collection

The study aimed at gathering both primary and secondary data, where primary data was obtained through administering questionnaires, interviewing, focus group discussions and observation while secondary data was acquired from official government documents, journals and books.

3.7.1 Questionnaire

Researcher administered questionnaires were used on the caregivers of children born to adolescent girls. The questionnaire contained structured and unstructured questions addressing the three objectives of the study. Part one addressed demographic data of the caregivers, part two addressed the feeding practices of the caregivers while part three was on access to health services and finally part four addressed engagement in playing activities with the under-fives. The questionnaire was used since it could be administered with ease, was affordable and permitted gathering of data from a huge sample (Gay, 1980; Bajpai, 1987). In addition, the researcher used picture reading and interpretation where necessary to better explain questions and increase response rate.

3.7.2 Oral in-depth Interviews

The researcher conducted one on one interviews with the Community Health Volunteers (CHVs) dealing with households with under-fives born to adolescent girls. The in-depth Interviews were suitable for the Community Health Volunteers and not any other group due to the fact that they would provide unbiased opinions on the health seeking behavior of caregivers. Additionally, they were the group who better understood the nature of health care education passed in the MCH clinic and as such they provided in-depth information on health seeking practices of caregivers. Interview schedule had open ended questions addressing health seeking behavior amongst caregivers of children aged five and below born to adolescent mothers. The interviews were conducted until a

point of saturation was reached and this enabled in-depth data to be collected. At this point of saturation, new data was becoming redundant since the interviews were producing only previously discovered data. Furthermore, the interview method was flexible and resulted in more accurate and honest responses (Kumar, 2018). Data collected was recorded in the spaces provided after each question in the interview schedule and by taking notes. By use of schedules, every informant replied the same question put in the same language and in the same order and thus the whole interview took place under standardized conditions and the data produced was comparable.

3.7.3 Focus group discussion

A Focus Group Discussion was used because it is an effective way to gather individuals from the same settings or livelihoods to talk over a particular subject. Participants were directed by the researcher who presented subjects for discussion and assisted the group to take part in a dynamic and normal discussion amongst them. Using Purposive sampling, respondents were chosen from the caregivers' sample to participate in three Focus Group Discussions each containing 12 participants. Studies done in the past showed that three to four focus group discussions are enough for non-complex research topics and relatively small samples (Nyumba, 2018). For this study, the researcher's experience was that the third focus group discussion began to be repetitive which implied that saturation had been reached and this led to the researcher leaving out the fourth focus group discussion. Therefore, three focus group discussions were enough since the third group discussion produced the same information as the other two and this provided a clear pattern. More than three focus group discussions were not necessary since the subsequent discussions would not yield any new information. The researcher therefore conducted two Focus Group Discussions with the adolescent mothers who were the primary caregivers and one Focus group discussion with the alternate caregivers. The first two FGDs sought to uphold the principle of homogeneity thus having

each of the categories together to ensure participants expressed their opinions freely. Since these are minors, one alternate caregiver or guardian was present during the discussion but did not participate. The last FGD sought to gather divergent opinions from the alternate caregivers and enabled the researcher to gather different ideas from the participants. The discussions were carried out with the caregivers to address issues on feeding practices, access to health care and engagement in playing activities with the under-fives. This form of group interviewing was useful for triangulation purposes and subsequently aimed at enhancing reliability of data gathered using other methods.

3.7.4 Observation schedule

Structured observation was utilized in this study and it allowed for the researcher to observe the household events as they occurred naturally and recorded them independently. The researcher used pre-determined categories in the form of a checklist to guide the recording process for about one and half hours in each household. The checklist was used to capture feeding practices as well as playing activities with the under-fives. Specifically, the researcher observed aspects meal frequency, mode of feeding the under-fives, presence or absence of any playing materials and engagement in play with the under-fives by caregivers. During data collection, the researcher checked off each activity as it occurred. A checklist permitted the observer to note what occurred rather than spend his or her time thinking about how to record the information and this enhanced the accuracy of the study (Kumar, 2018). What was observed during the observation period was recorded in the observation form by use of agreed-upon codes or sets of symbols.

3.8 Data Analysis and presentation.

Given that the data obtained was be both Quantitative and Qualitative, the analysis was done as follows;

3.8.1 Quantitative Data Analysis

According to Kumar (2018), descriptive analysis encompasses a procedure of converting a bulk of raw data into more understandable elements such as tables, graphs with frequency distribution and proportions which are an important part of understanding the information. Data from questionnaires on feeding practises, access to healthcare and engagement in playing was more rigid and defined hence being quantitative in nature. The questions were close ended hence generated a conclusive information. Using Quantitative analysis, the researcher could measure the literacy levels of caregivers and its influence on the three objectives. Therefore, Descriptive statistics which involves subjecting the data to several statistical computations done by use of a Statistical Package of Social Sciences (SPSS) was used to present quantitative descriptions about the data in manageable form. Descriptive statistics such as frequency tables, percentages, graphs and pie-charts were used to give a description and summarise the data (Gay, 1980). In addition, the data was explained in the lens of the policies that were initially outlined in the background information.

The study also used regression analysis and chi square tests to measure the influence of caregivers' formal and nutrition literacy on health care. Regression analysis is a statistical technique which encompasses identifying the association between dependent and independent variable (Mooi et al., 2018). By use of regression analysis, the researcher was able to establish whether literacy level which was the independent variable had a significant relationship with depended variables

including feeding practices, health care seeking and engagement in play. By use of chi square tests, the researcher was able to determine the relationship between categorical variables through crosstabulation. According to Mooi et al., 2018, this test is capable of assessing whether there exists a relationship between the two variables through a comparison of the patterns obtained of every response in the cells to those patterns that would be predicted if the variables under study were accurately independent of one another. Chi-Square statistic calculations and comparisons against critical values from the Chi-Square distributions enables the investigator to evaluate if the cell counts observed are significantly divergent from the predictable cell counts. The researcher established Statistical significance using of a p-value of < 0.05.

3.8.2 Qualitative Data Analysis

Qualitative data gathered from interviewing, focus group discussions and observation had open ended questions on issues like knowledge in EBF and MCH. The data collected was non numeric and was analyzed through coding where themes were generated to capture the original content of the data collected. The researcher attempted to come up with patterns, trends and associations from the data collected through coding. To achieve this, data was labelled and organized to bring out different themes and associations. This thematic analysis enabled the researcher to extract themes through assigning labels to recurring phrases representing important themes in the responses given. The themes generated are linked to the quantitative results to elaborate on the "why" and "how" of the various statistical findings. Where need be, narratives from KIIs and FGDs have been used to present the participants voices in line with study objectives. This data was analyzed in line with various policies that had been outline in the background of the study.

3.9 Validity and Reliability

Kombo & Tromp (2006) assert that validity of a test refers to a measurement of the effectiveness of a test in measuring what it is meant to measure. The study ensured this by using validity where the items in the questionnaire were examined in comparison with the objective of the study. A professional judgment was obtained from the supervisors who helped the researcher in validating the tools. Validation aided in pinpointing items in the questionnaire that required paraphrasing and doing away with the items that were insignificant in the current research. Content validation procedure was applied in determining the degree to which particular test tasks offer an applicable and representative sample of the realm of task being considered. As per Creswell (2011) content validation is carried out to ensure that the tools constructed by use of this design help in coming up with a test that yield outcomes that represent mutually the content area and the aims that need to be measured.

Creswell (2011) further argued that reliability of instruments can be described as the degree to which a certain measuring process produces same outcomes during several recurrent trials. Reliability can also be defined as the uniformity of a tool in yielding the same outcome at different occasions. This study utilized the test re-tests technique with the aim of establishing the reliability of the instruments used in this study. Test re-test technique is useful where tests are administered on respondents then after a while administered again, produce similar outcomes.

In order to ensure reliability of the data collection instruments, the structured questionnaire was pretested on 20 caregivers selected systematically before carrying out the actual data collection exercise. According to Kimberlin & Winterstein (2008), between 10% to 20% of the sample size for the actual study is sufficient in testing validity of an instrument. The study therefore used 20 caregivers who were not a part of the final sample and this represented 10% of the total sample of

204. Different interviewers posed the same questions to the same respondents two times in a duration of two weeks. The responses were similar and that showed that the questionnaire was reliable. Statistical analysis done on data collected during test re-test exercise produced similar outcomes confirming reliability. Validity of data was ensured by use of triangulation which involved collecting data using different approaches so as to enhance accuracy of the information gathered. Focus group discussions and observation checklist were utilized as follow up mechanisms and for enriching data from questionnaires and Interviews.

3.10 Ethical Consideration

Permission to carry out the research was acquired from Maseno University Ethics and Review Committee (MUERC) and the National Commission for Science, Technology and Innovation (NACOSTI). According to Nachmias & Nachmias, 2007 there exists a collective agreement amongst social scientists and researchers that research comprising of human subjects ought to be conducted with the informed consent of the subjects.

The participants were informed that their participation in the research was voluntary and that they could withdraw at any time. The researcher also ensured that for the adolescent mothers, assent was sought from their guardians or parents before their participation and they were also informed that their participation was voluntary. Their parents or guardians signed the consent forms on their behalf and they voluntarily participated in the study.

The researcher explained to the participants that there would be no risk encountered during the study and that confidentiality and privacy would be upheld throughout the study by keeping participant information secure. Further, no identifying information would be gathered and information would only be disclosed for the reason to which the participants would have

consented. Every necessary approval was obtained prior to the study research to ensure that the researcher cannot be forced to disclose any data that may identify the participants.

Most importantly, the participants were informed that Interviews and Focus Group Discussions would be recorded and the information transcribed later on. The researcher would not keep record of names or any other information that can reveal the identity of study participants. The study results could be published in an article or presentation but would not include data that can directly identify the study participants. The research information was not shared with others. On completion of the study, all the information would be destroyed.

The participants were assured that their privacy and dignity will be upheld throughout the procedure of data processing and analyses. Additionally, the participants were informed that in case the information they provided had already been processed and analysed and they would like to withdraw, it may not be possible to remove the information. The documents showing permission granted to carry out research from the two institutions are herein attached as appendices eight and nine respectively. During data collection, the researcher adhered to scientific research guidelines and ensured data collection, analysis, interpretation and presentation was conducted in an ethical way.

The participants did not receive personal benefits from taking part in this research. However, the results obtained may help the government come up with strategies that can help improve healthcare of children below the age of five.

CHAPTER FOUR

INFLUENCE OF CAREGIVERS' LITERACY LEVELS ON FEEDING PRACTISES OF CHILDREN AGED FIVE AND BELOW

4.1 Introduction

The first objective of the study was to examine the influence of caregivers' formal and nutrition literacy on feeding practises among children aged below five born to adolescent girls. As per the World Health Organization (2018), a caregiver refers to any person who provides care to children. In this study, the caregivers included both the adolescent girls who were the biological mothers and the alternate caregivers. Adolescent girls were defined as girls aged between 10 and 19 (WHO, 2015). When looking at formal literacy, the researcher looked at the capability to use language to read, write, listen or speak. This enables the caregiver to be able to understand and use materials in print or written form in various settings. The researcher also focused on nutrition literacy which referred to education gained from formal sources such as schools and health facilities or informal sources such as mass media or person to person on the appropriate diet to ensure healthy development amongst children aged five and below.

A sample size of 204 caregivers was used and questionnaires administered to them. A return rate of 100% was achieved. The questionnaires contained structured and unstructured questions addressing the first objective of the study. Qualitative data was gathered through Key Informant Interviews with CHVs and the respondents discussed issues such as breastfeeding practises of the caregivers, particularly timely introduction to breastfeeding and knowledge on Exclusive Breastfeeding. The CHVs also responded on complementary feeding knowledge. Three Focus Group Discussions were also carried out with caregivers for triangulation purposes. Previous

research recommends the use of three or four focus group discussions for non-complex research topics and relatively small samples (Nyumba, 2018). In the current research, three focus group discussions were considered enough since the third group discussion produced the same information as the other two. The researcher did not require additional discussions since they would not yield any new information. Two of focus group discussions were conducted with the adolescent mothers to gather homogenous data while one Focus group discussion was conducted with the alternate caregivers to gather divergent opinions from the alternate caregivers.

The findings of this chapter therefore examined how caregivers' literacy levels influence feeding practices among children born to adolescent mothers by looking at indicators such as knowledge on exclusive breastfeeding, complementary feeding knowledge as well nutritional knowledge. Information gathered was analysed by use of SPSS version 25. This chapter is organized into the following sub topics; Background information, Caregivers' formal literacy, Caregivers' nutrition literacy and Caregivers' feeding practices.

4.2 Background information/Household demographic features

The study sought to first gather background data of the respondents which included Age, Household economic activities and Marital status. Data gathered on the age of the respondents enabled the researcher to find out who the primary caregivers of children under five years were as well as the alternate caregivers. Information on the household economic activities was used in establishing how the occupational activities impact feeding practices through the ability of the caregivers to access commodities that are important for good child feeding practices.

4.2.1 Age of the Respondents

Data gathered from caregivers through administering of questionnaires clearly outlined the age of every caregiver. Table 4.1 below shows age distribution where most (70.1%) of the caregivers were aged below 20 years, meaning that the primary caregivers were the adolescent mothers while the remaining 29.9% were the alternate caregivers aged 20 and above 51 years.

Table 1: Age of the respondents

Age of the respondents

		Frequency	Percent	Valid Percent
Valid	Below 20 years	143	70.1	70.1
	20 to 35 years	5	2.5	2.5
	36 to 45 years	4	2.0	2.0
	46 to 50 years	9	4.4	4.4
	Above 51 years	43	21.1	21.1
	Total	204	100.0	100.0

Source: Author's field data (2021)

The table above implies that most of the adolescent mothers take care of their own children and are responsible for the care they give to their children including the child's nutritional status which is determined by feeding practices. Since adolescent mothers do not have prior experience in motherhood, at this point, it was assumed that they are more likely to have poor care practices, particularly with regards to feeding practices. Additionally, some of the adolescent mothers are of school-going age and as such they have to multi task between taking care of their children and attending school. These competing factors in most cases affect the care practices given to children below the age of 5 by adolescent mothers.

The study further sought to establish who the alternate caregivers were in the absence of the adolescent mothers as a result of attending school or engaging in other activities. When the adolescent mothers were absent, the following alternate caregivers had the responsibility of caring for the children on daily basis. Table 4.2 below shows the distribution where the main alternate caregivers were grandmothers as well as elder siblings to the adolescent mothers.

Table 2:Alternative caregivers when mothers were absent

Who cares for the child in mother's absence

		Frequency	Percent	Valid Percent
Valid	Sibling	64	31.4	31.4
	Grandmother	115	56.4	56.4
	Friends	25	12.3	12.3
	Total	204	100.0	100.0

Source: Author's field data (2021)

During focus group discussions with the caregivers, it emerged that in most cases the under-fives were left under the care of their grandmothers and this was attributed to the existence of other competing factors including education for some of the adolescent mothers that had returned to school and socioeconomic activities including farming.

During a Focus Group Discussion, a participant who was a parent to a teenage mother explained:

> *I have to take care of my grandchild in the absence of my daughter who resumed her studies a year after delivering the child. I also look after the child when my daughter is helping me in the shamba or with household chores.*

Table 4.2 above outlines the significant persons with the responsibility of caring for children aged 5 and below on daily basis. This is according to the Ecology systems theory which lays emphasis

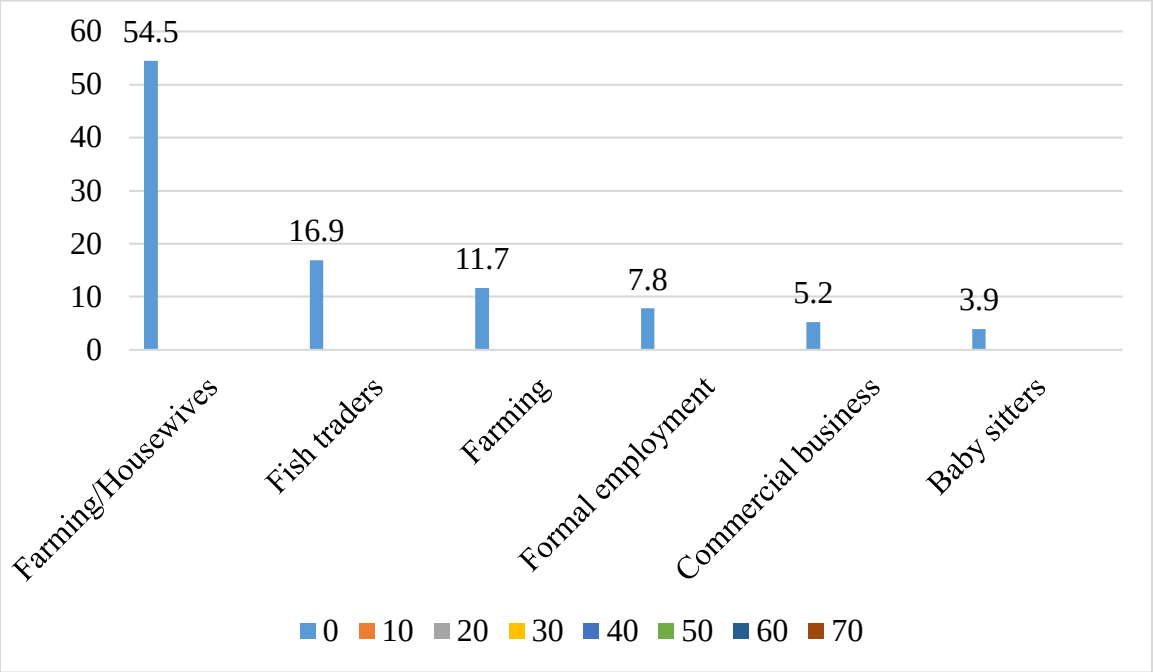
on the relations between the growing individual and those close to them whether they are mothers or alternate caregivers within an ecosystem (Bronfenbrenner, 1977). The alternate caregivers therefore form a significant part of the microsystem and to a large extent influence, through their literacy levels, the care they give to children below the age of five born to adolescent mothers.

4.2.2 Household economic activities

Household economic activities to a large extent influence feeding practises of children below the age of five. Since the adolescent mothers are still dependent on their families, household economic activities will impact on the feeding practises of under-fives born to this particular group. Occupational activities predict children's nutritional status through caregivers' capability to buy commodities that are important for good child feeding practices. According to the Ecological systems theory, household economic activities are part of the microsystem which involves associations between the growing child and their close environment such as the household (Bronfenbrenner, 1995). Such proximal processes including household economic activities are an extremely dominant determinant of human growth.

Data gathered through questionnaires showed that the occupational activities of the caregivers included Farming/Housewives 54.5%, Fish traders 16.9 %, Farming 11.7%, Formal employment 7.8%, Commercial business 5.2% and Baby sitters 3.9%.

Figure 1: Occupational activities of the caregivers



Source: Author's field data (2021)

Figure 4.1 above clearly showed that most of the caregivers were housewives and only a few had been formally employed. This means that only a few had the purchasing power and could afford the required foods for better feeding practises of the young ones. Previous research showed that high vulnerability of food insecurity is associated with household's lower socio-economic status. It was established that under-fives from high socio-economic household status were 57% less likely to be stunted as opposed to those from poor households. This is due to the fact that wealthier households have money and are capable of purchasing different foods which in turn improves nutrition status of under-fives (Darteh et al., 2014).

4.2.3 Marital status of caregivers

The researcher further sought to establish the marital status of every caregiver or individuals with the responsibility of caring for children below the age of five born to adolescent girls. This included both adolescent mothers and the alternate caregivers. By use of split file tool on SPSS, data on age was split into different groups, defined and analysis done on the data in all the groups. This segregation helped in understanding the marital status of each and every caregiver. Table 4.3 below shows the marital status of the caregivers in the sampled households.

Table 3: Marital status of Caregivers

Marital status of caregivers

Age of the respondent			Frequency	Percent	Valid Percent
Below 20 years	Valid	Single	129	90.2	90.2
		Married	14	9.8	9.8
		Total	143	100.0	100.0
20 to 35 years	Valid	Widowed	5	100.0	100.0
36 to 45 years	Valid	Divorced	1	25.0	25.0
		Widowed	3	75.0	75.0
		Total	4	100.0	100.0
46 to 50 years	Valid	Married	9	100.0	100.0
Above 51 years	Valid	Married	11	25.6	25.6
		Divorced	5	11.6	11.6
		Widowed	20	46.5	46.5
		Separated	7	16.3	16.3
		Total	43	100.0	100.0

Source: Author's field data (2021)

Information gathered showed that all the Single mothers (129 cases) were adolescents who were the biological mothers with only 14 cases of married adolescents. The remaining alternate caregivers including grandmothers and friends were either married, divorced, widowed or

separated. During focus group discussions with the adolescent mothers, it emerged that teenage pregnancy in some cases led to early marriages. Most of the adolescent mothers that were married cited early pregnancy as the main reason for getting married, particularly due to pressure from their parents.

The 2013 Multiple Cluster Indicator Survey showed that in Homa Bay County, about 6 out of 10 girls were married before reaching the age of 18. The survey further established that half of Homa Bay County females aged between 25 and 49 first married by age 18 and half of the males aged between 30 and 54 were married at 24. Nationally, females and males in the same age groups first married by age 20 and 25, correspondingly. These statistics therefore show that early marriage among girls is common in Homa Bay (National Council for Population and Development, 2015).

The current study established that in Ndhiwa sub-County, stigma over adolescent pregnancy outside of marriage remains so strong that adolescents are often sent away for marriage or to live with their relatives until after delivery of the child. In some instances, the adolescents do not complete their education, instead they get married or completely relocate with their children to live with their relatives. Caregivers in Ndhiwa also felt embarrassed and blamed themselves about their daughters' pregnancies and avoided discussions outside encouraging the adolescents to go back to school. Due to this, the choice to marry was established to be mostly as a result of coercion or as a way of dealing with other matters including adolescent pregnancies, high levels of poverty, peer pressure as well as protecting family honor for the sake of the caregivers.

A study done by Karimi (2015) showed that early marriages were a big challenge to adolescent mothers' education and was to a large extent depended on their parents, especially the fathers. The study showed that if the parents had the intention of marrying off the adolescent mother, they will use her pregnancy as a justification to marry her off and these findings are in tandem with those

of Priscila et al. (2014) and Wekesa (2014). The current research therefore sought to establish how marriage relates to literacy levels and the implications of the same on feeding habits of caregivers. The current research established that early marriages contributed to school dropout among adolescent mothers. This implied lack of formal literacy by this particular group. Low levels of formal literacy therefore led to lack of knowledge and exposure on issues of nutritional requirements for their children which jeopardizes the feeding practices.

4.3 Caregivers' formal literacy

This refers to the ability to use language to read, write, listen and speak. When a caregiver is literate, they can read, comprehend and use materials in print and written form presented before them in both formal and informal settings. Literacy levels in this study included formal and nutrition literacy and the researcher sought to examine how these forms of literacy influence feeding practices. Formal literacy refers to structured form of learning gained through attending basic high school and tertiary education and this was further discussed below.

To establish the caregivers' formal literacy, the researcher looked at the level of education, of the caregivers in general and this included the adolescent mothers and the alternate caregivers. Using split file tool on SPSS, data on age was split into different groups so as to analyze the level of education of every caregiver. It was established that 61 adolescents had incomplete secondary education while 82 adolescents had incomplete primary education. Data gathered also showed that 39 of grandmothers who were the main alternate caregivers had no formal education with only 4 grandmothers having incomplete primary education. Table 4.4 below shows the level of education of the caregivers.

Table 4: Caregivers' education level

Highest level of education					
Age of the respondent			Frequency	Percent	Valid Percent
Below 20 years	Valid	Secondary not completed	61	42.7	42.7
		Primary school	82	57.3	57.3
		Total	143	100.0	100.0
20 to 35 years	Valid	Primary school	5	100.0	100.0
36 to 45 years	Valid	No formal education	4	100.0	100.0
46 to 50 years	Valid	Primary school	4	44.4	44.4
		No formal education	5	55.6	55.6
		Total	9	100.0	100.0
Above 51 years	Valid	Primary school	4	9.3	9.3
		No formal education	39	90.7	90.7
		Total	43	100.0	100.0

Source: Author's field data (2021)

Follow up interviews with the Community Health Volunteers were conducted to establish the cause of adolescent mothers not completing their education. It emerged that most of the adolescents did not go back to school as stipulated by the Kenya School Health Policy (2018) which advocates for adolescent girls who become pregnant to be permitted to continue with their education and also be permitted to return to school after child delivery. The policy provides for the adolescent mothers to be permitted after giving birth, to go back to school or be readmitted in another school if they feel stigmatized. The CHVs cited stigmatization as well as financial constraints as a result of pregnancy such as childcare expenses to be the key barriers to rejoin school by the adolescent mothers. During an interview, a CHV said:

> *Several schools see it fit to expel expectant girls since they are viewed as negative influence to the rest of the pupils in the school. The lack of clear guideline or any official communication on the manner in which the policy should be implemented makes it weak and unreliable. As a matter of fact, many caregivers do not know whether the policy exists.*

Further, focus group discussions carried out with the adolescent mothers who are the primary caregivers showed that stigma and discrimination by teachers and fellow pupils were key reasons for the adolescents to abandon learning.

During a Focus group discussion carried out with the adolescent mothers, a participant aged 16 who had left school after child birth explained:

> *My colleagues in my previous school used to joke about my condition when they noticed I was expectant. They would draw funny pictures to demonstrate my condition during class with the aim of mocking me. It was so traumatic and when my guardian asked me to resume learning after caring for my son for a period of two years, I did not want to. I had already lost hope and given up my dream of becoming a lawyer in future.*

Even though the national school health policy advocates for adolescent girls who are expectant to be permitted to proceed with learning until they complete their studies as well as be permitted to resume school after childbirth without a specific timeline, implementing this government act has remained a challenge. Homa Bay County has been highly experiencing these cases. According to KNBS (2011), the County ranks second in adolescent childbearing cases nationwide at 33% and also has high levels of unintended teenage pregnancies and female school drop-out cases. In Homa Bay County, only 54% of school going girls complete their primary education. Additionally, around 48% of girls in Homa bay County are school drop outs and approximately 40% of girls between 15-19 years already have a child (Undie et al., 2015). These high cases of school drop out amongst the adolescent girls denies them a chance to acquire formal literacy which may influence feeding practices amongst children under their care. Additionally, dropping out of school by adolescent mothers has an implication on objectives of the Kenya School Health Policy (2018)

which advocates for continuation of education by adolescent girls during pregnancy and permission to re-join school after delivery.

However, despite the guidelines of the Kenya School Health policy, 2018 concerns have been highlighted about implementation or practice of its guidelines in research carried out in the past. Previous studies highlighted some of the factors barring the implementation of the policy including; minimal knowledge of the policy amongst the key stakeholders such as teachers, parents as well as the adolescent mothers, high levels of stigma and social exclusion in schools (Onyango, Kioli & Nyambedha, 2015), failure to readmit adolescent mothers, minimal involvement and support by parents (Wekesa, 2014; Karimi, 2015), insufficiency of resources for implementation of the policy (Mwenje, 2015) and discrepancies in implementing the same (Omwancha, 2012).

According to Ecological systems theory, the caregivers form an important part of the microsystem since they are the closest individuals to under-fives, making it imperative to look into their literacy levels. This is because, school attendance by caregivers enables them to acquire formal literacy. Such knowledge enables caregivers to know how to read, write and express themselves which then coupled with other formal or informal sources of knowledge, can contribute to general understanding of feeding practices. Additionally, this knowledge enables them to get exposed to and synthesize information and guidelines from various sources including MCH and mass media. This implies that being formally literate enables caregivers to be aware of the type of foods to feed their children and ensure balanced diet. Most importantly, formal literacy helps shift negative attitudes towards certain diets. Therefore, failure to continue schooling during pregnancy or rejoining school after child birth translates to low literacy levels among adolescent mothers which has detrimental effects to feeding practices of children aged 5 and below.

Table 5: Regression analysis on education level and receiving education on good child feeding practices

Correlations

		Highest level of education	Ever received education on good child feeding practices
Highest level of education	Pearson Correlation	1	.332**
	Sig. (2-tailed)		.000
	N	204	204
Ever received education on good child feeding practices	Pearson Correlation	.332**	1
	Sig. (2-tailed)	.000	
	N	204	204

**. Correlation is significant at the 0.01 level (2-tailed).

The table above shows existence of a significant relationship between level of education and awareness on good child feeding practices. This implies that formal literacy positively impacts knowledge on good child feeding practices. As such, literate caregivers ensure good feeding practices for their children since they are able to comprehend information on good feeding practices disseminated from various platforms as well as shifting negative attitude towards some diets which are beneficial to children.

4.4 Caregivers' nutrition literacy

Nutrition literacy refers to education gained from either health facilities, mass media or person to person on the diet that contributes to healthy living of children aged five and below (WHO, 2010). Nutrition literacy was categorized by differentiating the caregivers that had received any education on nutrition from those that had not received such education. The researcher further enquired if the caregivers were aware of the 3 categories of food including proteins, carbohydrates and

vitamins. The caregivers who were aware and could categorize the listed foods appropriately into either proteins, carbohydrates or vitamins were classified as being nutritionally literate whereas the caregivers that were not aware of the 3 categories of food and could not categorize the listed foods properly were classified as those of low nutritional literacy level.

To establish the caregivers' nutrition literacy, the researcher looked at the caregivers' knowledge on good child feeding practices and this included the adolescent mothers and the alternate caregivers. Data on feeding practices was gathered using questionnaires that were administered to every caregiver including the adolescents and the alternate caregivers.

Responses from the questionnaires were analysed and by use of split file tool on SPSS, data on age was split into different groups in order to establish the level of knowledge on good child feeding practices of each and every caregiver.

Table 6: Whether caregivers had received nutrition education

Ever received education on good child feeding practices

Age of the respondent			Frequency	Percent	Valid Percent	Cumulative Percent
Below 20 years	Valid	Yes	54	37.8	37.8	37.8
		No	89	62.2	62.2	100.0
		Total	143	100.0	100.0	
20 to 35 years	Valid	Yes	5	100.0	100.0	100.0
36 to 45 years	Valid	No	4	100.0	100.0	100.0
46 to 50 years	Valid	Yes	4	44.4	44.4	44.4
		No	5	55.6	55.6	100.0
		Total	9	100.0	100.0	
Above 51 years	Valid	Yes	8	18.6	18.6	18.6
		No	35	81.4	81.4	100.0
		Total	43	100.0	100.0	

Source: Author's field data (2021)

Table 4.6 above revealed that more than half of the adolescent mothers (62%) had not received education on good child feeding practices. This implies low nutrition literacy among adolescent mothers who were the main caregivers which leads to poor child feeding practises due to lack of awareness. It was also established that 18.6% of the grandmothers who were the main alternate caregivers had received education on good child feeding practices while 81.4% had not received such education. Knowledge on good child feeding practices among grandmothers could be partly associated with the fact that this particular group has past experience on feeding practices of children aged five and below.

For the few caregivers including adolescent mothers and alternate caregivers that had received nutrition education, the researcher further enquired where they received the information from. The study sought to establish whether all the caregivers had received any nutrition education either from formal or informal settings. Data was split into different groups and analysis done to where in particular every caregiver received the information. The caregivers that had received the nutrition education indicated that they had received it from the clinics, kin/relatives, friends, school as well as mass media. Table 4.7 below shows various sources from which caregivers received this education.

Table 7: Sources of nutrition knowledge

Where did you receive the education						
Age of the respondent			Frequency	Percent	Valid Percent	Cumulative Percent
Below 20 years	Valid	MCH clinic	22	15.4	40.7	40.7
		Relatives	12	8.4	22.2	63.0
		Friends	2	1.4	3.7	66.7
		Seminar	4	2.8	7.4	74.1
		Mass media	14	9.8	25.9	100.0
		Total	54	37.8	100.0	
	Missing	System	89	62.2		
	Total		143	100.0		
20 to 35 years	Valid	Friends	5	100.0	100.0	100.0
36 to 45 years	Missing	System	4	100.0		
46 to 50 years	Valid	Mass media	4	44.4	100.0	100.0
	Missing	System	5	55.6		
	Total		9	100.0		
Above 51 years	Valid	MCH clinic	8	18.6	100.0	100.0
	Missing	System	35	81.4		
	Total		43	100.0		

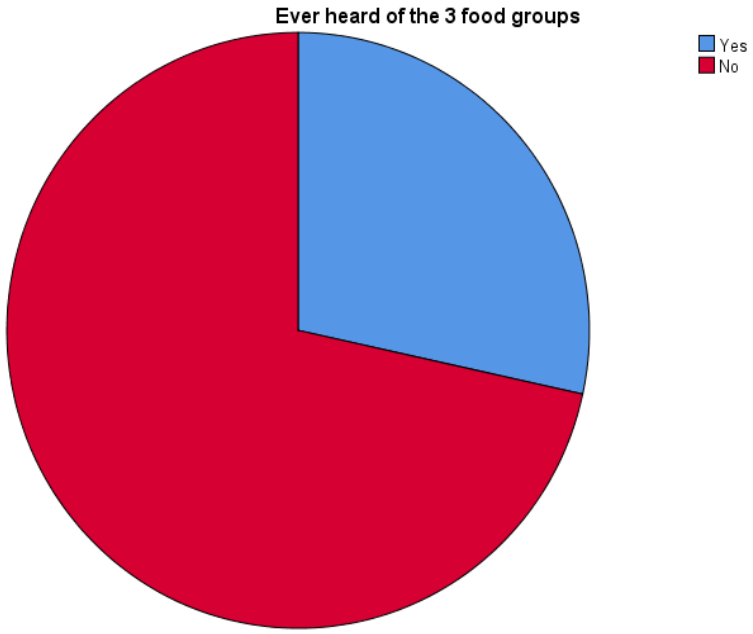
Source: Author's field data (2021)

From table 4.7 above, most of the adolescent mothers (15.4%) pointed out that they received nutrition education from MCH clinic and an additional (9.8%) from the media. Most of the alternate caregivers (18.6%) including grandmothers pointed out that they had received this education from MCH as well as mass media. This implied that most of the caregivers accessed nutrition knowledge majorly from MCH when they went for clinics. On the other hand, the mass media helps pass the nutrition education to the caregivers through various programs on radio or TV. Data collected by use of questionnaires showed that more than half of the sampled households (53.9%) had a radio hence exposure to the mass media. On the other hand, (46.1%) of the households did not have a radio. SPSS analysis further showed that out of the households sampled, only a small population of 25.5% had a television whereas 74.5% did not own a Television. Being that almost half of the population did not have a radio and only a quarter of the population had a

TV, this implied that most of the households could not access nutrition education transmitted through mass media. This again jeopardized nutritional literacy of the caregivers which affects their feeding practices.

In an effort to further establish nutrition literacy levels of caregivers, the researcher further enquired whether they were aware of the three food groups. Out of the sampled caregivers, 28.4% were aware of the three food groups and could name the different types whereas 71.6% were not aware of proteins, carbohydrates and vitamins.

Figure 2: Knowledge on the three food groups



Source: Author's field data (2021)

Figure 4.2 above shows that majority (71.6%) of the caregivers were not aware of the three food groups including proteins, carbohydrates and vitamins. This implies low nutrition literacy among the closest individuals in the environment in which under-fives live in and who are responsible for their healthy development as emphasized in Bronfenbrenner's Ecological theory. Lack of

awareness by this group results to poor decision making when it comes to feeding practices of children below the age of five through failure to provide the recommended food groups to children. A study by World Health Organization (2010) showed that children ought to be provided with four different types of foods on daily basis for their healthy development regardless of whether they are breastfeeding or not. Failure to feed on these foods due to low nutrition literacy may put children at the risk of malnutrition which has been identified as a major cause of death amongst under-fives. Similarly, low nutrition literacy resulting in poor feeding practices by caregivers jeopardizes the achievement of the policy objectives in the National Maternal, Infant and Young Child Nutrition Policy, 2013. This policy aims at protecting, facilitating and encouraging optimal Maternal Infant and Young Child Nutrition as well as creating an environment that fosters nutrition wellbeing in order to uphold the right of every child to be well nourished through good breastfeeding practices and appropriate complementary feeding.

To further establish the caregivers' knowledge on the three food groups, the researcher gave them a variety of foods to categorize into proteins, carbohydrates and vitamins. The caregivers had pinpointed these foods as the commonly used foods to feed children aged five and below. The researcher therefore used the listed foods to measure the caregivers' nutrition literacy by asking them to classify them into the three food groups and the outcome was as follows:

Table 8: Classifying foods into Proteins, Carbohydrates and Vitamins

	Classification of food into either Proteins, Carbohydrates and Vitamins				
Food	**Proteins**	**Carbohydrates**	**Vitamins**	**Do not know**	**Total**
Maize meal	38(18.8%)	41(19.9%)	10(4.7%)	115(56.6%)	204(100%)
Potatoes	37(18.2%)	41(20%)	6(3.0%)	120(58.8%)	204(100%)
Vegetables/Fruits	12(6.1%)	9(4.5%)	20(10%)	162(79.4%)	204(100%)
Beans	23(11.5%)	25(12.3%)	13(6.2%)	143(70%)	204(100%)
Milk	41(20%)	36(17.5%)	23(11.1%)	105(51.4%)	204(100%)
Millet	55(26.8%)	28(13.8%)	13(6.2%)	109(53.2%)	204(100%)
Fish	37(18%)	59(28.8%)	6(3%)	102(50.2%)	204(100%)

Source: Author's field data (2021)

Many of the caregivers had a challenge of classifying the listed foods appropriately into three food groups. Lack of awareness of the three food groups and inability to classify different foods into their respective food groups implied a low level of nutrition literacy. This showed that the caregivers were not aware of the types of food that comprised a balanced diet hence poor feeding practices of children below the age of five.

Table 9: Regression analysis on education level and knowledge on food groups

Correlations

		Highest level of education	Ever heard of the 3 food groups
Highest level of education	Pearson Correlation	1	.691**
	Sig. (2-tailed)		.000
	N	204	204
Ever heard of the 3 food groups	Pearson Correlation	.691**	1
	Sig. (2-tailed)	.000	
	N	204	204

**. Correlation is significant at the 0.01 level (2-tailed).

The table above shows existence of significant association between caregivers' education level and knowledge on the three food groups. From the regression data on the named variables, it was established that formal and nutritional literacy of caregivers had a positive effect on knowledge on the three food groups. This implied that exposure to both formal and nutrition literacy translated to caregivers having knowledge on good child feeding practices and having an understanding of proteins, carbohydrates and vitamins. Therefore, literate caregivers are able to ensure good feeding practices through balanced diet for their children which promotes healthy growth and development.

After exclusively breastfeeding for a period of six months, children ought to be introduced to other foods as a nutrition supplement for overall growth of the child which is referred to as weaning. The researcher found it necessary to therefore look into the level of awareness of caregivers on weaning as well as preparation of Oral Rehydration Solution (ORS) and suitable food for children. The participants were therefore asked if they were aware of weaning and the way through which they can wean a child as well as preparation of Oral Rehydration Solution and suitable food for a sick child demonstrated either at MCH or any other informal settings like seminars.

Table 10: Awareness on weaning food, preparation of Oral Rehydration Solution and how to make suitable foods for sick children

Activities	Yes	No
Weaning food	7.4%	92.6%
Preparation of ORS	7.4%	92.6%
Preparing suitable foods for sick children	17.2%	82.8%

Source: Author's field data (2021)

Out of the sampled households, 92.6% of the caregivers reported that they were not aware of ways of weaning food as well as preparation of Oral Rehydration Solution while 82.8% of the caregivers indicated that they did not have knowledge on ways of preparing suitable foods for sick children. Low level of knowledge on weaning food meant that the caregivers did not give these children suitable meals required for their growth at this tender age. Additionally, lack of awareness on preparation of Oral Rehydration Solution and suitable foods for sick children implied poor feeding practises during sickness for children aged five and below. From the findings above, it is clear that lack of knowledge on weaning food as well as preparation of ORS and suitable food for sick children translates to poor feeding practices that do not meet the requirements of the children. This leads to increased risk of becoming malnourished, contracting diseases and eventually causing death in children aged five and below.

According to UNICEF (2008) approximations, around one third of child mortality worldwide among children aged five and below is associated with poor feeding practices. In addition, out of every 1000 live deliveries in Kenya, 52 pass on before the age of five while 39 pass on before the age of one (KNBS et al., 2015). Therefore, poor feeding practices can be life threatening particularly when a child does not get the required foods during early stages of development as it jeopardizes the child's immune system hence being prone to common diseases. To curb this menace, the Government of Kenya came up with the National Maternal, Infant and Young Child Nutrition Policy, 2013 drawing reference to other national policies on nutritional needs of children. The objectives of this policy revolved around ensuring appropriate and adequate complementary feeding of children during the first five years of life with more attention on those aged two years and below to prevent under nutrition and over nutrition. Since the policy does not provide for

training of caregivers on matters of nutrition literacy, there is a policy gap to be filled in terms of creation of awareness on good feeding practices.

This study went further to assess how caregivers' literacy levels can influence through their feeding habits the health care they give to the under-fives. Therefore, caregivers who form an important part of the microsystem as per the ecology systems theory ought to provide the required diets to under-fives in order to curb undernutrition amongst this group for better development. This can be made possible by ensuring that the caregivers have knowledge on the nutritional requirements of children aged five and below. However, the findings of this study showed literacy levels as exemplified by school dropout rates, nutrition knowledge and training as well as knowledge on three important food groups to be low among caregivers which translates to poor feeding practices.

4.5 Caregivers' feeding practices

The Infant and Young Child Feeding recommends guidelines to establish the feeding practices and they include continued breastfeeding, minimum meal frequency, minimum dietary diversity as well as minimum acceptable diet (WHO, 2010). In this study, feeding practices were associated with indicators such as exclusive breastfeeding, complementary feeding as well as quantity and quality of foods. The researcher therefore looked at knowledge on exclusive breastfeeding, complementary feeding knowledge, dietary diversity, meal frequency for children aged five and below as well as quality and quantity of food.

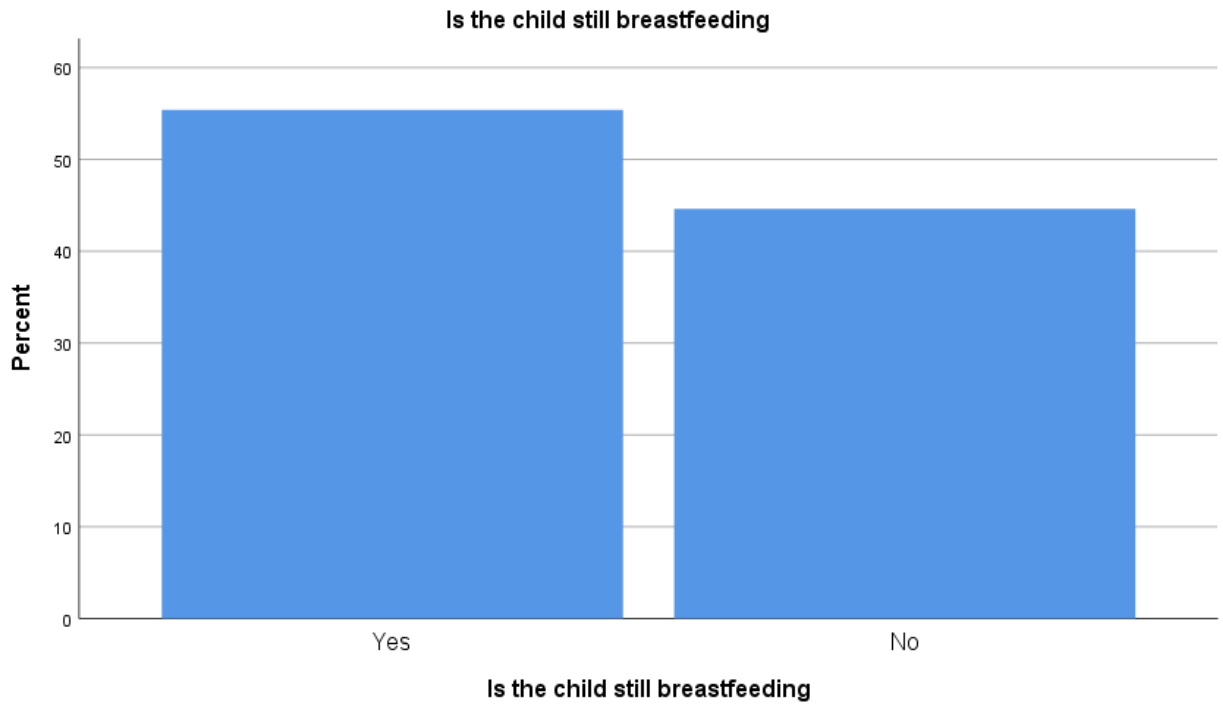
4.5.1 Breastfeeding practices

The WHO recommends full or Exclusive breastfeeding for 6 months and an extension along with complementary foods for 2 years or longer (WHO, 2010). In this study, all the children below 2

years were classified under the breastfeeding bracket while those older than 2 years were considered as not breastfeeding.

The researcher first sought to establish the households with children aged two years and below and those were categorized under the breastfeeding group. At the time of the research, many of the households (55.4%) had children below two years who were breastfeeding whereas a few households (44.6%) had children above two years who were not breastfeeding.

Figure 3: Children breastfeeding status



Source: Author's field data (2021)

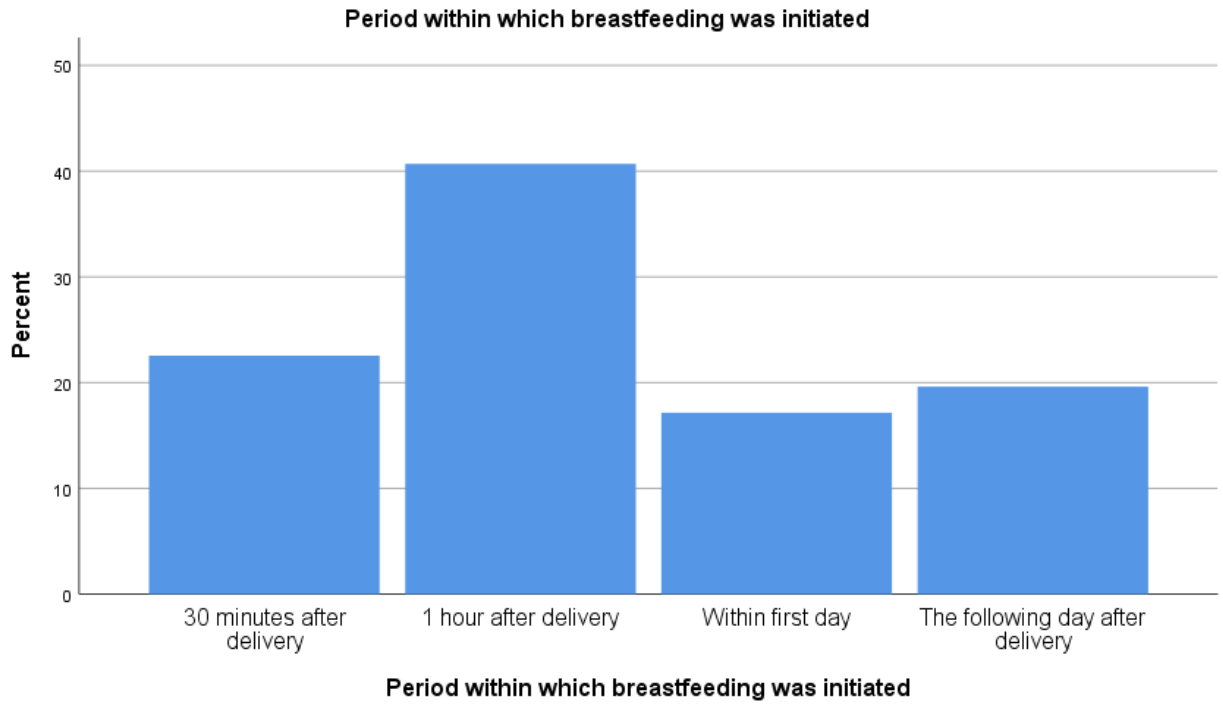
4.5.2 Timely introduction to breastfeeding

Timely introduction to breastfeeding can be described as putting the neonate to the breast within one hour of delivery. This early initiation to breastfeeding highly contributes to the survival of the

newborn. The study by WHO showed that 22% of newborn deaths are preventable if breastfeeding was initiated not later than an hour after delivery. In spite of this fact, only (45%) of neonates started breastfeeding within one hour of delivery worldwide (WHO, 2010).

Data gathered by use of questionnaires showed that majority (40.7%) of the caregivers were not aware of the need to introduce breastfeeding instantly after birth. These findings signify failure of caregivers to adhere to timely introduction to breastfeeding as per the WHO guidelines. Statistical analysis of data from 204 caregivers showed that 22.5% initiated breastfeeding 30 minutes after delivery, 40.7% initiated 1 hour after delivery, 17.2% initiated breastfeeding within the first day whereas 19.6% initiated breastfeeding the following day after delivery.

Figure 4: Period within which mothers initiated Breastfeeding



Source: Author's field data (2021)

The Community Health Volunteers (CHVs) probed explained that place of birth and timely introduction to breastfeeding were considerably associated. This is because incidences of timely introduction to breastfeeding were observed amongst children delivered in health centres as opposed to the children that were delivered at home or with the assistance of Traditional Birth Attendants (TBAs). This implies that there is some feeding practice knowledge-gaining on breastfeeding in health centres, which may be lacking in TBAs. Mothers who deliver at home therefore miss out on important knowledge given at the MCH clinics on timely introduction of breastfeeding resulting to poor breastfeeding practices.

Oral in-depth interviews with the Community Health Volunteers showed that the caregivers would receive wrong information on timely introduction to breastfeeding when they delivered through the help of Traditional Birth Attendants (TBAs).

During an Interview, a CHV explained:

> *Some of the misconceptions by the traditional doctors are that: The initial milk may affect the child's tummy thus recommends that the child to be fed on warm water. The Traditional birth attendants also believe that the mother and the child require some duration to rest after delivery. This is the information they give the caregivers.*

Another CHV explained during an Interview:

> *It is a common belief amongst caregivers instigated by TBAs that in instances where a child is delivered after numerous still births or new born deaths, the mothers are not supposed to breastfeed instantly until the mother and the child are given traditionally made herbs or medicine.*

Focus group discussions with the alternate caregivers many of whom were grandmothers showed that there was a common practise of untimely introduction to breastfeeding as a result of believing

in a stomach ache which affects mothers immediately after giving birth that ought to be given time to disappear before a mother can breastfeed. This is not in line with the WHO guidelines which recommend the initiation of breastfeeding within one hour of delivery as a way of preventing newborn deaths (WHO, 2010).

During a Focus Group Discussion, a participant aged 14 who was a mother to a 2 months old child explained:

> *The first milk is commonly referred to as "Tutu" to mean "Pus". In most cases it is believed to be dirty and not pure. I therefore did not initiate breastfeeding immediately as I was afraid it could affect my child.*

Another participant who was a grandmother to a 4 months old child argued:

> *When my daughter gave birth, the traditional birth attendant advised her to initiate breastfeeding after taking a bath and some good rest to ease her stomach ache a process which can take not less than an hour.*

Such misconceptions and beliefs by the caregivers who have a sole responsibility of ensuring better care to the under-fives as per the ecological approach to human development, lead to delayed initiation to breastfeeding which denies the child access to colostrum. As a result, the child lacks active protection from disease causing organisms and this increases the risk of neonatal mortality. Therefore, introduction to breastfeeding helps curb neonatal and infant mortality through reduction of the risk of infectious illnesses. This is majorly due to the fact that colostrum, the first breastmilk comprises of huge number of defensive aspects that offer passive and active defense to different pathogens. These findings resonate with those done by WHO which argues that first milk is particularly rich in nutrients and immunity substances and its absorption within an hour of delivery helps curb neonatal deaths (WHO, 2010). In addition, two recently done studies involving approximately 34,000 infants showed that the risk of child mortality rises with increased delay in

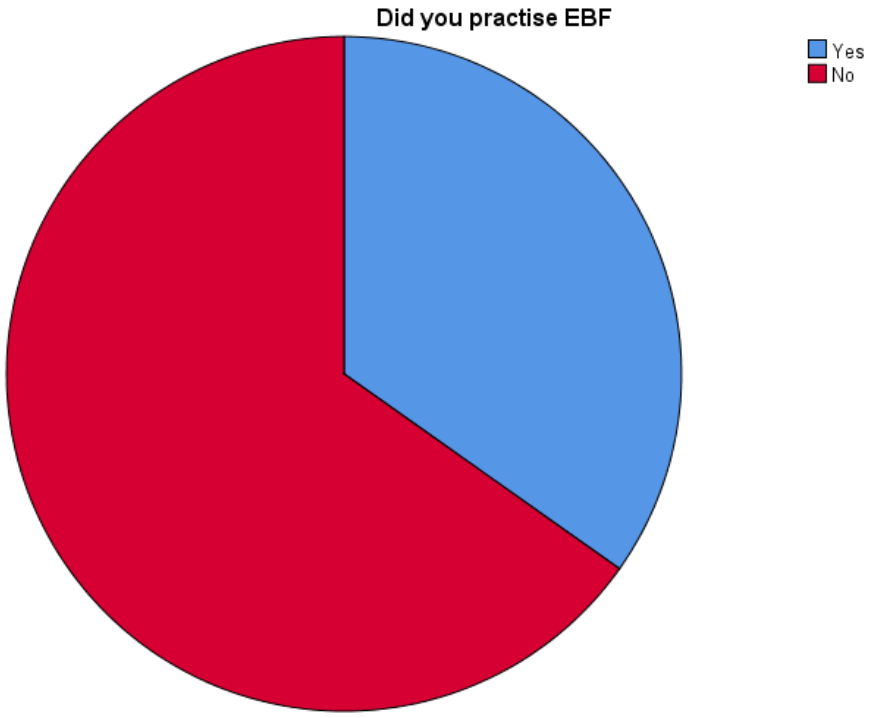
breastfeeding initiation (Edmond et al., 2008). A study done in Ghana showed that newborns were 2.5 times more likely to die in cases where breastfeeding was initiated after a period of one day compared to a case where breastfeeding was initiated within one hour of delivery. These findings are same as those of another study done in Nepal which showed that newborns were 1.4 times more likely to pass on in cases where breastfeeding was initiated after a day (Bhattarai, 2011). These studies projected that around one-fifth of newborn mortalities (22% and 19% in Ghana and Nepal respectively) could be averted if breastfeeding was introduced within one hour of delivery for every neonate. Therefore, timely initiation of breastfeeding plays a major role in terms of curbing newborn and infant deaths, hence accelerating achievement of Millenium Development Goal number 4. The significance of initiating breastfeeding at an early stage is recognized by the World Health Organization which advocates for introduction of breastfeeding within a period of one hour after giving birth for every neonate delivered at term or with a gestational age higher than 32 weeks or birth weight higher than 1500 grams (WHO, 2010). This can only be achieved through creation of awareness amongst caregivers and enhancing their literacy levels on the importance of timely introduction to breastfeeding since they form an important part of the microsystem, the closest surrounding in which a child grows as per Bronfenbrenner's theory. Literate caregivers are able to disregard unfounded beliefs and misconceptions regarding untimely introduction to breastfeeding for infants.

4.5.3 Exclusive breastfeeding

Exclusively breastfeeding a child for the first six months prevents newborn and infant mortalities through a reduced risk of infectious illnesses. In Ndhiwa sub-County, knowledge on exclusive breastfeeding (EBF) stood at 77.4% meaning that majority of the caregivers were aware of the importance of exclusive breastfeeding. However, statistical analysis of data from the 204

caregivers showed that 34.8% practiced exclusive breastfeeding while 65.2% did not practise exclusive breastfeeding.

Figure 5: Whether caregivers practiced EBF



Source: Author's field data (2021)

Findings from Key Informant Interviews and Focus Group Discussions showed that practise of EBF was hindered by a number of factors:

One of the major barriers to exclusive breastfeeding was that of receiving wrong information from the Traditional Birth Attendants advising caregivers who according to the ecological approach to human development are significant when it comes to ensuring good feeding practices, that breastfeeding alone is not enough for children and therefore they should be fed additional liquids including water or diluted cow milk. Further, there was also a believe that if children aged 6 months

and below cried, then they were probably starving and therefore needed additional foods other than breast milk.

Another barrier to exclusive breastfeeding resulted from some of the adolescent mothers having other competing activities. For the few adolescent mothers that went to school after child birth, this implied that they could not successfully practise exclusive breastfeeding. Additionally, some of the adolescent mothers had to find means of survival including farming given their humble family backgrounds making them to stop breastfeeding before the recommended period of 6 months.

Another barrier was that of cultural beliefs where caregivers believed that whenever two breastfeeding mothers engaged in a fight, they were not permitted to breastfeed until the two had taken traditional herbs referred to as "*Manyasi"* meant to cleanse them from bad omen before they can breastfeed again.

Even though awareness on exclusive breastfeeding was high in Ndhiwa sub-County at 77.4%, the caregivers that took part in the focus group discussions noted that most adolescent mothers translate exclusive breastfeeding to mean "*breastfeeding, as well as giving children water or dilute cow milk without solid foods*". So long as the baby is on breast milk and other food, the caregivers believe that it qualifies to be exclusive breastfeeding. This should not be the case since WHO and health practitioners are clear on the need to feed the child on breast milk only, for six months and thereafter continue breastfeeding for 2 years along with complementary foods.

Additionally, it emerged from the interviews with the CHVs that high cases of HIV/AIDs in the County were a barrier to Exclusive Breastfeeding. During an Interview, one of the CHV explained:

> *I think that the new policies that have been introduced by the government are very helpful but you find that implementing them is a challenge. For instance, HIV positive mothers ought to practice excusive breastfeeding for a period of six months. However, you realize that back at home these mothers do not follow the guidelines due to lack of right information.*

Another CHV added:

> *Meetings on information dissemination are mostly attended by top officials and they do not reach to some of us. As a result, we occasionally lack the correct information to give mothers.*

From the Interviews with CHVs, it emerged that misinformation or lack of correct information contributed to lack of knowledge on exclusive breastfeeding by caregivers. These low literacy levels result to failure to practice exclusive breastfeeding by caregivers due to lack of awareness. Insufficiency of breastmilk for infants less than six months denies the child important protective substances which keep the child safe from infectious diseases. The findings of this study show that the practice of exclusive breastfeeding is not in line with the guidelines of the adopted policies by the government on child feeding practices. Under the National Maternal, Infant and Young Child Nutrition Policy 2013, exclusive breastfeeding is highlighted as a key strategy under high impact nutrition interventions. As exclusive breastfeeding continually proves to be the best option for HIV exposed newborns, the government has made exclusive effort in providing evidence-based wide-ranging strategies for good child feeding in the context of HIV/AIDS in order to increase the chances of survival, growth and development for every child. It was established that the practice of exclusive breastfeeding is low due to lack of awareness and misinformation by traditional birth attendants which undermines the successful implementation of the policy.

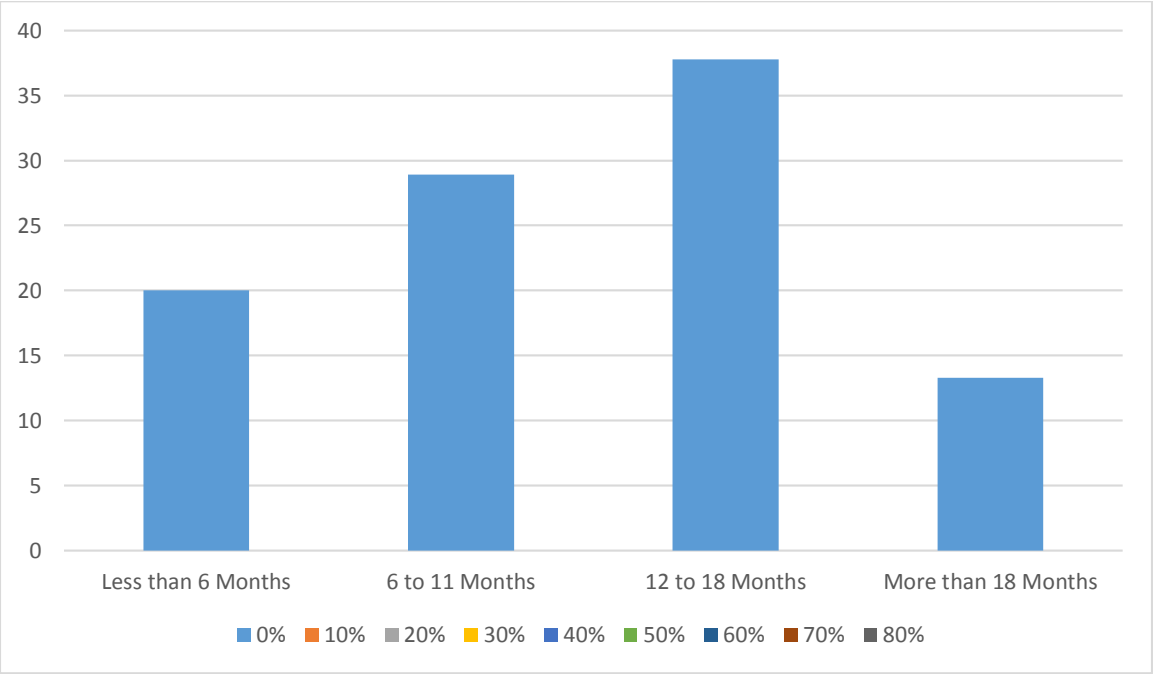
A study done by World Health Organisation (2014) showed that exclusive breastfeeding is the foundation to infant survival since it provides crucial, exceptional nutrition for infant's growth and development. Additionally, exclusive breastfeeding serves as an infant's initial vaccination as it provides protection from respiratory diseases, diarrhea as well as other possibly life-threatening illnesses. This is because breast milk eradicates intake of disease-causing micro-organisms through dirty water, other fluids and foods. Additionally, it safeguards the immunologic barriers in the child's gut from contaminants or allergy causing substances in infant formula or foods. The study further showed that exclusively breastfeeding also protects against obesity and certain noncommunicable diseases later in life. Therefore, advancing the practice of exclusive breastfeeding can assist in promoting improvement of other universal nutrition goals including stunting, anemia amongst women, low birth weight, being overweight and wasting in children and can be of use to policy-makers who aim at improving the wellbeing of their society and their economy. Therefore, exclusive breastfeeding for the first 6 months can make a major contribution towards reducing neonatal and early infant mortality, thus advancing SDG number 3 (WHO, 2014; Horta et al., 2007). These goals can be met through ensuring that the caregivers understand the importance of EBF and practice it exclusively. As per the Ecological systems theory, the caregivers are solely responsible of ensuring good feeding practices through adhering to things like exclusive breastfeeding which is very crucial for growth of children below the age of six months. However, as this study shows, the knowledge and practice of EBF is low and this is majorly associated with negative perceptions or cultural beliefs and misinformation by traditional birth attendants. This leads to failure in practicing EBF and hence poor feeding practices of infants which compromises their overall growth.

4.5.4 Continued Breastfeeding

The WHO recommends that mothers continue to breastfeed up to 2 years of age since breast-milk is a significant source of energy and nutrients in children aged 6–23 months. Breastmilk provides half or more of a child's energy requirements between the ages of 6 and 12 months and one third of energy requirements between 12 and 24 months. Breast milk is also an important source of energy and nutrients when a child is sick and reduces deaths among children who are malnourished (WHO, 2014). Similarly, the Government of Kenya enacted the Breastmilk Substitutes Regulations and Control Act, 2012 to ensure protection, promotion and support of breastfeeding. This Act aimed at ensuring continued breastfeeding from 6 to 24 months or beyond while ensuring timely, appropriate and adequate complementary feeding for healthy development of the under-fives.

The questionnaires showed that the age during which mothers stopped breastfeeding was different with 20% stopping at less than 6 months, 28.9% stopping at 6-11 months, 37.8% stopping at 12-18 months and 13.3% extending to more than 18 months as seen in figure 4.6 below.

Figure 6: Age at which mothers stopped breastfeeding



Source: Author's field data (2021)

From the Focus Group Discussions, it emerged that when mothers with small children conceived, they are supposed to stop breastfeeding or else the small child falls sick, commonly known as "chira". Chira in dholuo means illness caused by failure to follow some of the Luo traditional practices. It was further established that majority of the mothers had short birth intervals making them stop breastfeeding earlier than required. Another barrier to continued breastfeeding was high cases of HIV/AIDs in the County. From the findings of this study, it is evident that there is low knowledge and practise of continued breastfeeding as seen in the age at which mothers stopped breastfeeding. According to Bronfenbrenner's theory, the caregivers are the significant beings on which children depend on for their overall growth. Therefore, lack of awareness amongst caregivers on the importance of continued breastfeeding and low practise of the same highly

hinders healthy growth and development of infants. Failure to continue breastfeeding puts the child at the risk of death within the first two years of life.

Previous research showed that Children ought to breastfeed until the age of two for the reason that breast milk is a crucial part of their diet (Horta et al., 2007; UNICEF, 2008). Apart from being a source of important nutrients and liquids, continued breastfeeding in children enables them to fight diseases since it boosts their immune system. In addition, continued breastfeeding is associated with improved development in children as well as survival through reduction of metabolic illnesses and overweightness when they are older and their motor and intellectual growth (WHO, 2010). Previous studies also showed that termination of breastfeeding for a child aged two and below highly increases their chances of being malnourished (UNICEF, 2008). This study further showed that continued breastfeeding after one year is one of the significant indicators of optimal breastfeeding among children. Nevertheless, it was noted that the period within which children are breastfed has been significantly decreased once children attain the age of two (UNICEF, 2008). For instance, in Kenya, nearly every infant (98.4%) aged 6 to 8 months is breastfed with a steep reduction (61.4%) amongst those aged 18 to 23 months (KNBS & UNICEF, 2011). This trend does not adhere to the guidelines laid down by policies adopted by government to promote continued breastfeeding including the Breastmilk Substitutes Regulations and Control Act, 2012 as well as the National Maternal and Young Child Nutrition Policy, 2013.

Despite studies that have been done in the past showing that lack of continued breastfeeding leads to child mortality, the reason for lack of this continuity varies from one context to another. In Ndhiwa, some of the factors that hinder continued breastfeeding include cultural beliefs such as “chira” which is a common belief that one can fall sick if they do not adhere to Luo traditional practices. These cultural beliefs may be hard to deal with unless proper sensitization to increase

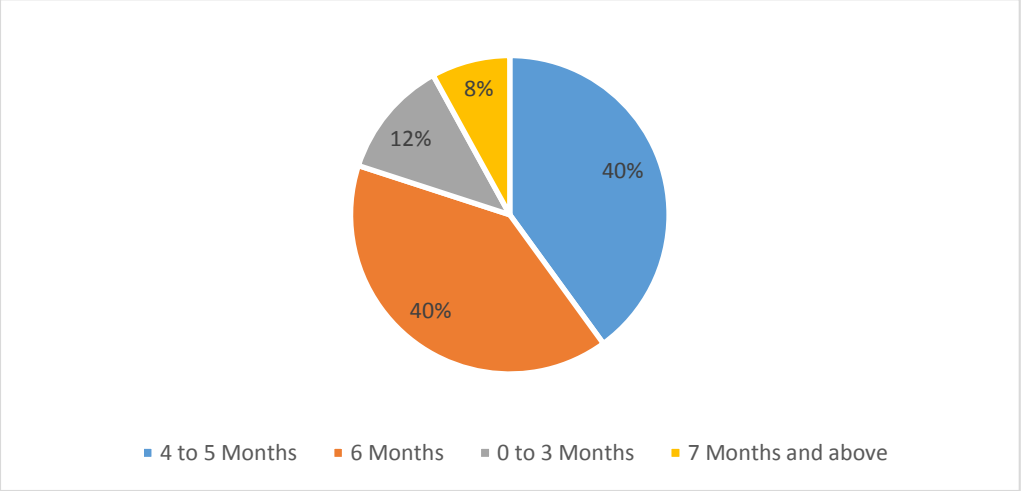
literacy on the importance of continued breastfeeding up to two years of age as recommended in the National Maternal, Infant and Young Child Nutrition Policy, 2013 is done. However, with low literacy levels, evident from the findings above, there continues to be low practice of continued breastfeeding hence poor feeding practices which negatively affects growth and development of under-fives.

4.5.5 Complementary feeding knowledge

Complementary feeding is the process of starting to give liquids, solids, semi-solids or soft foods alongside breastfeeding. From the age of 6 months to 24 months, breastfeeding only is not enough to meet the nutritional needs of a child (WHO, 2008). When a child reaches the age of 6 months, their energy and nutrients requirements exceeds what the breast milk provides and the child requires complementary foods for survival. In a case where complementary foods are not provided at the age of 6 months, or if the foods are unsuitably provided, the development of the child may falter. This section therefore sought to establish how caregivers' nutritional literacy levels influence their complementary feeding habits by looking at factors such as dietary diversity, meal frequency as well as quality and quantity of food.

The researcher first sought to establish the age at which caregivers introduced other foods. Data gathered by use of questionnaires showed that the age during which a child was given other foods apart from breast milk varied where 40% started at 4 to 5 Months, an additional 40% started at 6 Months, 12% at 0 to 3 Months and 8% at 7 Months and above.

Figure 7: Age during which a child was given other foods or liquids



Source: Author's field data (2021)

From figure 4.7 above, almost half of the population (48%) introduced complementary foods before the age of 6 months. Follow up interviews with the Community health volunteers showed that the main reason for introduction of foods before the age of 6 was associated with misinformation mostly from the Traditional birth attendants that breastmilk alone was not enough and hence the infants required additional foods. Additionally, for the few adolescent mothers that were school going or were engaging in economic activities it necessitated introduction of complementary foods at an early age.

After determining the age at which different fluids and foods were introduced to children, this study looked at the number of times caregivers gave children various foods. Table 4.9 below outlined the foods and the number of times they were consumed.

Table 11: Number of times on weekly basis various foods were given to children

	Number of times on weekly basis various foods were given to children						
Food	**1 to 4 times**	**5 to 7 times**	**8 to 10 times**	**More than 10 times**	**Not eaten**	**Rarely eaten**	**Total**
Maize meal	103 (50.5%)	52 (25.7%)	12 (5.9 %)	6 (3.0%)	14 (6.9%)	16 (7.9%)	204 (100%)
Beans	88 (42.9%)	67 (32.7%)	12 (6.1%)	6 (3.1%)	14 (7.1%)	17 (8.2%)	204 (100%)
Eggs	52 (25.5%)	14 (7.1%)	4 (2.0%)	4 (2.0%)	73 (35.7%)	56 (27.6%)	204 (100%)
Meat	31 (15.3%)	8 (4.1%)	8 (4.1%)	4 (2.0%)	60 (29.6%)	92 (44.9%)	204 (100%)
Vegetables	89 (43.3%)	46 (22.7%)	32 (15.5%)	17 (8.2%)	15 (7.2%)	6 (3.1%)	204 (100%)
Irish potatoes	79 (38.8%)	19 (9.2%)	12 (6.1%)	17 (8.2%)	27 (13.3%)	50 (24.5%)	204 (100%)
Green grams	73 (35.7%)	8 (4.1%)	10 (5.1%)	6 (3.1%)	6 (3.1%)	54 (26.5%)	204 (100%)
Peas	44 (21.4%)	8 (4.1%)	6 (3.1%)	2 (1.0%)	67 (32.7%)	77 (37.8%)	204 (100%)
Fruits	4 (2.0%)	6 (3.1%)	19 (9.2%)	19 (9.2%)	60 (29.6%)	96 (46.9%)	204 (100%)
Cassava	135 (66.0%)	53 (25.8%)	4 (2.1%)	0 (0%)	6 (3.1%)	6 (3.1%)	204 (100%)
Weetabix	36 (17.5%)	38 (18.6%)	2 (1.0%)	4 (2.1%)	63 (30.9%)	61 (29.9%)	204 (100%)
Sweet potatoes	84 (41.2%)	63 (30.9%)	36 (17.5%)	17 (8.2%)	2 (1.0%)	2 (1.0%)	204 (100%)

Source: Author's field data (2021)

Table 12: Number of times on daily basis different foods are given to children

Number of feeds apart from breastfeeding	**Percentage**
1 to3 times	56.2
More than 3 times	43.8
Total	100.0

Source: Authors field data (2021)

It was established that many of the caregivers (56.2%) were feeding their children 1 to 3 times on daily basis. During focus group discussions the caregivers pointed out that some of the foods that were forbidden in the community included eggs. It was a common misconception among caregivers that feeding children on eggs would cause stammering or hinder the development of

speech in children below the age of five. This implied that the under-fives had no access to recommended dietary diversity which is important for their development.

On the way to stop breastfeeding so as to introduce complementary foods, caregivers suggested that they planned to avoid spending a lot of time with the children and by so doing reduce the number of times they breastfeed them. Some of the caregivers suggested application of bitter herbs on the breasts in order to discourage children from breastfeeding. This implied low level of awareness on ways of weaning a child hence poor feeding practices. This is because weaning of the under-fives should be done through introduction of a formula gradually using a cup to enable them get used to feeding themselves. This was not a common practise among caregivers as a result of lack of awareness on weaning. According to the Ecology systems theory, the caregivers are referred to as the significant persons and fully responsible of ensuring good child feeding practices for the under-fives. The theory further explains that children entirely depend on the caregivers for their overall wellbeing. Therefore, lack of knowledge on good feeding practices may have detrimental effects on the growth of the under-fives.

According to WHO (2010), Minimum Dietary Diversity comprises the number of food categories children consume on daily basis. World Health Organization recommends the use of seven food categories in determining dietary diversity among infants and young children. The recommended foods are Grains, roots/tubers, Legumes/nuts, Milk, Meat; Eggs as well as Fruits and vegetables with Vitamin A and those without. It is therefore advisable to provide children with diets from not less than four food categories, irrespective of whether they are breastfeeding or not (WHO, 2010). On the other hand, Minimum Meal Frequency refers to the number of times children are fed on daily basis. For example, children aged 6 to 8 months who are breastfeeding need additional diets not less than two times in a day while children aged between 9 and 23 months, at least three foods

in a day. Additionally, every child that is breastfeeding requires at least four meals every day (KNBS and ICF MACRO, 2010; WHO, 2010).

The Minimum Acceptable Diet therefore is achieved when a child gets the Minimum Dietary Diversity as well as the Minimum Meal Frequency (UNICEF, 2008). A study done by the KDHS 2014 showed that family income majorly influences the capability to provide suitable foods to children. It was established that it is possible to curb 6% of child mortality if every child is provided with diets that meet the set standards (WHO, 2010). However, according to the Demographic Health Survey (2014), only 22% of children nationwide meet the Minimum Acceptable Diet. Attaining Minimum Acceptable Diet has proven a challenge since the success rates are minimal in many third world nations, a situation that makes it imperative to increase the focus on the quality and number of complementary foods (UNICEF, 2008). Additionally, research done in Bangladesh showed that there exists a significant association between dietary diversity and stuntedness in children, as echoed in the work of Talkuder (2017).

The achievement of minimum dietary diversity and minimum acceptable diet is only possible if caregivers are well literate on the required diet for children aged five and below. However, findings from this study show existence of low literacy on dietary diversity and minimum diet as evidenced by failure to give children foods like eggs due to misconceptions. These practices do not adhere to the guidelines outlined in the National Nutrition Action Plan, 2012-2017 which emphasizes on appropriate feeding of children during the first five years of life while putting more attention on those aged two and below in order to prevent undernutrition or overnutrition. Therefore, the policy should be revised and include a strategy of creating awareness and educating caregivers on appropriate complementary feeding and also help do away with unfounded misconceptions. Failure to adhere to these guidelines due to lack of awareness leads to children aged five and below

having limited access to the recommended dietary diversity and acceptable meals which may compromise the nutritional status of these children through poor feeding practices.

4.5.5.1 Challenges facing complementary feeding

The caregivers highlighted numerous barriers they faced in accessing and providing ideal complementary foods for their young ones. Some of the challenges highlighted included; food shortage as a result of insufficient income since most of the caregivers were unemployed, huge families and other competing factors that limit caregivers' time with their children.

Data gathered by use of questionnaires showed that one of the main challenges facing complementary feeding is some of the foods being forbidden in the community as a result of misconceptions. These community beliefs originate from interaction amongst caregivers and signify the mesosystem as per Bronfenbrenner's ecological theory. Out of the sampled households, 75.5% of the caregivers confirmed that there were foods that were forbidden in the community whereas only 24.5% were not aware of any foods that were forbidden in the community.

Table 13: Foods that are forbidden in the community

Any foods children are not allowed to eat					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	154	75.5	75.5	75.5
	No	50	24.5	24.5	100.0
	Total	204	100.0	100.0	

The data in the table above is complemented by qualitative data, particularly focus group discussions which showed that most children rarely consumed eggs and this was as result of a

misconception that if children consumed eggs, they were most likely to become dumb or stammer. These are cultural beliefs that require the intervention of healthcare workers in ensuring that caregivers are educated against these misconceptions that promote poor feeding practices amongst under-fives.

Follow up interviews were conducted with the Community Health Volunteers to establish whether there was any type of nutrition education messages included in the MCH services to help the caregivers.

During an interview a CHV explained:

> *When the caregivers go for clinics, you will find that there is low Infant and Young Child Nutrition (IYCN) advisory at the health centers. As a result, the caregivers have low knowledge on the appropriate breastfeeding practices as well as complementary feeding. This is majorly because a lot of attention awareness creation is given to HIV/AIDs as a result of high cases HIV/AIDs in Homa bay at around 25%.*

Another CHV added:

> *Provision of appropriate complementary feeding is majorly challenged by cultural beliefs where you find that caregivers are afraid of giving children certain foods for fear that such foods may affect children. For instance, in our community, it's a common belief that eggs cause stammering in children and so caregivers avoid giving children eggs with the fear that the children may not develop speech. Another challenge is that of huge families which make it difficult for caregivers to access and purchase various food items. You will find that in a family there are 7 children. That implies that a caregivers cannot be able to provide a balanced diet for all these children.*

Another Volunteer also explained:

> Another barrier to complementary feeding was inadequacy of Multiple Micronutrient Powders (MNPs) in Ndhiwa for children aged 6-24 months to boost child's immunity.

The study therefore established that very few children received nutritionally adequate and safe complementary foods. Additionally, most of the children did not have access to the required dietary diversity and feeding frequency that was appropriate for their age. This was associated with factors such as lack of income hence the inability to purchase the required foods, huge families which make it difficult for caregivers to provide balanced diet and community misconceptions towards some foods such as eggs. Therefore, poor complementary feeding habits may result to undernutrition among children aged five and below which is one of the major causes of deaths in this particular group.

Further, from these findings, there is evidence that cultural beliefs around feeding children on some foods such as eggs may deny children of the right nutrients, yet there seems to be no information given to the caregivers on the same by the CHVs. This may call for capacity building on the part of CHVs if effective sensitization to improve literacy levels of caregivers is to be achieved.

From the various variables studied on how they influence feeding habits of the under-fives through their caregivers, the study in the end used Chi-square tests to establish the relationship between caregivers' level of education and feeding practices. The results are as seen in figure 4.14 below:

Table 14: Relationship between caregivers' level of education and knowledge on feeding practices.

Highest level of education * Ever received education on good child feeding practices Cross tabulation

			Ever received education on good child feeding practices		
			Yes	No	Total
Highest level of education	Secondary not completed	Count	32	29	61
		Standardized Residual	2.3	-1.7	
	Primary school	Count	35	60	95
		Standardized Residual	.3	-.2	
	No school	Count	4	44	48
		Standardized Residual	-3.1	2.3	
Total		Count	71	133	204

Chi-Square Tests

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	23.376[a]	2	.000
Likelihood Ratio	26.666	2	.000
Linear-by-Linear Association	22.343	1	.000
N of Valid Cases	204		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 16.71.

Null hypothesis (Ho): There is no association between the caregivers' literacy levels and feeding practices among under-fives. Chi square test done on caregivers' formal literacy versus knowledge on good child feeding practices showed p value to be 0.000, less than alpha, 0.05. That implies rejection of the null hypothesis and acceptance of an existence of a significant association between the caregivers' literacy levels and feeding practices.

This implied existence of a significant association between the two variables, that is literacy levels and knowledge on good child feeding practices. Therefore, this means that being literate implied better feeding practices amongst the under-fives since the caregivers had exposure to the three food groups. Additionally, if caregivers have nutritional literacy either from MCH, school or from kins, they tend to give better care to their children aged five and below in terms of nutrition. However, in case where caregivers have both formal literacy and nutritional literacy, this has a positive impact on the day-to-day upbringing of the children. Caregivers with high formal and nutritional literacy can make good choices when it comes to nutritious foods and diverse or variety of diets for the children under their care as opposed to those without such knowledge. This leads to better feeding practices of such children which enhances their overall growth and development.

Conclusion

This chapter focused on the influence of caregivers' literacy levels on feeding practices of children aged five and below. The study assessed influence of caregivers' literacy on indicators such as breastfeeding practices and complementary feeding practices. The researcher went further to look into caregivers' knowledge on EBF, timely introduction to breastfeeding and continued breastfeeding. The study also looked into complementary feeding practices through looking at their literacy on the three food groups, minimum dietary diversity as well minimum acceptable diet.

It was established that cultural beliefs were a major barrier to good breastfeeding practices as well as good complementary feeding practices through caregivers not feeding under-fives appropriately due to misconceptions either from TBAs or fellow caregivers. Such misconceptions can only be curbed through educating caregivers against them to ensure that caregivers understand nutritional requirements of the under-fives. Chi-square tests done showed existence of a significant

relationship with a p-value 0.000 between caregivers formal and nutrition literacy and feeding practices. This study therefore concluded that formal and nutritional literacy equips caregivers with knowledge on EBF practice, appropriate complementary feeding practices as well as knowledge on the three food groups. Lack of awareness on good child feeding practices therefore puts children on the risk of malnutrition which is a cause of most deaths in children. The study also concluded that there is need to improve on the implementation of the Kenya School Health Policy, 2018 which plays a key role in enhancing formal literacy among the main caregivers who are the adolescent girls. The implementation of this policy can be improved through creating awareness on the policy guidelines to all stake holders and enforcing school re-entry after childbirth. Policies including the National Maternal, Infant and Young Child Nutrition Policy, 2013 and the National Nutrition Action Plan 2012-2017 which outline guidelines on good feeding practices amongst the under-fives should provide a training for caregivers on matters of nutrition literacy in order to ensure that the caregivers are well aware of good child feeding practices.

CHAPTER FIVE

INFLUENCE OF CAREGIVERS' FORMAL AND NUTRITION LITERACY ON ACCESS TO HEALTH SERVICES

5.1 Introduction

This chapter sought to explain how caregiver's formal and nutrition literacy levels influence access to health services among children born to adolescent girls. Apart from ensuring appropriate feeding practices for the under-fives, the caregivers also have a role to play in terms of provision of the uppermost achievable health care for this particular group. The following sub sections therefore present data on how formal and nutrition literacy levels of caregivers influence access to health services.

Formal literacy was determined by looking at the ability to use language in reading, writing, listening or speaking which enables the caregivers to comprehend and use materials in print and written form from various settings. Nutrition literacy was determined by looking at education gained from both formal and informal sources on the suitable diet for growth and development of children aged five and below. Nutrition literacy is important to access of health services because it is a significant part of healthy living. This is because poor feeding practices are a major cause of several chronic illnesses and as such are directly related to health seeking behavior.

Data was collected by use of questionnaires containing structured and unstructured questions addressing issues such as immunization uptake, health seeking behavior and knowledge of danger signs amongst under-fives. Qualitative data was gathered by use of Key informant interviews with the community health volunteers who responded on health seeking behavior of caregivers and the role of MCH in educating caregivers on health care they give to under-fives. Focus Group

Discussions were carried out with caregivers for triangulation purposes and some of the issues raised were supported by existing literature sourced from secondary data including County records and other official documents.

Accessibility to health services and determinants of the same was examined by looking at indicators such as, adherence to immunization, recognition of illness signs amongst the under-fives, knowledge and prevention of common illnesses as well as the ability to seek for healthcare opinion. The sections that follow hereunder examine how literacy levels relate and define access to health services in relation to the various aspects of children's health. Regression analysis, specifically Chi-square tests were carried out to determine whether caregivers' formal and nutrition literacy levels were significantly associated with health care seeking among caregivers of children below the age of five.

5.1.1 Caregivers' formal literacy

Formal literacy refers to structured form of education which can be obtained from attending high schools and tertiary institutions. This form of literacy enables caregivers to read, write, listen and speak as well as be able to use materials in print and written form from various settings. With this form of literacy, caregivers can fully comprehend health care information passed through formal and informal channels.

To establish the caregivers' formal literacy, the researcher looked the education levels of the caregivers in general and this included the adolescent mothers and the alternate caregivers. Using split file tool on SPSS, data on age was split into different groups so as to analyze the level of education of every caregiver. The indicators of health access that relate to formal literacy are adherence to immunization schedule and ability to seek health care opinion.

5.1.2 Caregivers' nutrition literacy

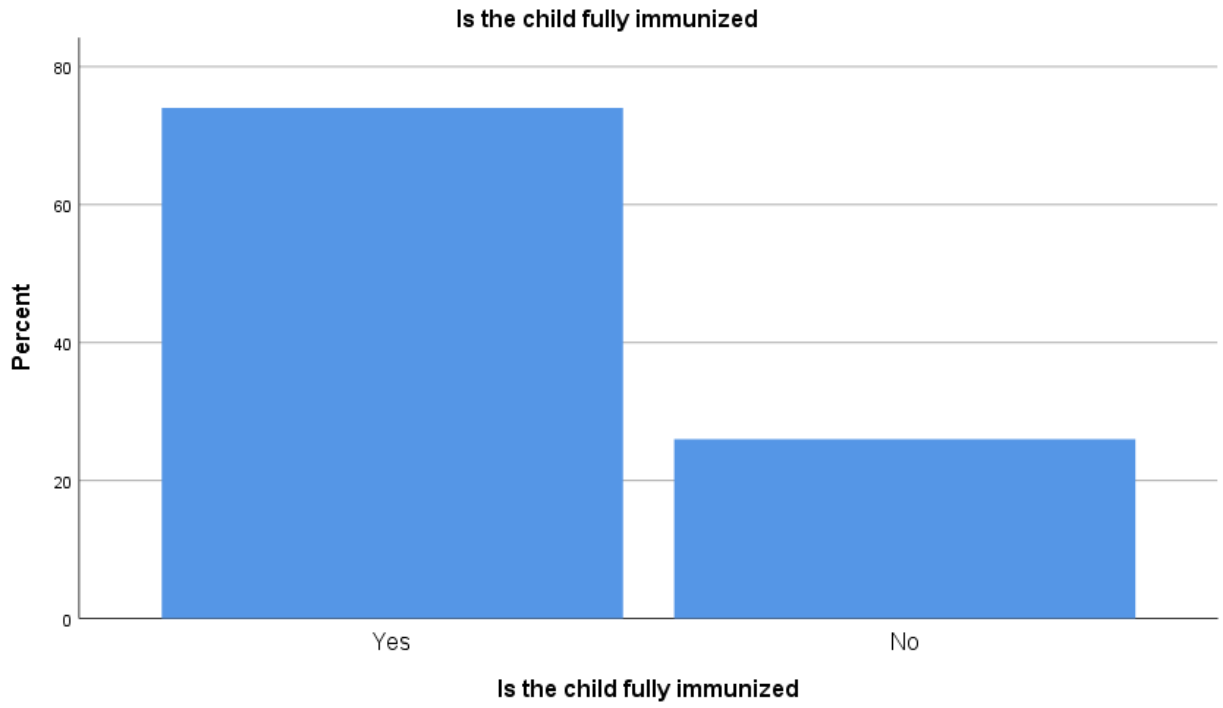
Nutrition literacy is a form of literacy gained from health centers, mass media or person to person regarding appropriate diet for healthy development of under-fives. Caregivers' nutritional literacy was established by looking at their knowledge on food groups and dietary diversity of under-fives. This form of literacy is significant to access of health services due to the fact that failure to adhere to nutritional diet results to chronic diseases which is closely associated to health seeking behavior.

There were no indicators of health access that related to nutrition literacy only. However, recognition of illness signs and prevention of illnesses in children aged 5 and below which is an indicator of health access relates to both formal and nutrition literacy.

5.2 Literacy levels and adherence to immunization schedule

Data gathered for this indicator was on immunization coverage through either immunization cards or from caregivers' responses. Every caregiver was asked to present the immunization card in which details of the vaccinations were recorded. In a case where the caregiver presented the card, the researcher recorded the information as it appeared whereas in cases where vaccination card was not presented, the caregivers were asked whether the child had been vaccinated against BCG, polio, pentavalent, measles and pneumococcal immunization. The researcher also asked the dosage children had received for polio, pentavalent or pneumococcal vaccinations. The study sought to first establish whether every child aged one year and above had been fully immunized. From data gathered by use of questionnaires, it emerged that immunization coverage among children aged one year and above was quite high with 74% of the children fully immunized and only 26% not yet fully immunized.

Figure 8: Adherence to required immunization



From the interviews with the CHVs, it emerged that the high uptake of immunization was associated with the door-to-door campaigns by the CHVs on the importance of fully vaccinating the under-fives. These campaigns are encouraged by the Kenya Health Policy 2014-2030, National Health Sector Strategic Plan 2005-2012 (NHSSP II) and the Kenya Health Strategic Plan 2013-2017 (KHSSP III) all of which are policies adopted by the government in order to increase uptake of immunization amongst the under-fives. These policies were also aimed at reducing morbidity and mortality in children as a result of vaccine preventable diseases as well as ensuring access to quality vaccines. The study further showed that mothers who did not adhere to the immunization as required were those that delivered through the help of traditional birth attendants. This resulted in delay in accessing health facilities to receive vaccines administered during the first week of

delivery such as the BCG and polio vaccine. The CHVs opined that they needed to steer up efforts to mobilize every caregiver to adhere to immunization schedule.

During an interview a CHV explained:

> *Part of our work is to visit each and every household in our assigned area, sometimes accompanied by the community health extension officers to educate caregivers on the importance of immunization in children. Through our efforts, most of the caregivers have embraced immunization in our villages.*

Another CHV added:

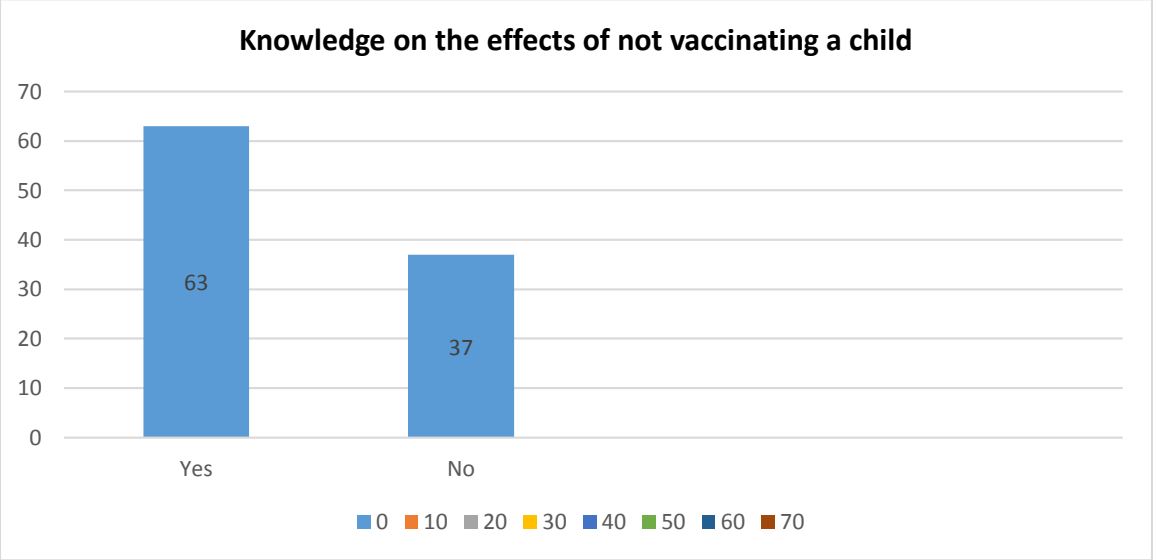
> *We have tried our best to create awareness on importance of full immunization amongst under-fives. However, a few of the caregivers do not adhere to it especially due to the fact that they deliver at home with the help of TBAs who misinform them and miss out on the vaccines administered during early stages of life and also because they are located far from health centers. Additionally, we still face the challenge of misconceptions where some of the caregivers believe that vaccinations may have negative effects on children.*

From the above excerpts, it was clear that full coverage on immunization has not been achieved due to failure by mothers to deliver in health centers. Instead, those that delivered through the help of traditional birth attendants did not receive sufficient advice on the need to take the newborns for vaccinations. This implies that the newborns miss out or delay in getting vaccines that administered are during early stages of life. Additionally, the CHVs highlighted that misconceptions based on rumors from fellow caregivers have led to caregivers not adhering to immunization. As such, adherence to immunization is not fully embraced, which has a negative impact to the wellbeing of the under-fives. The ecological approach to human development espouses that caregivers have a role to play in ensuring that the under-fives are fully immunized since they form the major part of the microsystem and are solely responsible for the health care of

the under-fives. However, lack of awareness as a result of low levels of formal literacy which is evident in the above excerpts could hinder adherence to immunization schedule. This has implication to the Kenya Health Policy 2014-2030 which through its first objective on elimination of communicable illnesses emphasizes adherence to immunization schedule. This policy was developed in accordance with the second National Health Sector Strategic Plan 2005-2012 (NHSSP II) with the aim of reversing the decline in health status of Kenyan citizens. The policy seeks to promote and take part in the provision of integrated and quality services in order to cure, prevent, promote and rehabilitate health care for every Kenyan. This policy through immunization therefore, seeks to reverse the trends of sub-optimal immunization coverage through providing clear guidelines on rationalized vaccination practices and vaccine use so as to meet SDG number 3 which advocates for prevention of child deaths as a result of preventable illnesses. Since from the findings, full immunization coverage has not been achieved, child mortality remains a serious health challenge.

A further enquiry into the knowledge on the effects of failure to adhere to immunization schedule showed that out of the sampled caregivers, 63% of them were aware of the effects of not completing the immunization schedule while 37% were not aware of the effects. These results are shown in figure 5.2 below:

Figure 9: Caregivers knowledge on the effects of not vaccinating children



When asked to specify on the effects of failure to adhere to immunization, the caregivers that were aware explained that failure to vaccinate the under-fives is a major cause of diseases and disability among this group. According to WHO (2014), routine immunization plays a key role in significantly reducing child deaths caused by vaccine preventable illnesses. Full immunization safeguards children from illnesses such as measles, hepatitis, tuberculosis, whooping cough and diphtheria. However, 37% of the caregivers were not aware of the possible effects of not vaccinating under-fives and they shared some of their beliefs concerning the same in the Focus group discussions:

During a Focus group discussion, a participant aged 15 who was a mother to a 1-year-old son explained:

> *I am aware that lack of vaccination leads to illnesses. However, I always felt hesitant about multiple injections that my son had to receive. Since they introduced a third injection (Inactivated Polio Vaccine), I was afraid that the injections were too many which made me not to bring my son on time for the injection.*

Another participant who was a grandmother to a two-year-old girl argued:

> *My fellow caregivers have told me about possible adverse events associated with the use of multiple vaccinations. They say that if the child is vaccinated twice, for instance during the routine and during campaigns, the child could fall ill or die.*

A participant aged 14 who was a mother to a 7 months old girl explained:

> *I have also heard my friends talk about possible long term, permanent health consequences associated with vaccinations and the quality of vaccinations given at the local health center. They say that the injections given at health centers specifically the vaccines are unsafe and not the injection techniques.*

The information gathered using Focus group discussions showed that these caregivers may not fully adhere to immunization schedule since they do not perceive failure to vaccinate under-fives to have detrimental effects. In addition, failure to adhere to immunizations due to negative perceptions can be associated to low levels of formal literacy.

Immunization for children is a public health exercise whose main aim is to reduce mortality and morbidity in children. Vaccination is a significant way of curbing illnesses and is seen as a crucial health indicator for development of a nation (UNICEF, 2005). The World Health Organization states that full immunization is achieved when children receive all the recommended vaccines including a BCG vaccine to prevent tuberculosis; three doses of DPT vaccination against diphtheria, pertussis, and tetanus or three doses of pentavalent, which comprises DPT immunizations to prevent mutually hepatitis B and haemophiles influenza type B; three doses of polio vaccination; and one dose of measles vaccination. The listed immunizations should be given before completion of one year in children. The immunization program is covered under Kenya Health Policy 2014-2030 which through its first objective seeks to eliminate communicable illnesses through increasing immunization uptake. Therefore, the vaccination program in Kenya

considers children to have covered full immunization if they receive all the recommended vaccines as well as three doses of pneumococcal immunization, which was introduced in Kenya in the year 2012 (WHO, 2013). The uptake of full immunization can only be achieved if caregivers put aside negative perceptions and are well aware of the importance of adhering to full immunization. However, the findings from the Focus group discussion excerpts above have shown failure of the caregivers to adhere to full immunization as a result of misinformation by the traditional birth attendants as well as negative perceptions from fellow caregivers.

Formal literacy is believed to be useful in enabling caregivers to disregard negative beliefs on immunization uptake. There was therefore a need to establish the relationship between caregivers' formal literacy and immunization as shown in Table 5.1 and 5.2 hereunder.

By use of split file tool on SPSS, data on caregiver's education level was split into different groups and analyzed. This segregation would help compare the adherence by those who had reached secondary school to those who had reached primary school and those without formal education. Table 5.1 below shows the outcome:

Table 15: Education level and adherence to immunization

Is the child fully immunized

Highest level of education			Frequency	Percent	Valid Percent	Cumulative Percent
Secondary not completed	Valid	Yes	61	100.0	100.0	100.0
Primary school	Valid	Yes	81	85.3	85.3	85.3
		No	14	14.7	14.7	100.0
		Total	95	100.0	100.0	
No formal education	Valid	Yes	9	18.8	18.8	18.8
		No	39	81.3	81.3	100.0
		Total	48	100.0	100.0	

From the segregation of data as per level of education, it was evident that the adherence to immunization increases with increase in the level of education. The researcher therefore went further to carry out Chi square tests to establish the association between education level and immunization uptake as seen in table 5.2 below.

Table 16: Regression Results: Influence of Caregivers' literacy on completion of immunization schedule among under-fives

Highest level of education * Is the child fully immunized Cross tabulation

Count

		Is the child fully immunized		
		Yes	No	Total
Highest level of education	Secondary not completed	61	0	61
	Primary school	81	14	95
	No formal education	9	39	48
Total		151	53	204

Chi-Square Tests

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	103.902[a]	2	.000
Likelihood Ratio	107.954	2	.000
Linear-by-Linear Association	85.907	1	.000
N of Valid Cases	204		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 12.47.

The chi-square tests above revealed that p=.000, less than 0.05 signifying an existence of a significant relationship between caregivers' educational level and immunization uptake. This means we accept the alternative hypothesis which says that there is a significant association between caregivers' literacy levels and adherence to full immunization. Therefore, caregivers'

literacy level is significant when it comes to completing the immunization schedule. The findings of the current research indicate that caregivers with formal education are associated with high uptake of comprehensive immunization schedule. Additionally, from the segregated data in table 5.1, it was established that children under the care of caregivers who had reached secondary school or primary school were more likely to be fully immunized compared to those who do not have any formal education. From these findings, it can be concluded that formal literacy equips the caregivers with progressive health principles to help them give the young ones improved health care. Caregivers who had reached secondary or primary school were more likely to have completed the vaccination schedule than children of caregivers without any formal education since the literate caregivers fully understand effects of not adhering to immunization and may not follow unfounded misconceptions. Additionally, having formal and nutritional literacy equips caregivers with awareness and skills on basic healthcare services and increases the chances to nurture habits and practices which improve health and well-being of the under-fives. Educated caregivers are associated with seeking health services for their children through ensuring that these children get every recommended vaccine within the specified period since delay of the same compromises immunity of the children. According to the Ecology systems theory, caregivers are solely responsible of the health care of under-fives and they should ensure that full immunization is adhered to.

Studies done in the past showed that vaccination amongst the under-fives has majorly contributed to the reduction of child mortality through eradicating diseases like smallpox and almost eliminating polio. Additionally, approximately 3 million child deaths are prevented yearly through vaccination against illnesses such as measles, pertussis, diphtheria and tetanus (WHO, 2014).

Since the year 2000 and 2016, a decline of 84% in the measles related deaths was recorded across the globe as a result of measles vaccination. Similarly, a decline in pertussis related deaths was also recorded internationally from 390,000 cases in the year 1999 amongst children aged five and below to 160,700 cases in the year 2014 due to implementation of vaccinations pertussis (UNICEF, 2005). Due to this significant contribution, vaccination against avoidable childhood diseases is now a crucial part of policies and plans for enhancing the health and well-being of the under-fives. Therefore, the Government of Kenya through the Ministry of Health, came up with the Kenya Expanded Program on immunization (KEPI) in the year 1980 so as to promote vaccination against some of the death causing illnesses among children before they reach the age of one. Since then, the Government adopted other policies aimed at increasing the uptake of immunization. These policies include the National Health Sector Strategic Plan 2005-2012 (NHSSP II) which sought to increase uptake of immunization through providing guidelines on rationalized vaccine administration and use. The Government also introduced the Kenya Health Sector Strategic Plan (KHSSP-III) which advocated for under-five vaccination and prevention of illnesses. The most current policy is the Kenya Health Policy 2014-2030, which aims at eliminating communicable illnesses through the use of vaccines. Kenya has since depicted substantial improvement in terms of vaccination coverage as seen in the Demographic and Health Surveys (DHS), which showed an increase from 44% to 77.4% vaccination uptake. This percentage is still below the national target of 90% for every child by the Ministry of Health (KDHS, 2014). Additionally, this study further showed that there exist substantial coverage differences amongst counties with some having high vaccination coverage as opposed to others. This may be due to the fact that there still exist unique factors in some regions which may require further research to establish reasons for low coverage in those regions. In Ndhiwa for instance, it was established that misinformation as a result of giving

birth through traditional birth attendants as well as misconceptions were amongst the causes of not adhering to immunization schedule. These issues can only be dealt with through ensuring that these policies also embark on creating awareness amongst caregivers on importance of adhering to full immunization. As propagated in the Ecological systems theory, the caregivers form an integral part of the environment in which children live and as such have the responsibility of ensuring that the under-fives adhere to full immunization.

5.3 Literacy levels and recognition of illness signs as well as prevention of illnesses in children aged 5 and below

The study sought to establish morbidity amongst under-fives and whether caregivers had the literacy needed to identify danger signs during illnesses. Data collected by use of questionnaires showed that out of the sampled households, 144 children had been ill in the last two weeks prior to and during the study. This is shown in table 5.2 below.

Table 17: Morbidity in children in the past two weeks prior to the study

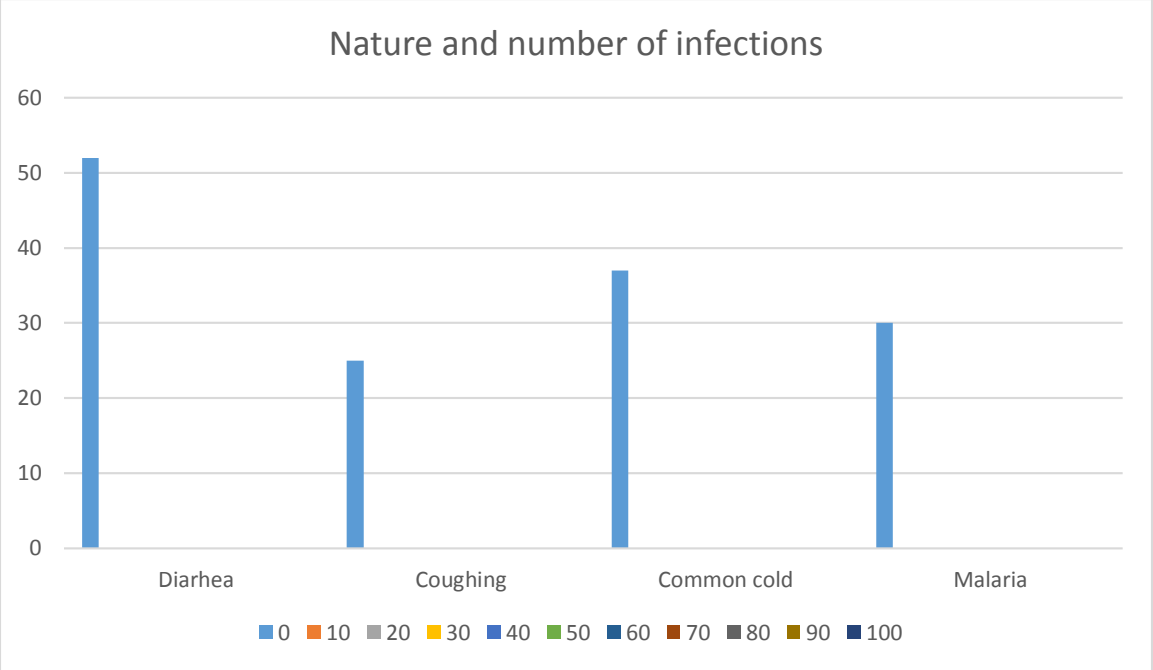
Has the child suffered any illness in the past two weeks

		Frequency	Percent	Valid Percent
Valid	Yes	144	70.6	70.6
	No	60	29.4	29.4
	Total	204	100.0	100.0

From table 5.2 above, there had been 144 (70.6%) cases of illnesses amongst the under-fives and only 60 (29.4%) of this group had not been reported ill. This signifies high cases of ill health in children aged five and below in the households under study.

The researcher further enquired from the caregivers the signs of illnesses the under-fives exhibited during illnesses. Some of the responses given by caregivers especially those that did not seek medical assistance on the signs of illnesses exhibited was from their self-diagnosis, without a medical examination and such responses may not be accurate. The caregivers pointed out some of the signs to include diarrhea, coughing, common cold and malaria. Figure 5.3 below shows the nature and number of infections recorded during the study.

Figure 10: Nature and number of infections amongst under-fives



The researcher was not able to determine the real type of illness reported by the caregivers especially where there lacked medical diagnosis. In such cases, it was assumed that those reporting did so from their own interpretations of the symptoms. Therefore, the figure above captures the

perspectives of the caregivers. The figure 5.4 indicates that most of the under-fives (52% of the infections) were suffering from diarrhea. This made it imperative to make a further inquiry into whether caregivers were aware of the causes and prevention of diarrhea since it was a common illness among children.

Figure 11: Causes and prevention of diarrhea in children

On the causes and prevention of diarrhea in children, data collected by use questionnaires showed that 35% of the respondents indicated that it is associated with dirt and can be prevented through better hygiene, 14% indicated that is associated with teething, 3% did not give any response whereas 48% did not know.

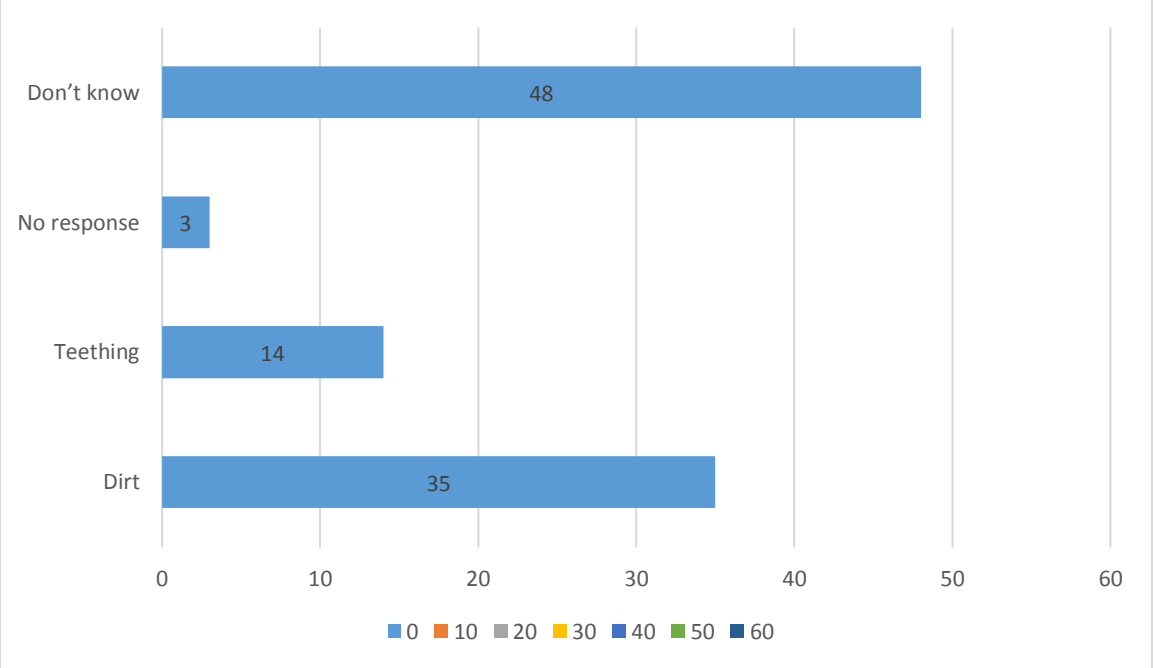


Figure 5.4 above showed that majority of the caregivers (48%) were not aware of the causes and prevention of diarrhea. Lack of this knowledge implied that such caregivers were not aware of what measures they ought to take in preventing this type of a disease. As a result, children are at a higher risk of getting infected since the caregivers are not aware of what is expected of them in

terms of preventing diarrhea and other diseases. This is associated with lack of formal and nutrition literacy since diarrhea would be caused by things like poor hygiene. Diarrhea which is the second leading cause of deaths amongst under-fives is caused by among other factors; intake of contaminated water with sewage or human feces. This disease can also be by poor personal hygiene including poor preparation and storage of food in unhygienic conditions. Unsafe domestic water also poses a risk as well as fish or seafood from polluted water. Some of the key measures in prevention of diarrhea include access to safe drinking water, improved sanitation, good personal and food hygiene, exclusively breastfeeding for 6 months and rotavirus vaccination. Diarrhea can be treated through rehydration with Oral Rehydration Solution (ORS) or through the use of Zinc supplements to reduce the duration of diarrhea and consulting a health professional to manage severe cases (UNICEF, 2005).

Focus group discussions with the caregivers on the knowledge of danger signs showed that most of the caregivers did not perceive danger signs in children until the situation got worse.

A participant who was a mother to a one-year daughter explained:

> *I only noticed that my daughter's eyes had turned white and later on she had fever accompanied by loose stool. As a matter of fact, that day alone I changed nappies five times and they had a very funny smell. I had not noticed it was diarrhea until it got worse and we took her to hospital.*

Another participant explained:

> *My daughter and I had gone to visit my cousin in Kisumu and she had started diarrhea and vomiting. I did not think it was serious so my cousin applied some local herbs believed to sooth the stomach but by the time we reached here my baby was worse.*

Yet another participant who was a mother to a nine-month-old son explained:

> *My son had malaria but I had not recognized the signs at first until I took him to hospital when he got worse. It all started as fever, was wheezing and not able to breastfeed constantly. He used to breastfeed for around two minutes then inhale deeply before resuming breastfeeding.*

These findings showed that lack of awareness and failure to recognize danger signs amongst under-fives by caregivers led to delay in seeking medical help. It was evident that the seriousness of the disease determines the caregivers' course of action. The study established that the caregivers sought medical help only when they deemed the sickness to be serious and completely ignored health care seeking if they perceived the disease to be mild and not so serious for a medical checkup. The caregivers explained that they did not take the under-fives for medical checkup on identifying danger signs since they believed that it was a minor infection and would improve eventually. This implies that majority of caregivers delayed seeking health care because they deemed the signs to be mild, putting the under-fives at the risk of advanced illnesses and mortalities. Delayed health care seeking practices therefore undermine the Kenya Health Sector Strategic Plan, 2013-2017 (KHSSP III) adopted by government to manage common illnesses among children with a lot of attention given on malaria. Further, these practices do not adhere to the guidelines of this policy which advocates for immediate health care seeking when a caregivers notices illness signs. The major contributing factor to delayed health seeking was self-diagnosis and perceiving illnesses to be mild which exposed the under-fives to more serious conditions.

Further, lack of formal and nutrition literacy may result to poor hygiene when preparing food for the under-fives which exposes them to diseases like diarrhea. Additionally, lack of nutrition

literacy may lead to poor feeding practices which expose children to chronic illnesses such as marasmus hence being directly associated health seeking behavior of caregivers. According to the sub-County nutritionist, the most common malnutrition related illness in Ndhiwa was Marasmus followed by Kwashiorkor. When administering the questionnaires, the researcher showed a picture of a marasmus suffering child to the caregivers and asked them to name the condition, its signs and whether it had cure. Data collected showed that most of the caregivers (72.1%) were not able to identify signs of marasmus when shown a picture of a child suffering from the disease and pointed out that it had no cure. This made it necessary to test for relationship by use of crosstabulation between nutrition literacy and the ability to identify signs of marasmus in children below the age of five. This is shown in the regression results table below.

Table 18: Relationship between caregivers' nutrition literacy and knowledge of marasmus signs in children aged 5 and below.

Ever received education on good child feeding practices * Knowledge on signs and cure of marasmus Crosstabulation

Count

		Knowledge on signs and cure of marasmus		
		Yes	No	Total
Ever received education on good child feeding practices	Yes	50	17	67
	No	10	127	137
Total		60	144	204

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	98.242[a]	1	.000		
Continuity Correction	95.026	1	.000		
Likelihood Ratio	99.669	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	97.761	1	.000		
N of Valid Cases	204				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 19.71.

b. Computed only for a 2x2 table

Chi-square tests carried out showed p-value to be .000 which is less than alpha, 0.05 and this signifies existence of a significant relationship between caregivers' nutrition literacy and recognition of illness signs as well as prevention of illnesses such as marasmus in children aged 5 and below. This implies that nutrition literacy amongst caregivers translates to better knowledge of illness signs and better feeding practices which helps in prevention of illnesses such as marasmus. Therefore, having nutritional literacy by caregivers equips them with better feeding practices which do not expose the under-fives to illnesses associated with malnutrition.

Survival of children aged five and below from bodily stressors as a result of acute diseases is reliant on identification of signs for the diseases and timely decision making in terms of seeking professional assistance by the caregivers which in other words is referred to as "health seeking behavior". The capability to recognize signs of illness among children aged five and below is depended on factors such as past experience, physical location including proximity to health

facilities as well as health facility workers (Chuma et al., 2007). Therefore, failure to recognize life-threatening diseases and failure to consult a medical doctor may result to increased mortalities amongst under-fives (WHO, 2014). According to Bronfenbrenner's ecological model of human development, the caregivers who form an important part of the microsystem have a huge role to play in recognizing illness signs as well as taking the necessary steps to prevent illnesses amongst the under-fives. It was therefore imperative to establish the relationship between caregivers' formal literacy and recognition of illness signs as shown in table 5.4 below.

Table 19: Relationship between caregivers' formal literacy and recognition of illness signs as well as prevention of illnesses in under-fives

Highest level of education * Knowledge on signs and cure of marasmus Crosstabulation

Count

		Knowledge on signs and cure of marasmus		
		Yes	No	Total
Highest level of education	Secondary not completed	37	24	61
	Primary school	13	82	95
	No formal education	7	41	48
Total		57	147	204

Chi-Square Tests

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	46.269[a]	2	.000
Likelihood Ratio	44.200	2	.000
Linear-by-Linear Association	31.766	1	.000
N of Valid Cases	204		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 13.41.

The study showed that there existed a significant relationship between caregivers' formal literacy and knowledge of marasmus signs as well as prevention of marasmus in children aged 5 and below. This means that formally literate caregivers are capable of knowing what measures ought to be put in place to prevent illnesses such as diarrhea and marasmus in children. In addition, formal literacy in caregivers enables them to identify illness signs and seek health services when necessary. The Ecological systems theory emphasizes the role of caregivers in provision of good care through recognition of illness signs and prevention of illnesses in children. The Kenya Health Policy 2014-2030 in its policy objective 2 seeks to reverse the rising burden of non-communicable illnesses like marasmus through implementation of strategies to ensure that services related to non-communicable conditions meet set standards and are accessible to everyone. This policy seeks to achieve this through ensuring quality care in providing preventive and promotive services to address major causes of the burden of communicable illnesses. It is clear from the research findings that even though the policy spells out the need to seek health services during illnesses, there is still a lag in the uptake of these guidelines characterized by caregivers ignoring illness signs instead of seeking health care when the under-fives are sick.

Newborn deaths and illnesses are worldwide health challenges which require strategic course of action and investment. Previous research showed that 75% of infant mortalities took place within one year of age (WHO, 2014). Certainly, most infant and child mortalities are caused by severe childhood diseases including acute respiratory infections (ARI), diarrhea, malaria and meningitis. For a child to survive from these diseases, there is need to identify signs of diseases and make timely decision in seeking assistance from a professional by the caregivers (Olenja, 2003). The capability of a caregiver to recognize the danger signs of newborn illnesses may depend on issues such as past experience, proximity to health facilities as well as nature of staff at the health facilities

(WHO, 2014). This can be achieved through creation of awareness in order to strengthen caregivers' capability to recognize danger signs during illness amongst under-fives and seek professional assistance so as to reduce deaths related to infant diseases.

5.4 Literacy and the ability to seek for health care opinion

The researcher sought to establish whether caregivers sought for health care opinion during illnesses. The table below shows the number of caregivers who sought health care opinion and those that did not.

Table 20: Whether caregivers sought health care opinion

Was anyone consulted

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	80	39.2	55.6	55.6
	No	64	31.4	44.4	100.0
	Total	144	70.6	100.0	
Missing	System	60	29.4		
Total		204	100.0		

The table above showed that out of the 144 cases of illnesses, 64 of the caregivers did not seek health care opinion while 80 of the caregivers sought opinion from various entities.

The researcher therefore went further to establish who the caregivers consulted when the under-fives were sick. The table below showed that most of the caregivers consulted health facilities, traditional healers or a nearby pharmacy.

Table 21: Who caregivers consulted during illnesses

If yes, who was consulted				
		Frequency	Percent	Valid Percent
Valid	Health facility	31	15.2	38.8
	Traditional healer	31	15.2	38.8
	Pharmacy	14	6.9	17.5
	Ordinary shop	4	2.0	5.0
	Total	80	39.2	100.0
Missing	System	124	60.8	
Total		204	100.0	

These results are corroborated by findings from qualitative data in the following excerpts which were captured during focus group discussions with the caregivers. During a Focus group discussion, a participant who was a mother to a one-year-old son explained:

> *When my son had fever, I removed his clothes then visited a traditional healer for help since the health facility is far away who then recommended that I wash him with warm water with menthol ointment which is believed to reduce fever.*

Another participant who was a mother to a 7 months old girl added:

> *When my daughter was sick, I consulted a shop keeper who advised that I give her painkillers which belonged to my other child to save me the expense of buying more medication. The medicine had been previously prescribed for my elder son who back then exhibited similar symptoms. I therefore opted to use it on my younger child and see if she would get well. Unfortunately, the condition only got worse.*

Another participant who was a mother to a sick son explained:

> *My son has been unwell for a while now and so I went to the pharmacy and explained my son's signs and symptoms. The pharmacist then recommended some drugs which I gave to my son as advised but my child has not shown any improvement since.*

The table above captures the caregivers that had reported to have had sick children and consulted various entities (80 cases). Out of these 80 cases, only 31 caregivers went to a health facility as seen in table 5.6 above which implies that more than half of the caregivers did not consult a doctor when children were sick. It was established that they consulted traditional healers, pharmacies or ordinary shops. The missing number (124 cases) comprises of the caregivers that reported cases of illness but never consulted any entity (64 cases) and those that did not report any case of illness (60 cases). This can be associated with the lack of formal literacy on the importance of seeking professional health care opinion when children are ill. This can only be averted through creation of awareness amongst caregivers to ensure that they have knowledge on the importance of promptly seeking medical help from a health care professional when they perceive danger signs amongst under-fives. This is because literate caregivers may not use home remedies since they understand the importance of seeking the advice of someone who has the required medical expertise hence being able to reduce child deaths associated with treatable illnesses. Appropriate health care seeking helps in preventing deaths associated with treatable diseases. According to the Ecology systems theory, the caregivers who form an important part of the micro system have the sole responsibility of providing the highest affordable health care to the under-fives. According to this theory, the under-fives entirely depend on caregivers for access to basic needs.

According to WHO, delayed health care seeking for an ill child is attributable to various factors including, combination of home-based therapies with conventional medications, failure to

recognize life-threatening diseases and lack of prior experience. These factors exist contrary to a background of unidentified serious diseases including diarrhea, malaria and meningitis. Additionally, the outcome of this unverifiable and unscientific interventions is disastrous and can cause mortalities and other unforeseen problems (WHO, 2014). The Government of Kenya therefore came up with life changing policies including the Kenya Health Sector Strategic Plan 2013-2017 (KHSSP III) which encompasses the Integrated Management of Childhood Illnesses (IMCI) strategy and the Malezi Bora initiative aimed at improving child health through timely diagnosis and treatment of childhood diseases (UNICEF, 2005). However, the findings of this study showed that seeking health care opinion form a health center was not a common practice among caregivers with some buying over the counter drugs or consulting traditional healers when children were sick. This has an implication to the policy which clearly outlines the need to seek health care opinion from a doctor during illness. The researcher therefore sought to understand how literacy levels compare to the ability of caregivers in seeking professional health care opinion as one of the factors associated with high rates of child deaths.

Table 22: Relationships between caregivers' education level and health care seeking behavior when children were ill

Highest level of education * Whether they consulted a healthcare professional Cross tabulation

			Was anyone consulted		
			Yes	No	Total
Highest level of education	Secondary not completed	Count	33	6	39
		Standardized Residual	2.4	-2.7	
	Primary school	Count	33	30	63
		Standardized Residual	-.3	.4	
	No school	Count	14	28	42
		Standardized Residual	-1.9	2.2	
Total		Count	80	64	144

Chi-Square Tests

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	21.996[a]	2	.000
Likelihood Ratio	23.697	2	.000
Linear-by-Linear Association	21.224	1	.000
N of Valid Cases	144		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 17.33.

Table 5.7 above on caregivers' formal literacy versus health seeking behavior showed p value to be 0.000, less than alpha, 0.05 which signifies existence of a significant relationship between caregivers' literacy levels and health seeking behavior. This implies that having formal literacy translated to better health seeking behavior since the caregivers had a better understanding of danger signs and sought medical help without delay. The Ecological systems theory propagates that the caregivers are significant beings in the lives of the under-fives and every caregiver has the sole responsibility of providing better health care through seeking professional assistance when children are sick.

Having formal literacy by the caregivers enables them to acquire knowledge on a whole range of health issues affecting the children under their care. The caregivers get this knowledge through various ways, including learning about the causes of illnesses, how to recognize, prevent and cure various illnesses, the nutritional requirements for effective growth and development of the under-fives and the ability to synthesize health related messages and guidelines from different avenues such as the mass media. Being formally literate also helps caregivers to shift negative perceptions towards modern medicine by making them aware and helping them accept modern medical

practices and disease interpretation based on scientific data and not unproved misconceptions (Abuya et al., 2011). Therefore, it is envisaged that formally literate caregivers are capable of embracing modern medicine and the use of preventive health care and know the importance of consulting health care professionals during illnesses and not traditional healers as earlier seen in table 5.6. Consulting other entities who are not professional doctors undermines the achievement of the policy objectives outlined in the Kenya Health Policy 2014-2030 which advocates for quality care in provision of prevention services and management of childhood illnesses.

5.4.1 Factors that influence health seeking behavior

5.4.1.1 Social factors

The ability to seek health care opinion is not just a one-off isolated event. It is an essential part of an individuals, a families or communities. Numerous factors have been established to be the main causes of failure to utilize primary health care services. The factors identified included low socio-economic status, inaccessibility of health centers, culture and misconceptions as well as huge families. Therefore, global research done in the past showed that aspects that impact on health seeking behavior could be categorized into culture, socio-demographic status, autonomy of the women, economic condition, physical and financial availability, illness pattern and factors related to health services. However, it was established that in less developed nations, cultural practices and beliefs were the major barriers to the ability to seek for healthcare opinion when children were sick (Heaton et al., 2005). This challenge can only be solved through educating caregivers on the need to seek for healthcare opinion during illnesses which is emphasized by the Kenya Health Policy 2014-2030 through its commitment to ensure health services are accessible to every citizen. This awareness will enhance caregivers' literacy which will in turn help in shifting negative

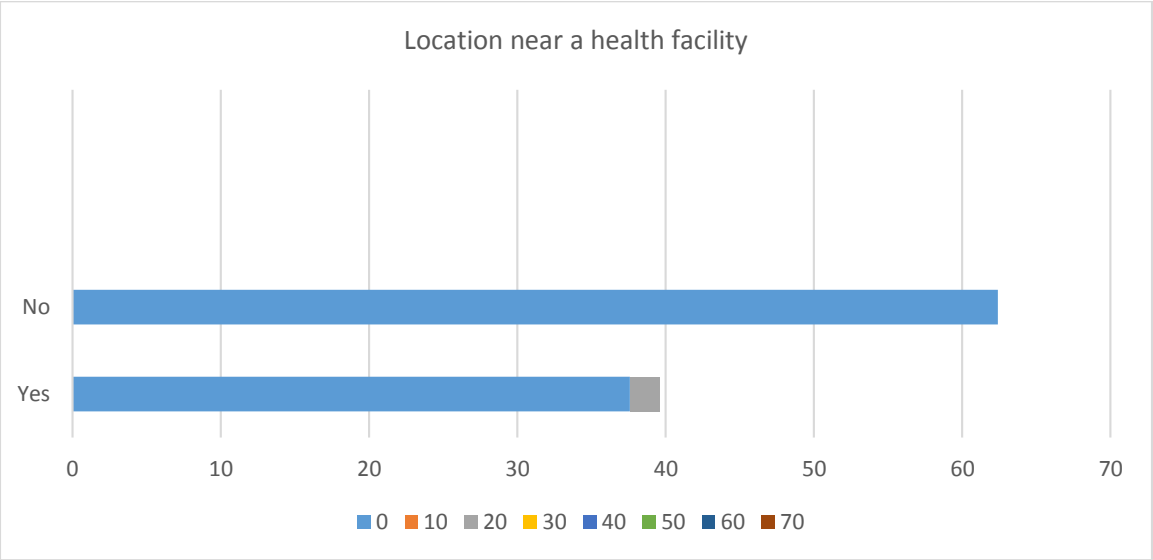
perceptions towards modern medicine through enhanced awareness and reception of contemporary health practices and ailment interpretations based on pure science and not on unfounded perceptions. When they are formally literate caregivers are likely to embrace contemporary medical practices, are receptive and practice preventive health care and will not associate any childhood illnesses with fate or supernatural cause. As propagated by Ecological approach to human development, the under-fives entirely depend on their caregivers in seeking health care during illness.

5.4.1.2 Distance to the nearest health center

Proximity to health centers was a factor which is not related to caregivers' literacy but influenced access to health services. The researcher first sought to establish household's proximity to health centers so as to know how accessible they are. Data gathered by use of questionnaires showed that many of the households (62.4%) pointed out that the distance to the nearest health center was far (approximately 5 Kilometers from their homes), whereas a few (37.6%) indicated that they were located near a health center.

A further inquiry into the means through which the caregivers accessed health facilities showed that most of the households mainly accessed health facilities by walking (92.5%) or by use of motorcycles, public vehicles or bicycles (7.5%).

Figure 12: Proximity to health facility



The above results are consistent with qualitative data collected during follow up interviews with the CHVs. Responses from the community health volunteers showed that long distance to the health centers was one of the major causes of mothers giving birth at home. A CHV explained:

> *We do not have many health centers around and the few that exist are located far from the village. Normally one has to use a motorbike to access a health facility which may cost up to two hundred shillings. As a result, when it comes to emergency cases such as giving birth, mothers prefer to deliver at home with the help of traditional birth attendants.*

Another CHV added:

> *In some cases, when a child is sick, the caregivers consult their neighbors for advice who recommend the use of herbs and other traditional methods. Many of the times the caregivers cite inaccessibility to health centers as the cause of their reluctance to seek medical assistance.*

From the above findings, failure of caregivers to seek medical help during sickness as a result of long distances to health centers is common. This may have detrimental effects on children's health

and it also poses a greater risk to mothers that deliver at home as they risk having a still birth or even losing their own life.

According to the International Covenant on Social and Economic Rights, the right to health care encompasses both the right to access and be able to utilize ideal physical and mental health irrespective of social status or favoritism. The Kenya Health Policy 2014-2030 under its second objective seeks to reverse the increasing burden of non-communicable illnesses and mental disorders. This objective will be achieved through promoting universal access to interventions addressing priority non-communicable conditions and mental disorders across the country. Conversely, past research showed that, approximately two billion persons globally are not able to access primary health care and crucial medicine (UNICEF, 2005). In Kenya, accessibility to health care services is not optimal since only 52% of the citizens are capable of accessing health amenities located at distance of 5km radius. Therefore, majority of people suffer as a result of diseases and infections which can be prevented if they had access to basic health care. This is because accessibility to health services among Kenyans majorly depends on the geographical location of health centers. Majority of Kenyans from remote areas including Ndhiwa sub-County are therefore forced to travel long distances to access health services due to limited availability of health centers (Abuya et al., 2011). As per Ecological systems theory, the caregivers are solely responsible when it comes to the provision of the highest achievable quality of health care since they form an integral part of the microsystem. Therefore, it is expected that they will provide the under-fives access to health services during illness regardless of the distance and this is achievable through creating awareness on the importance of seeking medical help at all cost in order to avoid deaths caused by treatable diseases.

Conclusion

The aim of this chapter was to assess how caregivers formal and nutrition literacy levels influence access to health services. The study established that the government has put in place several policies to enhance healthcare of under-fives including Kenya Health Sector Strategic Plan (KHSSP-III) which advocates for immunization and Kenya Health Policy 2014-2030 which aims at eliminating communicable and non-communicable illnesses. Despite the partial adoption of these policies health care seeking amongst caregivers is still low. The study therefore, focused on the influence of caregivers' literacy on indicators such as adherence to immunization, recognition of illness signs in children as well as prevention of illnesses and the ability to seek for health care opinion during illness. Formal literacy was associated with indicators such as adherence to immunization schedule and the ability to seek health care opinion during illness. The indicator on the recognition of illness signs as well as prevention of illnesses was associated with both formal and nutritional literacy.

The study established that caregivers formal and nutrition literacy is associated with health seeking behavior where formally literate caregivers were associated with high uptake of immunization and timely health seeking. Failure to adhere to immunization was associated with mothers delivering at home with the help of traditional birth attendants hence a delay in accessing vaccines administered shortly after birth. This delay or failure to be vaccinated has an implication on the National Health Sector Strategic Plan 2005-2012 (NHSSP II) whose main aim is to increase uptake of immunization amongst the under-fives and minimize diseases and deaths caused by vaccine preventable illnesses. Additionally, lack of awareness on danger signs of childhood illnesses was common among caregivers distorting the extent of serious ailments and this resulted in delay in seeking medical help. The caregivers were also not aware of the ways through which diseases such

as diarrhea can be prevented and this could expose children to such illnesses. From the findings, it emerged that majority of the caregivers did not seek health care opinion when children were ill since some of them consulted traditional healers, pharmacists and shop keepers. These practices undermine the achievement of the goals set by the Kenya Health Policy 2014-2030 which was adopted with the aim of promoting universal access to health services in a bid to curb childhood illnesses. This was associated with caregivers perceiving illness signs as mild and not serious for medical attention. It was also established that caregivers who lived near health facilities were associated with immediate health care seeking as opposed to those located far from health centers.

Chi-square tests done revealed that there exists a significant relationship between caregivers' formal and nutrition literacy and access to health services. This implied that literate caregivers take the necessary measures to prevent illnesses such as diarrhea and are also capable of seeking health care opinion when children are sick which helps curb child mortality, a serious health challenge. This chapter therefore concludes that formal and nutrition literacy helps eliminate negative perceptions amongst caregivers which hinder their adherence to full immunization and seeking professional health care assistance. These two forms of literacy also enable caregivers learn causes of illnesses and their prevention as well as the nutritional requirements for healthy development of the under-fives. This contributes to the achievement of the set objectives in the Kenya Health Policy 2014-2030 which was put in place to enhance prevention, management and control of communicable and non-communicable illnesses amongst children aged 5 and below.

CHAPTER SIX

THE INFLUENCE OF CAREGIVERS' FORMAL AND NUTRITION LITERACY ON ENGAGEMENT IN PLAYING ACTIVITIES

6.1 Introduction

The previous two chapters focused on feeding practices and access to health services as some of the major aspects for the wellbeing of children aged five and below. However, the aspect of play which is paramount for a child's physical and mental growth requires attention too. The study in its last objective sought to explain the influence of caregivers' literacy levels on engagement in playing activities with under-fives as a way of enhancing their mental and physical development.

Formal literacy was earlier defined as the ability to use language to read, write, listen or speak, enabling the caregiver to understand and be able to utilize materials in print and written form. Nutrition literacy was described as a form of education acquired from formal or informal settings on the appropriate diet for healthy development of under-fives. Nutrition literacy is important when it comes to engagement in play of the under-fives because good nutrition in children helps in brain development that in turn influences the ability of the child to play.

Data on this objective was collected using questionnaires containing structured and unstructured questions on indicators of play such as provision of playing materials, engagement in playing activities with the under-fives as well as time allocation for play for the under-fives. Qualitative data was gathered by use of focus group discussions with the caregivers on engagement in playing activities and provision of play materials. This allowed for triangulation and enriching of data collected using questionnaires.

The researcher first discussed the nature of play/games and the visible effects of the same on children. The indicators that were discussed thereafter under this objective include; provision of play materials, time allocated for play and how often caregivers engaged in playing activities with the under-fives. The sections below therefore discussed how caregivers' formal and nutrition literacy influences these indicators. Chi square tests were carried out to determine whether there exists a relationship between caregivers' formal and nutrition literacy and engagement in playing activities.

6.1.1 Caregivers' formal literacy

Caregivers' formal literacy was determined by looking at the highest level of education attained by every caregiver including adolescent mothers and the alternate caregivers. Level of education of every caregiver was established by use of split file tool on SPSS. The indicators of play that were found to relate to formal literacy include provision of play materials by caregivers, allocation of time for play as well as engagement in playing activities with the under-fives.

6.1.2 Caregivers' nutrition literacy

Nutrition literacy would be determined by looking at caregivers' knowledge on good feeding practices which are essential for healthy development of the under-fives. This form of literacy is important since good nutrition characterized by good feeding practices plays a key role in psychomotor development of the under-fives.

Good feeding practices help in healthy development of the under-fives which enables them to engage in various playing activities. There were no indicators that were related to nutritional literacy only. However, engagement in playing activities is related to both formal and nutritional literacy.

6.1.3 Nature of play/games and the visible effects of the same on children

According to the American Academy of Pediatrics (2014), different types of play have different benefits to the under-fives. Toy and object play is a common type of play amongst the under-fives. When the under-fives play with objects or toys, they use their sensory-motor skills to explore the features of these toys and carry out experiments like scientists. For instance, they bang an object on the floor in order to determine whether it is solid. Another type of play is the physical play. Physical activities help children develop motor skills and prevents obesity in childhood and also helps in building emotional intelligence. For instance, a gentle thrill of playground slides helps children develop confidence as they take risks in a secure environment. Additionally, games such as tag help in building other socio-emotional skills such as empathy since the under-fives learn to be cautious not to hurt others by tapping each other too hard.

Outdoor play is another common type of play amongst the under-fives. Outdoor activities give the under-fives a chance to make use of all their senses in building skills such as spatial awareness and balance. These activities also help in improving the under-fives' attention span. Additionally, young children in countries where learning institutions allocate more time for recess achieve more academically as these children advance in their education. Pretend play is another form of play which gives the under-fives a chance to experiment with different social roles and learn the art of cooperation. Dress up and imaginary play encourages creativity and building of negotiation skills, communication and language. For instance, a child will assume the role of a teacher while the other takes up the role of a student. These forms of play laid a foundation on which the sections hereunder on indicators of play were discussed.

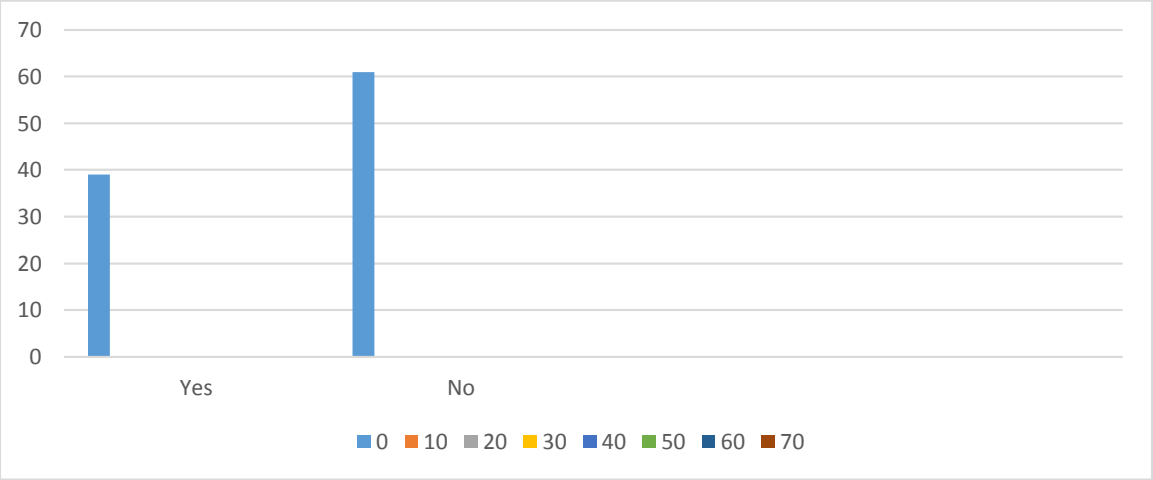
Different policies have been adopted by the Kenyan government in order to promote play amongst the under-fives. These include the Early Childhood Development Policy, 2006 which was adopted

with the aim of promoting psychosocial development through provision of enough time, play materials and secure environment for play. The government also adopted the National Pre-primary Education Policy, 2017 which advocates for provision of ample playing space and materials for pre-school children. The policy outlines that pre-schools including kindergartens need to be equipped with adequate and safe playgrounds to promote play activities for the under-fives. It also advocates for provision of age appropriate and suitable play equipment and materials to the under-fives. The indicators were discussed in relation to different forms of play and whether they were fully practiced according to the guidelines of the policies.

6.2 Literacy levels and availability of play materials

The research first sought to establish whether playing materials were available for children by asking the caregivers whether their children had playing materials at home. Responses from the questionnaires showed that out of the sampled households, 39% had playing materials while 61% did not have play materials. Figure 13 below shows availability of playing materials in the households.

Figure 13: Whether playing materials were available



Source: Author's field data (2021)

Figure 13 above shows that more than half of the caregivers had not provided the under-fives with play materials which implies that they were not aware of the importance of availing playing materials for their children. Failure to provide enough play materials means inadequate use of the same and hence poor development in psychomotor and social skills amongst the under-fives due to failure to engage in playing activities. Similarly, failure to provide play materials for the under-fives has an implication on the National Pre-primary Education Policy, 2017 which advocates for provision of suitable play equipment and materials for the under-fives.

According to (Anderson-Mc Namee, 2010) play amongst the under-fives is essential to their healthy development. Through engagement in play activities, the under-fives' nerve cells are stimulated and this in turn influences the pattern of connections between these cells. This stimulation enhances the development of important motor skills, speech, socialization, own awareness, emotional well-being, creativity, problem solving and learning capability. One of the significant roles of play is that it helps the under-fives to be active, make a choice and carry out actions to mastery. The under-fives mainly experience through various types of content including art, music or social relations and all these aspects are significant for the growth of a complex and integrated brain for this particular group. In addition, through linking sensory-motor, cognitive and social-emotional experiences play offers a perfect environment for under-fives' brain development. Some of the significant dimensions of play encompass voluntary, entertaining, purposeful and natural, creativeness by use of problem-solving skills and dealing with emotional challenges. Further, engagement in playing activities gives the under-fives a chance to be creative as they develop their own thoughts. This contributes to a healthy brain development for children aged five and below. Another study showed that play is the initial opportunity through which the under-fives discover their surrounding and the world they live in. Through engaging in playing

activities, the under-fives are able to master skills which assist them to build self-confidence and be able to deal with different setbacks. For instance, children may feel proud while stacking blocks but get disappointed when the last block makes the whole stack collapse. Through such experiences when playing, children get a chance to express their opinions, experience and frustrations which contributes to their emotional development. Failure to engage in playing activities is associated with issues such as depression, aggression and stress. Additionally, lack of play denies the under-fives a chance to develop physically, emotionally, socially as well as develop cognitive skills (Bell & Wolf, 2004). It is therefore important for caregivers to provide play materials to the under-fives to ensure they engage in meaningful activities which in turn promote physical and mental development for this particular group. The importance of play amongst the under-fives is further emphasized by the Ecology systems theory in its third phase which explains the importance of proximal processes. According to this theory proximal processes encompass relations between caregivers and under-fives through things such as playing activities and such activities are significant to the growth of the under-fives. To further establish availability of play materials, the researcher enquired on the type of playing materials that were accessible to the under-fives.

6.2.1 Type of playing materials that were available

From the 80 (39%) households that recorded availability of play materials, the caregivers were requested to indicate the type of play materials the under-fives had access to. Table 6.1 below shows the materials available.

Table 23: Type of materials that were available

Which of these materials are available

		Frequency	Percent	Valid Percent
Valid	Balls	22	13.2	27.3
	Swings	7	4.4	9.1
	Bean bags	9	6.4	13.1
	Tyers	17	9.8	20.2
	Dolls	20	11.8	24.2
	Toy cars	5	2.9	6.1
	Total	80	39	100.0
Missing	System	124	61	
Total		204	100.0	

The data above showed that most of the households had a ball, a tyer or a doll whereas every household lacked slides. The study also established that there were a variety of toys in the households. This implies that from the type of materials that were available, children below one year of age were not considered and as such were not provided with materials that are suitable to them such as teething toys and soft dolls. In addition, those materials provided for older children were also not sufficient. This implies that age-appropriate materials were not provided for the under-fives and this impeded their engagement in playing activities. The findings above are supported by qualitative data gathered using Focus group discussions which were conducted as a follow up to determine whether caregivers were aware and they provided age-appropriate toys to the under-five and the responses are shown in the excerpts below.

During a Focus group discussion, a participant who was a mother to an 8-month-old son explained:

> *My son is still young and as such, he does not need play materials. However, I will buy him a toy car when he is two years old since he does not need a toy car right now.*

Another participant who was a mother to a two-year-old son added:

> *For me, my son can always play with his mates and I do not see the need to buy him toys. Additionally, I think that if I buy him a toy, he will end up misplacing it so I prefer he plays with his friends instead.*

Yet another participant with a three-year-old daughter explained:

> *I recently bought my daughter a doll but I cannot afford to buy her any more play materials. To me, that is enough for her to use and I do not see the need to provide other materials since I also cannot afford them.*

From the findings above, it is clear that the caregivers did not provide play materials that matched the stages of development and emerging abilities of the under-fives. It was clear from the focus group discussions that caregivers did not provide appropriate materials for especially for children below the age of one who needed materials such as teething toys. Additionally, the caregivers did not provide sufficient play materials for older children. The focus group discussions showed that this was due to ignorance on importance of toys and lack of awareness on the appropriate toys for children of different ages. This can be associated with lack of formal literacy on the importance of age-appropriate play materials for the under-fives. This low literacy results to caregivers not providing age-appropriate materials which enhance engagement in playing activities amongst the under-fives. This therefore impedes the ability of the children to sufficiently engage in play. Similarly, these practices characterized by failure to provide age-appropriate and enough play materials undermine achievement of the policy objectives outlined in the Early Childhood Development Policy, 2006 which encompasses strategies for early childhood services and programs for children from conception to 8 years. One of the objectives of this policy is to promote psychosocial development through provision of adequate time, facilities for play and the right environment. The policy seeks to promote cognitive, psychosocial, emotional, language and psychomotor development amongst the under-fives through play. According to the Ecology

systems theory, proximal processes which include playing activities between caregivers and children aged 5 and below is a dominant interpreter of human growth.

Different toys are used during different stages of life by the under-fives. For instance, infants aged between 0 to 18 months engage in solitary play and spend most of their time playing alone through looking at faces and bright colors. Additionally, children in this age group are fascinated by moving their hands and feet as well as moving their head when they hear a sound. Therefore, this group of children should be provided with toys which they can hold and shake, suck on, teething toys, soft dolls or squeeze toys. This age group also likes listening to recordings of lullabies or songs (Guyton, 2011). Children aged between 18 months to 3 years engage in parallel play where they start engaging in play with other children. During this stage, the under-fives like to experiment and caregivers have to be present to keep them safe. Therefore, the appropriate play materials for children in this age group include things to pretend with such as toy phones, dolls, plastic animals and toy cars. They also require things to build including blocks and also like drawing using crayons. When children are above three years of age, they enjoy problem-solving playing activities such as wood puzzles. They also like engaging in pretense play and building using materials like construction sets and kitchen sets. At this stage of development, the under-fives also embrace turn-taking with their mates (Healey et al., 2019). All these play materials are essential for the development of the under-fives at different stages since children of different ages use different materials. It is therefore important that the under-fives are provided with the appropriate materials for them to fully engage in play. This is the sole responsibility of caregivers to provide these materials since they form a significant part of the microsystem as per the Ecological systems theory and the under-fives depend on them to access them. This can only be achieved through creating

awareness amongst the caregivers on the provision of enough and age-appropriate play materials for the under-fives to enable them to sufficiently engage in playing activities.

This therefore made it necessary for the study to go further to establish whether there existed an association between caregivers' literacy levels and presence of playing materials by use of Chi square tests.

Table 24: Association between level of education and availability of playing materials

Highest level of education * Does the child have play materials Crosstabulation

Count

		Does the child have play materials		
		Yes	No	Total
Highest level of education	Secondary not completed	71	4	75
	Primary school	7	73	80
	No formal education	2	47	49
Total		80	124	204

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	153.270[a]	2	.000
Likelihood Ratio	177.820	2	.000
Linear-by-Linear Association	119.610	1	.000
N of Valid Cases	204		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 19.22.

Table 24 above showed that out of the 80 caregivers that had reported availability of play materials, 71 of the caregivers had incomplete secondary education, 7 had primary education while 2 had no formal education. This implies that formal literacy is associated with high chances of provision of

play materials. As seen above, caregivers with formal literacy were more likely to provide play materials to the under-fives as opposed to those without formal literacy. Further, the Chi square tests results showed p-value to be .000 which is less than alpha, 0.05. This shows a significant relationship between caregivers' formal literacy and provision of play materials. These findings reveal that formal literacy is associated with provision of play materials for the under-fives. It can therefore be deduced that formal literacy equips caregivers with knowledge on the importance of play materials as well as the age-appropriate materials for these children for their mental and physical development.

Provision of relevant play materials which match stages of development of the under-fives enhances their mental and physical development through knowing how to deal with different challenges, develop bodily control, exercise social skills and also bring out the creativity in them which enables them to make a choice on toys and play materials that they are interested in. Additionally, the use of relevant play materials enables the under-fives to acquire different experiences while playing and learn more about themselves, the surrounding they live in and those close to them including their caregivers. Being able to choose the preferred play materials from a variety gives the under-fives a sense of safety, adventure competency and confidence to be more creative (Elias & Arnold, 2006).

In the Ecological Systems theory, Bronfenbrenner refers to the Process-Person-Context-Time (PPCT) model which emphasizes on proximal processes. These processes comprise give-and-take relations between the growing individual and additional important persons in their closest surrounding. In this phase, the theory propagated the idea that proximal processes consist of events between a caregiver and a child and may include things like engagement in playing activities. These proximal processes particularly playing activities were considered as being extremely

dominant interpreter of human growth. This theory stresses further on the importance of providing relevant play materials to the under-fives to ensure they sufficiently engage in play which enhances their mental and physical development. Additionally, the National Pre-primary Education policy, 2017 advocates for provision of play materials for pre-school children in order to promote play. However, the findings of this study showed that this policy has not been adhered to. The study showed that the low provision of age-appropriate materials was due to lack of awareness on the importance of these materials and suitable toys for different ages. This leads to insufficient engagement in playing activities which impedes the mental and physical development of the under-fives, undermining the achievement of the policy objectives.

6.2.2 Challenges facing provision of play materials

The caregivers highlighted various challenges in providing age-appropriate and sufficient play materials. Some of the challenges they outlined included lack of awareness on age-appropriate materials and the importance of these materials as well as the fear of the under-fives losing or misplacing the play materials. Focus group discussions with the caregivers showed that one of the main challenges to the provision of play materials is economic status characterized by inability to afford play materials. The aspect of caregivers choosing what to buy and what not to buy as a result of their economic status was evident during the focus group discussions.

During Focus group discussions, one of the participants who was a grandmother to a 3-year-old son explained:

> *It is quite difficult for me to provide play materials to my grandson. I can barely afford good diet for him and the mother whom I have to pay school fees for since she went back to school a year ago. I therefore do not think the play materials are a priority.*

Another participant who was a mother to a 2-year-old son added:

Since I gave birth to my son, things became more difficult and I could not even go back to school. I can only afford basic needs for my son and not things like play materials.

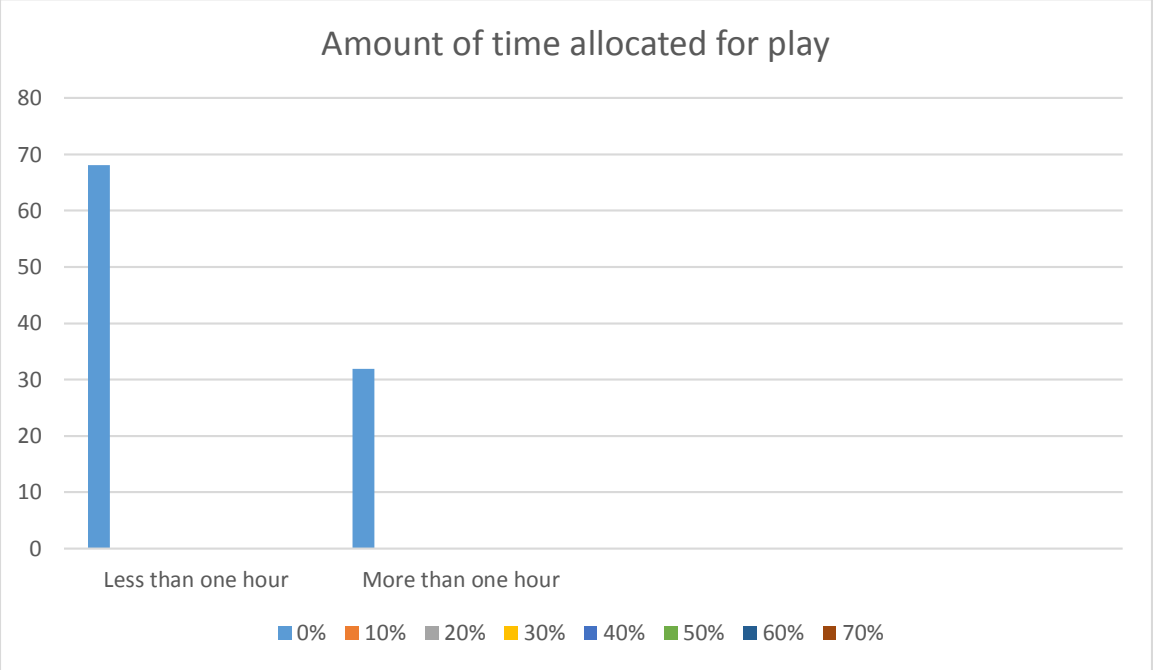
The background information of caregivers collected earlier and displayed on figure 4.1 showed that most of the households (92.2%) were of low socio-economic status. It was established that most of the caregivers were housewives and only a few (7.2%) had been employed. This implies that majority of the households did not have the purchasing power and could not afford play materials for the under-fives. Previous research also showed that in most African nations children face many challenges such as lack of adequate play and learning materials due to poverty levels in these countries. Most households lack the monetary capability to purchase play and learning materials and finances for adaptation of the environment which is a pre-requisite for play and learning to take place. It was also reported that play and learning materials are expensive and as a result, several learning institutions are not able to meet the purchasing costs due to limited budget. Additionally, most of the children come from poor backgrounds where caregivers struggle to meet their educational requirements and cannot afford to provide play and learning materials that are required in school. These economic challenges therefore end up impeding support that children require from caregivers through failure to provide this essential play and learning materials. Similarly, the economic constraints undermine government efforts to promote play through its policy on Early Childhood Development, 2006. The aim of this objective is to promote Psychosocial development through provision of play materials and a secure environment for play. These economic challenges also undermine the achievement of the National Pre-primary Education Policy, 2017 which outlines the need to provide play materials for pre-school children in order to promote play in these children.

6.3 Time allocation for play and Under-fives mental and physical development

From 2 years of age, children start to actively engage in parallel play, either alone or with other children. When they grow to the age of 3, they start engaging in associative play where the child starts to socialize with other children through activities such as sharing, problem solving and cooperation (Guyton, 2011). At this stage of development, it is important to allocate sufficient time for play and ensure that the under-fives engage in outdoor activities. According to the American Academy of Pediatrics (2014), children aged 5 and below should be allocated 90 to 120 minutes of gross motor activity every day and be taken outdoors twice on daily basis. Additionally, children should not be inactive for more than an hour at any particular time except when sleeping. To establish whether the time allocated for play was sufficient, the researcher enquired from the caregivers whether they allocated the recommended time and took children for outdoor activities.

Out of the sampled caregivers, 31.9% indicated that they allocated more than an hour to their children for play while 68.1% revealed they allocated less than 1 hour to their children for play and did not take out children for outdoor activities. Figure 6.2 below shows the results.

Figure 14: Whether time allocated for outdoor activities was sufficient



Source: Author's field data (2021)

Figure 6.2 above showed that majority of the caregivers (68.1%) did not allocate the recommended time for play as well as take the under-fives for outdoor activities. Failure to allocate enough time for outdoor activities implies that the under-fives are inactive and do not get a chance to explore natural environment. This means that the under-fives do not sufficiently engage in play activities due to time restrictions which jeopardizes their mental and physical development. In addition, time restriction for play denies the under-fives the opportunity to explore various activities aimed at broadening their thinking and their ability to adapt to the environment they live in.

During focus group discussions, the caregivers pointed out that they were not aware of the amount of time for play that should be allocated to the under-fives. The caregivers also revealed that they did not set aside time for outdoor activities. One of the participants during a focus group discussion who was a mother to a 3-year-old son explained:

I am not aware of the amount of time I am supposed to allocate for play or outdoor activities. As such, my son and I spent time helping my mother who is a fish vendor in a nearby market.

There exist policies such as the Early Childhood Development policy (2006) and the National Pre-primary education policy, 2017. These policies emphasize the need to need to promote psychosocial development through allocation of enough time for play amongst the under-fives. Despite the existence of these policies, the findings above show insufficient allocation of time for play amongst caregivers which means that these policies are not adhered to. Lack of awareness on the amount of time that should be allocated for play and the need to take children out for outdoor activities can be associated with lack of formal literacy amongst caregivers. This made it necessary to test for a relationship between formal literacy and time allocation for play using crosstabulations. The results are shown in the regression table below.

Table 25: Association between level of education and time allocation for play

Highest level of education * Is the time allocated for play adequate Crosstabulation
Count

		Is the time allocated for play adequate		
		Yes	No	Total
Highest level of education	Secondary not completed	54	12	66
	Primary school	9	80	89
	No formal education	3	46	49
Total		66	138	204

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	109.307[a]	2	.000
Likelihood Ratio	113.375	2	.000
Linear-by-Linear Association	82.873	1	.000
N of Valid Cases	204		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 15.85.

The findings of this study showed existence of a significant relationship between caregivers' literacy and time allocation for play as shown in table 6.3 above. This implies that formal literacy is associated with allocation of sufficient time for play amongst the under-fives. This can be explained by the fact that having formal literacy is associated with caregivers knowing the recommended time that they should allocate for outdoor activities. These findings are in tandem with qualitative data collected using focus group discussions with the caregivers which showed that the caregivers who did not allocate enough time cited lack of knowledge on the time that should be allocated to the under-fives and the need for outdoor activities. Therefore, lack of formal literacy amongst limits the allocation of enough time for play for this particular group which in turn impedes their mental and physical development.

Lack of enough time for play has an impact to the development of the under-fives since it denies them some of the most significant aspects of play including dramatic and constructive forms of play. These forms of play may be time consuming and may need allocation of 45 to 60 minutes on daily basis and this time should be allocated to enable the under-fives to develop scenarios of play, organize themselves and carry out their plans (Early Childhood Education Syllabus, 2008). Failure to allocate this time by the caregivers which is evident from the findings above jeopardizes mental

and physical development of the under-fives and has an implication to the Early Childhood Development policy and the National Pre-primary Education policy which both advocate for allocation of enough time for play amongst the under-fives in order to promote their psychosocial development. Previous research also shows that even for the under-fives in pre-school, they are not provided with enough time for play since the teachers only focus on academics and kindergarten readiness (Bell & Wolfe, 2004). There have been preschool guidelines aimed at promoting play amongst children below the age of five and these guidelines acknowledge play as a crucial activity for children in this age and they advocate for allocation for time for outdoor activities on the timetable. The guidelines that have been put in place also acknowledge that play is a natural way of teaching and should be utilized and put in practice for the benefit of the children. It was established that allocation of time to play by both caregivers and teachers in pre-schools enables the under-fives to adore living and learning from engagement in playing activities since the under-fives are able to develop their self-awareness as well as self-esteem (Mahindu, 2011). This can only be achieved if caregivers are aware of the importance of allocating enough time for play and the need to take the under-fives for outdoor activities as a way of enhancing their mental and physical development. The Ecological systems theory puts emphasis on proximal processes which encompass interactions between caregiver and children below the age of five through outdoor activities. The theory states that such interactions are significant for the growth and development of the under-fives. Allocation of enough time for play can only be achieved if caregivers are made aware of the amount of time that is enough and should be allocated to under-fives and the need for outdoor activities. However, it was established that caregivers lack awareness on the amount of time that should be allocated for play and outdoor activities. This

translates to failure of the under-fives having enough time to engage in playing activities which undermines psychomotor development of these children.

6.6 Literacy levels and Caregivers' engagement in play with under-fives

The researcher first sought to establish whether caregivers engaged in playing activities with the under-fives aged 2 and above as one way of enhancing their mental and physical development. The respondents were asked to indicate how often they engaged in play with the children. Out of the sampled caregivers, 4.9% indicated that they often engage in play, 27% cited sometimes, 22.1% said they rarely engaged in play, 21.1% cited very rarely while 25% said that they never engage in play with the under-fives. These results are shown in figure 15 below.

Figure 15: Whether Caregivers engaged in play with their children

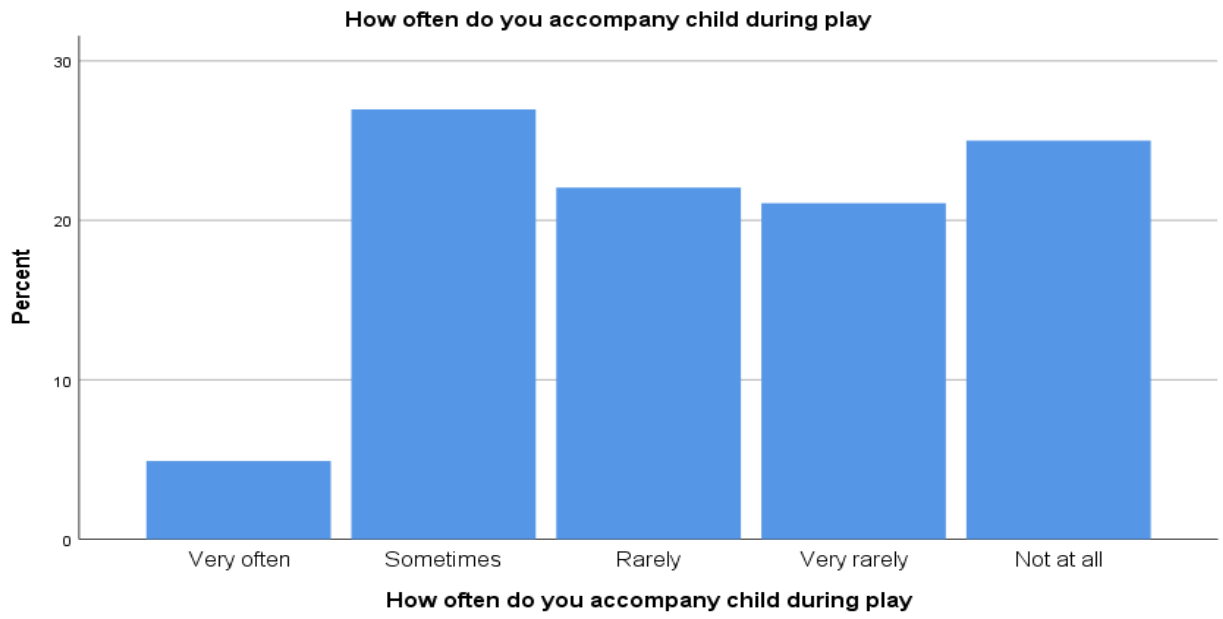


Figure 15 above showed that engagement in playing activities with under-fives was quite low with only 4.9 % of the caregivers often engaging in play with the under-fives. Majority of the caregivers (68.2%) did not engage in play with the under-fives and this implies that these children had minimal interaction with their caregivers during play. Failure of the caregivers to engage in playing activities can be associated to lack of awareness on the need to engage in play activities with children under their care. These findings are supported by Qualitative data collected in a bid to understand some of the reasons as to why caregivers did not engage in playing activities with under-fives and the responses are presented in the excerpts below.

During Focus Group Discussion, caregivers explained that they were not able to engage in playing activities with the under-fives more often as a result of other competing activities.

One of the participants who was a mother to a 3-year-old son explained:

> *Since I resumed learning, I do not get to spend enough time with my son. I rarely engage in playing activities with him since I get home late in the evening and I also have to help my mother with home chores after school.*

Another participant who was a grandmother to a 2-year-old girl argued:

> *As a grandmother, it is my sole responsibility to ensure that I provide for my grandchild and my daughter as well. As such, I spent a lot of my time in the shamba and I may not get the time to play with the child or else they will not get something to eat by the end of the day.*

Another participant, a mother to a 3-year-old daughter explained:

> *My mother helps take care of my daughter when I leave for school. However, she is too old and cannot play with the child. I sometimes engage in play with her but maybe once in a week since when I get home from school, I usually help my mother with the house chores and as such I do not get time to play with the child often.*

The findings above clearly showed that caregivers did not sufficiently engage in playing activities with the under-fives. Data gathered using Focus group discussions showed that some of the reasons given by caregivers for not engaging in playing activities with the under-fives were associated with having other competing priorities such as mothers going to school or caregivers having to engage in other economic activities. Failure to engage in playing activities with the under-fives undermines the achievement of policy objectives outlined in the Early Childhood Development policy, 2006 which advocates for engagement in play amongst the under-fives as a way of promoting their psychosocial development. The National Pre-primary Education policy, 2017 also emphasizes on the need to engage in play by children aged five and below and puts more emphasis on provision of age-appropriate materials and safe playgrounds. The findings above revealed lack of adherence to these policies due to lack of awareness on the importance of engaging in playing activities with the under-fives as a way of enhancing their psychomotor development.

A study by to Guyton (2011), the under-fives start to actively engage in playing activities at the age of 2. This is the time they start engaging in role playing and socializing with people around them. Therefore, caregivers' engagement in playing activities with under-fives during this stage helps them learn new skills which is important for their cognitive development. This opinion was further propagated by Healey et al., 2019, who argued that interaction with the under-fives through play stimulates and improves cognitive development of the children. Therefore, engagement in playing activities with the help of a caregiver improves the under-five's ability to think, communicate and connect with other individuals. The interaction also helps children gain important skills such as problem solving which again is good for a healthy brain development. This can only be achieved if caregivers are aware of the need to engage in playing activities with the under-fives and the benefits the children are likely to gain through this interaction. However,

the findings of this study showed that engagement in playing activities with the under-fives was low and caregivers associated their failure to engage in play with having other competing priorities which speaks to lack of awareness on the importance of playing with the under-fives. This lack of awareness can be associated to low formal literacy which makes it necessary to establish whether there exists any relationship between caregivers' formal literacy and engagement in playing activities.

Table 26: Chi-Square tests on the relationship between caregivers' formal literacy and how often they accompany children during play

Highest level of education * How often do you accompany child during play Crosstabulation

Count

		How often do you accompany child during play					Total
		Very often	Sometimes	Rarely	Very rarely	Not at all	
Highest level of education	Secondary not completed	6	29	15	6	5	61
	Primary school	4	14	25	33	19	95
	No formal education	0	12	5	4	27	48
Total		10	55	45	43	51	204

Chi-Square Tests

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	66.653[a]	8	.000
Likelihood Ratio	66.452	8	.000
Linear-by-Linear Association	32.747	1	.000
N of Valid Cases	204		

a. 3 cells (20.0%) have expected count less than 5. The minimum expected count is 2.35.

Null hypothesis (Ho): There is no association between the caregivers' literacy levels and engagement in play with the under-fives. The findings on table 26 above display a test on caregivers' formal literacy versus how often caregivers accompanied children during play using different parameters which showed p value to be 0.000, less than alpha, 0.05. That implies rejection of the null hypothesis and acceptance of an existence of a significant association between the caregivers' literacy levels and engagement in play with the under-fives. The crosstabulation table above showed that caregivers with either secondary or primary education often engage in playing activities with the under-fives compared to those who do not have any formal education. These findings imply that formal literacy is associated with frequent engagement in playing activities with the under-fives. This can be explained by the fact that caregivers with formal literacy know the importance of interacting with their children through play which is beneficial to the mental and physical development of the under-fives.

According to Anderson & Mc Namee (2010), one of the roles played by the caregiver is to ensure safety of play materials and that they do not harm the under-fives when they are playing. This study also showed that a caregiver is responsible for guiding and instructing the under-fives on how they should play. The involvement of a caregiver enables the under-fives to emulate their caregiver's words and actions and hence assisting the children to develop socially and emotionally. Another study by Njoki (2007) showed that the engagement of a caregiver in the playing activities of the under-fives is important to ensure that the under-fives have access to adequate play materials and also make sure that they have adequate space as well as enough time to engage in playing activities. In addition, the involvement of a caregiver may also assist in solving problems, enquiring, redirecting bad conduct and luring the under-fives into various playing themes. Further, the caregivers' engagement into playing activities helps in expanding on the ideas of the under-

fives. When caregivers help the under-fives to plan roles, encourage them to open up to peers, pose questions and become involved in their play, the caregivers enhance learning hence mental development of these children. The caregiver is also capable of helping children think by posing questions like "Why does the baby need a doctor?". This allows the child to both express themselves as well as think and formulate a response (Anderson & Mc Namee, 2010). Although these findings are relevant in showing the importance of caregivers' interaction with the under-fives through play, the findings of the present research proves that engagement in playing activities with the under-fives was low with caregivers citing other competing priorities hence undermining attainment of the Early Childhood Development policy goals. This is only achievable when caregivers are aware of the need to engage in playing activities with the under-fives which is important in enhancing their mental and physical development.

The role of a caregiver in the engagement of playing activities is further emphasized by the Ecological systems theory which explains that proximal processes encompassing interactions between caregivers and under-fives through things such as play are very important. The theory argues that such interactions are a major contributor to the development of the under-fives since play for instance can enhance mental and physical development of children aged five and below. In the context of the present study, the theory importantly frames the aspect of caregiver-child interaction through play and shows that such engagement is a dominant interpreter of growth amongst children.

Additionally, nutrition literacy was also considered under this particular indicator since good nutrition characterized by good feeding practices is a major contributor to psychomotor development of the under-fives. Good feeding practices are associated with healthy development of the under-fives enabling them to engage in playing activities. The researcher therefore also

tested the relationship between nutrition literacy and engagement in playing activities. The table that follows hereunder shows the association between nutrition literacy amongst caregivers and their engagement in play with the under-fives.

Table 27: Chi-square tests on the relationship between caregivers' nutrition literacy and how often they accompany children in playing.

Ever received education on good child feeding practises * How often do you accompany child during play Crosstabulation

Count

		How often do you accompany child during play						Total
		Very often	Often	Sometimes	Rarely	Very rarely	Not at all	
Ever received education on good child feeding practises	Yes	9	15	26	1	4	7	62
	No	1	0	25	41	34	41	142
Total		10	15	51	42	38	48	204

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	89.705[a]	5	.000
Likelihood Ratio	98.486	5	.000
Linear-by-Linear Association	56.903	1	.000
N of Valid Cases	204		

a. 2 cells (16.7%) have expected count less than 5. The minimum expected count is 3.04.

Results displayed in table 27 above showed existence of a significant relationship between caregivers' nutrition literacy and engagement in playing activities. From cross tabulations carried

out, caregivers who had received education on good feeding practices were associated with frequent engagement in playing activities. This implies that having knowledge on good feeding practices helps in feeding the under-fives suitable diets which help them become active and engage in playing activities. With this knowledge, the caregivers know the importance of engaging in play with their children which contributes to the overall development of the child. Additionally, good feeding practices are associated with improved nutritional status which leads to a healthy and strong body, enabling the child to carry out activities that are capable of promoting gross and fine motor skills development amongst the under-fives. On the contrary, poor feeding practices amongst the under-fives results to illnesses and eventually having a weak body hence being unable to engage in playing activities which jeopardizes their overall development (Zulkarnean, 2019). In addition, failure to engage in playing activities amongst the under-fives has implications on the policies adopted by the government to promote play including the Early Childhood Development policy (2006) and the National Pre-primary Education policy (2017). These two policies emphasize the need to engage in play by children and outlines guidelines on the roles that caregivers and pre-school teachers should play and failure of the caregivers to sufficiently engage in play with the under-fives as depicted in the results undermines these policies.

Nutritional status of the under-fives characterized by good feeding practices is significantly associated with psychomotor development in children. Therefore, as a way of ensuring good feeding practices, caregivers should provide to the under-fives food that contains enough nutrients and one that is safe for their consumption. This is because good feeding practices for the under-fives is associated with better physical and motor skills development and have a higher life expectancy. Good feeding practices are associated with provision of important nutrients including iodine, iron, and folate which are all significant in the development of the brain and the

development cognitive functions. These nutrients are important for ideal brain development and functionality. Even though, all these nutrients are significant in the lives of the under-fives, some of them are extremely significant on the cognitive development of these children. The provision of these nutrients is important for the overall growth of the under-fives (Zulkarnean, 2019). According to the Ecological systems theory, is the role of the caregivers to ensure that the under-fives sufficiently engage in playing activities. It is therefore expected they will uphold good feeding practices which contribute to psychomotor development of the under-fives. This can only be achieved through creating awareness on the significance of good feeding practices and how this relates to play amongst under-fives, an aspect which promotes their mental and physical development.

Conclusion

The aim of this chapter was to explain how caregivers' formal and nutrition literacy influences engagement in playing activities. The researcher first discussed the nature of play/games and the visible effects of the same on children. The indicators that were discussed thereafter include; provision of play materials, time allocation for play and how often caregivers engaged in play with the under-fives. All these indicators were associated with both formal and nutrition literacy.

It was established that the major barrier to provision of play materials was affordability where most of the household were of low socio-economic status and could not afford to purchase these materials. Other barriers were lack of awareness on the age-appropriate materials and the need for play materials. Time allocation for play was insufficient due to lack of knowledge on the amount of time that should be allocated to the under-fives. On engagement in play, it was established that caregivers did not engage in playing activities with the under-fives due to other competing activities. Chi square tests done revealed that there exists a significant relationship between caregivers' formal and nutrition literacy and engagement in playing activities amongst the under-

fives. This study therefore concluded that having both formal and nutrition literacy equips caregivers with knowledge on age-appropriate play materials and the need to engage in play with the under-fives as well as the suitable diet for the under-fives which plays a key role in their psychomotor development. Lack of knowledge on the importance of play amongst the caregivers which is evident from the findings above denies the under-fives a chance to engage in playing activities which undermines their mental and physical development. Due to lack of awareness, the implementation of the adopted policies has not been a success. Both the National Pre-primary Education Policy, 2017 and the Early Childhood Development Policy (2006) have not been adhered to due to lack of awareness by caregivers on the importance of play amongst the under-fives.

CHAPTER SEVEN

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

7.1 Introduction

The current chapter provides a summary of the findings of the study on the three objectives which were; how caregivers' formal and nutrition literacy levels influence feeding practices, how caregivers formal and nutrition literacy levels influence access to health services and how caregivers' formal and nutrition literacy levels influence engagement in playing activities with the under-fives as a way of enhancing their mental and physical development in Ndhiwa sub-County. This part of the study also provides a conclusion on the entire study and gives recommendations which can help the government revise the policies in place or come up with new ones. The section also gives suggestions for further research on areas that need more research and contribute to the existing body of knowledge.

7.2 Summary of the findings

The study sought to analyze the extent to which caregivers' formal and nutrition literacy levels influence the health care of children born to adolescent girls in Ndhiwa sub-County. The summary is given in line with the three specific objectives of the study as follows:

7.2.1 Influence of caregiver's literacy levels on feeding practices of children aged five and below

Regarding this first objective, the study sought to examine how caregivers' formal and nutrition literacy levels influence feeding practices among children born to adolescent girls. This was achieved through looking into indicators such as; knowledge on exclusive breastfeeding,

complementary feeding knowledge and nutritional knowledge. The study established that there was low practice on timely introduction to breastfeeding at 40.7% due to caregivers giving birth through the help of traditional birth attendants who misadvised the caregivers on timely initiation of breastfeeding. The study also revealed that there was low exclusive breastfeeding rate at 34.8% due to community misconceptions. In addition, it was established that there was low continued breastfeeding rate at 1 year and 2 years at 73.7% and 37.3% correspondingly. This goes against the stipulations of various child feeding policies including WHO policy recommendations which for instance document that a child has to be introduced to breastmilk within one hour of delivery and be exclusively breastfed for six months as well as an extension along with complementary foods for two years or longer. These findings are also not in line with the recommendations of the National Maternal, Infant and Young Child Nutrition Policy, 2013 which emphasizes on timely introduction to breastfeeding, exclusively breastfeeding for six months and continued breastfeeding to two years of age. According to this policy, exclusive breastfeeding is highlighted as a key strategy under high impact nutrition interventions.

Qualitative data gathered through focus group discussions showed that misconceptions and delivery through the help of traditional birth attendants were major barriers to timely initiation of breastfeeding as well as Exclusive breastfeeding. The study further established that the under-fives did not have access to appropriate complementary diet. It emerged that the main challenge facing complementary feeding was some of the foods being forbidden in the community due to misconceptions.

The study further established that there was low nutrition literacy amongst caregivers who were not aware of the three food groups and the suitable diet for a sick child. Due to lack of knowledge

on the required diet for the under-fives, the caregivers did not adhere to minimum dietary diversity and minimum acceptable diet which compromises their nutritional status.

For Caregivers' formal and nutrition literacy versus feeding practices by use of Chi-square test of independence, it was established that $p=0.000$ which was less than $\alpha=0.05$ at 95% confidence interval. This implies existence of a significant relationship between caregivers' formal and nutrition literacy levels and feeding practices of the under-fives. That implies rejection of the null hypothesis and acceptance of an existence of a significant association between the caregivers' formal and nutrition literacy levels and feeding practices. Therefore, the study concluded that formal and nutrition literacy equips caregivers with knowledge on exclusive breastfeeding, appropriate complementary feeding practices as well as knowledge on the three food groups. According to the Ecological systems theory, the under-fives entirely depend on their caregivers for good feeding since they form a significant part of the microsystem. Lack of awareness characterized by misconceptions amongst caregivers on good child feeding practices therefore puts children on the risk of malnutrition which is a cause of most deaths in children. Further, poor feeding practices also undermine the achievement of policy objectives outlined in the National Nutrition Action Plan 2012-2017 and the National Maternal, Infant and Young Child Nutrition Policy, 2013 which outlines guidelines on good feeding practices amongst the under-fives.

7.2.2 Influence of caregivers' formal and nutrition literacy on access to health services

Based on this objective, the study focused on adherence to immunization, recognition of illness signs amongst the under-fives and the ability to seek for health care opinion when children are sick.

On adherence to immunization, the study established that immunization was quite high with 74% of children fully immunized and 26% not fully immunized. This immunization coverage is associated with door-to-door campaigns by CHVs which are encouraged by policies such as the National Health Sector Strategic Plan, 2005-2012 (NHSSP II) and the Kenya Health Sector Strategic Plan 2013-2017 (KHSSP III) which were adopted to increase the uptake of immunization. Failure to adhere to immunization was associated with delivering through the help of traditional birth attendants. Failure to deliver at health centers was in turn associated with delayed access to vaccines given during early stages of life. This has an implication on the policies put in place to enhance immunization coverage and in order to meet their objectives, the policies should embark on creating awareness amongst traditional birth attendants on vaccination and use them as agents of change. Qualitative data gathered also showed that misinformation amongst caregivers was a major reason for their failure to adhere to immunization.

On recognition of illness signs as well as prevention of illnesses amongst the under-fives, the study established that lack of awareness and failure to recognize danger signs amongst under-fives led to delay in seeking health care assistance. It was also established that majority (72.1%) of the caregivers delayed seeking health care since they deemed signs to be mild and this put the under-fives at the risk of advanced illnesses capable of causing death. In regards to the ability to seek health care opinion, the study established that only a few caregivers (15.2%) consulted health care professionals while the rest used home remedies or consulted traditional healers, pharmacies or ordinary shops. During focus group discussions, it emerged that some of the factors associated with failure to seek health care opinion include; low socio-economic status, cultural beliefs and proximity to health centers. Majority of the households pointed out that the distance to the nearest health center was approximately 5 kilometers away. These practices are not in line with the Kenya

Health Policy 2014-2030 which seeks to reverse the rising burden of non-communicable illnesses like marasmus through implementation of strategies to ensure that services related to non-communicable conditions meet set standards and are accessible to everyone. This also policy seeks to achieve its objectives through ensuring quality care in providing preventive and promotive services to address major causes of the burden of communicable illnesses. The findings of this study showed that even though the policy spells out the need to seek health services during illnesses, the caregivers ignore illness signs instead of seeking health care when the under-fives are sick.

The chi-square tests done on caregivers' formal and nutrition literacy showed p-value to be 0.000, less than alpha, 0.05 which signifies existence of a significant relationship between caregivers' literacy and all the three indicators including adherence to immunization, recognition of illness signs as well as prevention of illnesses and the ability to seek health care opinion during illnesses. The study therefore concluded that formal literacy equips caregivers with wide range of knowledge and makes them more receptive and have a positive attitude towards modern medicine which enables them to adhere to the vaccination schedule and practice good health seeking behavior. It was also concluded that having nutrition literacy enables the caregivers to embrace good feeding practices which do not expose the under-fives to illnesses hence promoting their healthcare. The responsibility of a caregiver in ensuring good health for the under-fives is further propagated by the Ecological systems theory which argues that the caregivers are solely responsible for their health care since they are the closest individuals in the environment, they live in.

7.2.3 Influence of caregivers' formal and nutrition literacy on engagement in playing activities

On this objective, the study focused on indicators such as provision of play materials, time allocated for play and how often caregivers engaged in playing activities with the under-fives.

On the indicator on provision of play materials, the study established that out of the sampled households 39% had playing materials while 61% did not have playing materials. This implied that more than half of the caregivers did not provide the under-fives with play materials. It was established that failure to provide play materials was associated with lack of awareness on age-appropriate materials that should be provided to the under-fives at different stages of development and the importance of providing those materials. During focus group discussions, it also emerged that another barrier to the provision of play materials was that of economic status characterized by inability to afford play materials. Failure to provide play materials signifies failure to adhere to the guidelines of the Early Childhood Development Policy (2006) which advocates for promotion of psychosocial development amongst the under-fives through provision of play materials and adequate time for play.

In regards to the indicator on time allocated for play, the study established that only 31.9% of the caregivers allocated more than one hour to their children for play while 68.1% allocated less that one hour. It was established that failure to allocate enough time was due to lack of knowledge on the amount of time that should be allocated for play. The caregivers also revealed that they are not aware of the need to allocate time for outdoor activities. This is not in line with the recommendations by the American Academy of Pediatrics (2014) which outlines that children aged five and below should be allocated 90 to 120 minutes of gross motor activity on daily basis and taken for outdoor activities twice every day. These findings are also not aligned with the

National Pre-primary Education Policy, 2017 which emphasizes on provision of play materials to the under-fives as a way of promoting play amongst this group.

On caregivers' engagement in playing activities with the under-fives, the study showed that out of the sampled caregivers, 4.9% indicated that they often engage in play, 27% cited sometimes, 22.1% said they rarely engaged in play, 21.1% cited very rarely while 25% said that they never engage in play with the under-fives. It was established that failure to engage in playing activities with the under-fives was as a result of other competing priorities such as attending school or engaging in other economic activities. Failure to engage in playing activities with the under-fives undermines the achievement of the policy objectives outlined in the Early Childhood Development Policy, 2006 which was set out to promote psychosocial development through provision of adequate time, facilities for play and the right environment.

Additionally, the study revealed that there was lack of knowledge amongst the caregivers on the importance of good nutritional status characterized by good feeding practices and how it contributes to psychomotor development of the under-fives. By use of Chi square tests, the study established an existence of a strong positive correlation $r(1, 204) = 0.00$, $p<0.05$, between caregivers' formal and nutrition literacy levels and the indicators of play. It was therefore concluded that formal literacy equips caregivers with knowledge on the age-appropriate materials for under-fives at different ages and helps them understand the need to allocate enough time for play and engage in playing activities with the under-fives. The study also established that nutrition literacy helps caregivers adhere to good feeding practices which is essential for psychomotor development of the under-fives. With the appropriate diet, the under-fives have the energy to actively engage in play and the interaction with the caregiver is significant. With both formal and nutrition literacy, caregivers promote play amongst the under-fives which enhances their mental

and physical development. The role of caregivers in engagement in play was emphasized by the Ecological systems theory which advocates for proximal processes which encompass interaction between caregiver and a child through play citing that these interactions are essential for the development of the under-fives.

7.3 Conclusions

Form the findings above, the study makes the following conclusions.

The first objective sought to examine how caregivers' formal and nutrition literacy levels influence feeding practices among children. Focus was given to indicators such as breastfeeding practices, complementary feeding and nutrition knowledge. The WHO and the National Maternal, Infant and Young Child Nutrition Policy, 2013 advocates for exclusive breastfeeding for six months and appropriate complementary feeding which encompasses minimum dietary diversity and minimum acceptable diet amongst the under-fives. However, the findings of this study show that the policy recommendations have not been utilized and this is majorly due to misinformation by traditional birth attendants and fellow caregivers as well as misconceptions on certain diets in the community. The therefore study concludes that formal and nutrition literacy helps caregivers understand the importance of practicing exclusive breastfeeding, timely introduction to breastfeeding and continued breastfeeding since they are able to avoid misinformation by fellow caregivers and traditional birth attendants.

The study also concludes that formal and nutrition literacy play a big role in enhancing the nutritional status of under-fives through better feeding practices. Literate caregivers are aware of the type of foods to feed their children and ensure balanced diet and are capable of disregarding misconceptions towards some type of foods. Therefore, having both formal and nutrition literacy

equips caregivers with better knowledge on dietary diversity and minimum acceptable diet for the under-fives which is essential for their healthy development.

The second objective was to assess how caregivers' formal and nutrition literacy levels influence access to health services. The researcher looked into indicators such as immunization, ability to recognize illness signs and health seeking behavior. The Kenya Health Policy 2014-2030 and the National Health Sector Strategic Plan 2005-2012 (NHSSP II), were both adopted with the aim of increasing immunization uptake as well as reducing the burden communicable and non-communicable diseases amongst the under-fives. These policies also spell out the need to seek health care during illnesses. However, the study findings showed that there is still a lag in adherence to immunization and seeking health care during illness as a result of delivering through the help of traditional birth attendants and lack of awareness on illness signs and the need to seek health care promptly when children are sick. The study concludes that formal and nutrition literacy equips caregivers with health awareness which helps them improve health care they give to under-fives through increased uptake of immunization, knowledge of danger signs of illness and good health seeking behavior when children are ill. Additionally, formal literacy helps them embrace modern medicine and disregard misconceptions that could bar them from seeking health care assistance from a professional. Having nutrition literacy further enables the caregivers to uphold good feeding practices which do not expose children to nutrition related illnesses.

The third objective was to explain how caregivers' formal and nutrition literacy levels influence engagement in playing activities with children born to adolescent girls as a way of enhancing their mental and physical development. The Early Childhood Development Policy, 2006 and the National Pre-primary Education Policy, 2017 advocate for play amongst the under-fives as a way of promoting their psychomotor development. These policies clearly outline the need to provide

play materials, sufficient time and secure environment for play. They further emphasize provision of age appropriate and suitable play equipment for the under-fives. However, the findings of this study show that these policy recommendations have not been utilized since caregivers were not aware of the age-appropriate materials that they should provide to the under-fives and enough time that should be allocated for play. The study concludes that formal and nutrition literacy amongst caregivers enables them to promote play amongst the under-fives through provision of age-appropriate play materials, allocation of enough time for play and engaging in playing activities with the under-fives since they understand the importance of play to this particular group of children. The study also concludes that having nutrition literacy by the caregivers promotes good feeding practices hence good diet for the under-fives which enhances their psychomotor development.

7.4 Recommendations

Based on the study findings and the conclusions drawn, the study makes the following recommendations aimed at helping in formulation of better policies.

The first objective on the influence of caregivers formal and nutrition literacy on feeding practices of the under-fives. It was established that timely introduction to breastfeeding and exclusive breastfeeding is low as a result of misconceptions and misinformation by fellow caregivers. The study also established that poor complementary feeding practices were as a result misconceptions and lack of knowledge on the three food groups. Failure to provide good diet for the under-fives undermines the achievement of policy objectives outlined in the National Maternal, Infant and Young Child Nutrition, 2013. The study recommends that the County health department initiates and scales up Infant and Young Child Nutrition (IYCN) education and creation of awareness both at MCH clinics and within the community. Another recommendation is entrenching nutrition

education in the school curriculum. By so doing, once caregivers acquire formal literacy, they will also have nutrition literacy. Additionally, the mass media needs to create awareness on nutrition matters since malnutrition is associated with almost half of all the under-five mortalities.

The study also recommends training and capacity building of every traditional birth attendant in Ndhiwa sub-County on breastfeeding practices such as timely introduction to breastfeeding and exclusive breastfeeding and use them in bringing change in terms of perceptions. It is also recommended that health department transmits targeting communications aimed at averting negative perceptions within the community on timely introduction of breastfeeding and colostrum feeding to infants while targeting traditional birth attendants and communal leaders.

Scaling up of Exclusive Breastfeeding campaigns is also recommended in Ndhiwa sub-County to enhance the practice. The campaign ought to be focused on sufficiency of breast milk for children aged 6 months and below as well as advising caregivers to do away with perception hindering exclusive breastfeeding as outlined in the current study. Most importantly, as a result of high cases of adolescent pregnancy in the sub-County, it is crucial to initiate and educate adolescent mothers how to express breast milk for their children to enable them breastfeed even when mothers are away.

The second objective on the influence of caregivers' formal and nutrition literacy on access to health services. It was established that failure to adhere to immunization was as a result of giving birth through the help of traditional birth attendants which leads to children missing out on vaccines given after birth. The study also found out that there was poor health seeking behavior with caregivers consulting traditional healers, pharmacies and shops. These practices are against the guidelines of the Kenya Health Policy 2014-2030 which advocates adherence to full immunization and provision of health care services in order to curb communicable and non-

communicable diseases. The following recommendations are proposed. From the current study, it was established that education positively impacts on complete vaccination of the under-fives.

The first recommendation is that the government ought to enhance the provision of education for girls. By educating girls, they will be fully aware of good child care practices during motherhood and have the ability to make the right decisions for their children. This is because educating girls will help shift negative attitudes toward modern medicine through creating awareness and being able to accept modern medical practices and interpret illnesses using scientific data and not fatalistic misconceptions. Further, educating girls will increase their personal responsibility towards the under-fives, drawing more attention to the child's illness. Since they are educated, they will be able to take action and result into visiting a medical practitioner when the child is sick instead of waiting for the decisions by traditional authority figures or visiting other entities that are not professionals.

The study also recommends the intensification of the vaccination campaigns in Ndhiwa sub-County to ensure that uptake of immunization is 100%.

It is also recommended that the government ensures the retention of the girls in school in order to accomplish high levels of education and ensure better health care of their children.

The third objective on the influence of caregivers' formal and nutrition literacy on engagement in play with the under-fives as a way of enhancing their mental and physical development. The study established that caregivers did not provide play materials for the under-fives and did not allocate enough time for play due to lack of knowledge on the age-appropriate materials that should be provided and the amount of time that the under-fives need for play. This is not in line with the Early Childhood Development Policy, 2006 which emphasizes the provision of play materials, sufficient time and secure environment for play for the under-fives. The study recommends that

caregivers should provide under-fives with age-appropriate of play materials since this enhances their mental and physical development.

Another recommendation was for caregivers to allocate more time for outdoor activities so as to expose the children to more play and enhance their overall development.

The study also recommends that caregivers should often engage in playing activities with the under-fives as a way of motivating them to play more and protect them from dangerous play. Finally, it is recommended that caregivers increase the play varieties as a way of motivating the under-fives to engage in play which is very essential for their mental and physical development.

7.5 Suggestion for further research

The following issues arose during the study and were not part of the scope of coverage. These issues are therefore recommended as part of what needs further interrogation.

Detailed studies on how culture and tradition affect implementation of health policies especially those on child feeding.

There is need for further studies on how women's autonomy influences health seeking behavior. It was established that education is associated with child health through its influence on the ability of caregivers to make decisions in their households. When caregivers are not literate, they will often wait until other family members recognize that the child is ill, particularly the individuals who have authority in the family. Therefore, having formal literacy will enable the caregivers to make the initial decisions that are related to the health of the under-fives.

A study ought to be carried out on how family economic status affects the implementation of Early Childhood Development policies.

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APPENDICES

APPENDIX I: CONSENT NOTE

Study title: The influence of caregivers' formal and nutrition literacy levels on healthcare of children born to adolescent girls in Ndhiwa, Homabay County

Principal Investigator: Teresia Yula Musembi

Co-Investigators: Prof. Susan Kilonzo &

Dr. Michael Owiso

You are invited to participate in a research study. This form has information that will assist you decide whether you are willing take part in the study.

Hi! I am Teresia Yula Musembi, a Masters in Research and Public Policy student at Maseno University. I am currently conducting a study on the influence of caregivers' formal and nutrition literacy levels on healthcare of children born to adolescent girls in Ndhiwa sub-County.

The objectives of the study are to examine how caregivers' formal and nutrition literacy levels influence feeding practises among children born to adolescent mothers, to assess how caregivers' formal and nutrition literacy levels influence access to health services among children born to adolescent mothers and to explain how caregivers formal and nutrition literacy levels influence engagement into playing activities with children born to adolescent mothers as a way of enhancing their development.

Confidentiality and privacy will be upheld throughout the study by keeping participant information secure. Further, no identifying information will be gathered and we will only disclose your information for any reason to which you have consented. Every necessary approval will be

obtained prior to the study research to ensure that the researcher cannot be compelled to disclose any data that may identify you. The information you provide may be shared with MUERC for purposes of monitoring the progress of the research.

Your participation in this research study is voluntary. You do not have to agree to participate and you are free to withdraw at any time. If you decide to withdraw, you can contact one of the people listed below under contact information. The research will retain the information gathered unless you need it removed from our records. However, if the information has already been used in research analysis, it may not be possible to remove the data. Please take time to go through the entire form and ask questions before you decide whether to agree to take part in this research study.

There are no risks that you will encounter during your participation in this study. The researcher will ensure that the information you provide is kept secure throughout the study while upholding confidentiality and privacy. We will not collect any identifying information and we will only disclose what you consent. You may not get any personal benefits from participating in the study. Conversely, the information gathered will help the government come up with better policies in an effort to improve healthcare of children aged five and below.

Results from this study will be disseminated to the University, Government agencies and MUERC which may need the information to make sure that the study is done in a safe and proper manner. The results of the study could be published but will not contain any identifying information.

For any questions or concerns about the study, to enquire about the study procedures, report any problem, leave the study before it is finished, express your opinion about the study or report project-related injury, please contact the Principal Investigator through: Name: Teresia Yula Musembi, Email: traceycecil@gmail.com, Phone: 0723606256.

For any questions related to your rights as a research participant, please contact: The Secretary, Maseno University Ethics Review Committee, Private Bag, Maseno; Telephone numbers: 057-51622, 0722203411, 0721543976, 0733230878;

Email address: muerc-secretariate@maseno.ac.ke; muerc-secretariate@gmail.com.

The data generated will help me write a thesis which is a partial requirement for the course. Feel free to answer the questions in the best manner you understand them and be assured that your views will be treated with utmost confidentiality. This research will help the government in policy making and formulation and contribute to existing academic knowledge. In policy formulation, the study will assist in formulating effective strategies for improvement of child health. Participation in this research is voluntary and you are free to decline to answer a question you are not comfortable with. There will be no monetary appreciation for participation. I will be grateful for any assistance in this regard.

Signature……

APPENDIX II: DHOLUO CONSENT NOTE

Nyingnonro: Kaka lonygiweche mag ngima mag nyithindokonyo e ngima mag nyithindogo ma onyuolginyiri ma gin mine matindo e iNdhiwa, Homabay Kaunti

Ja timnonromaduong' : Teresia Yula Musembi

Jo kony ja timnonromaduong' :Profesa Susan Kilonzo to gi Daktari Michael Owiso

Orwaki e bedojadwokoeinonroni. Obokeninikodweche ma biro konyineno ka pore niinyalobedojaduoko e nonroni.

Osawore! Nyinga en Teresia Yula Musembi, ja somoeimbalarianyesomo mar nonro to giweche mag chenro mag donguok mar serikalnioganda.

Dwachnonroni gin ng'iyomatut kaka lony e wechegi yore mag chiemooyangorenijogo ma ritonyithindo ma onyuolginyirimatindomondoonon kaka rieko mar chiemogirit mag nyithindokonyojogi kendo nono kaka tugomedodongruokgitiegruok mag nyitihindogi.

Wechegiibiroritgiapandamakende kendo ongekumaibirofuambgi e nono. Kendo, ongeweche e inonroni ma dhiyofuloni in ng'anoginyingi. Wabiro mana wachoweche go ma in iwuon ema iyiemondowawachi. Wabiro yudoyieduto mag serikal ka pokwachakononronimamiyojanonro ok nyalmiyong'atowachmoro amora mari kendo manyalofuli. Wach ma iwachoinyalo mana riwkod MUERC niwach mar ng'iyo kaka nonrodhiyonyime.

Bedo jadwoko e nonronien mana giyie kata hero mari. Ok ochunimondoiyiebedojadwoko e nonroni kendo inyaloweyobedojadwokosa ma in ema idwaro. Ka inenomondoiwuogi e nonroniongefainimoro amora ma ibirogoyi. Ka inenomondoiwuogi, inyalotudoriging'atomoro amora ma nyingeondiki ka kaka jakanyo. Nonroni biro kano weche ma iwachomak mana ka idwaromondoogolgi e rekodsmagwa. To ka poniweche go osetigodo e yangononroninyalobedomatekmondoogolweche go e iye ka. Wakwayonimondoikawseche magi e somopenjogi ka pokaiyiebedojadwoko.

Wach matek ma jadwokonyaloyudo e inonronisamaseche ma itimeenlalosiri mag jodwoko. Mar geng'olal mar wechemani ka wuonnonro biro kano aling' wecheduto ma owach ka. Ok wabidwarowechemafuloni in ng'ano. Kendo wabirowachmagokende ma chunyi biro yienimondoowachi. Onge yutomoro amora ma jadwoko biro yudo. En mana niweche ma owach e iye ka biro konyoserikal keto chenromabechomohingo e konyodongruok mar ngima mar nyithindo matin nihigniabich. Nyiri matindo ma niginyithindobendenyalo biro yudober ma oakuomnonroni.

Adwokeduto ma biro yudorekuomnonroniibiro or e mbalariany, sirikal, to gi MUERC. Magi gin jogomanyalodwaroweche go kendo nenoninonroniotim e yo ma kare kendo e yomaowinjore go. Aduoke mag nonroniinyalo go e buk kata kamano ok biro nyisore e bukgimoro a mora manyalofulonyingng'ato.

Kuompenjomoro amora kata paromoro amora ka luoreginonroni, mar manyoler mar yore mag nonro, kata diponiidwaroweyojadwoko ka nonro pod dhiyonyime, kata idwarowachopachi e winonroni, kata diponiiyudokasoromoro amora ka luoreginonronitudrigi: Teresia Yula Musembi, E-mail: traceycecil@gmail.com Namba simo: 0723606256

Ni wechemokoamoka ma luoregithuologinyalomari kaka jaduokoinyalotudorigi: Jagoro, Maseno University Ethics Review Committee, Private Bag, Maseno; Telephone numbers: 057-51622, 0722203411, 0721543976, 0733230878 ;muerc-scretariate@gmail.com

Wach ma biro wuokkuomnonroni biro konyowuon go ndikoripotmare mar mbalariany ma endwaroachielni kos mar wuonnonro kaka jasomo e mbalariany. Bed githuoloduokopenjogi e yomaberkakaiwinjogi ka ing'eyonikikchunyichandrenikechwechegiteibirokan e yo ma aling kendo apanda e yomakende kendo e yo ma owinjoregodo. Nonroni biro konyosirikal e losochenromabecho ma dongooganda kendo weche ma nonrooyudodhiyomedorieko. Kor ka chenro ma dongooganda, nonroni biro konyomalach e chano yore go ma dhiyotiegongima mar nyithindomatindo. Bedo ja duoko e nonronien hero mari kendo in githuolo mar dagiduokopenj go ma ok in godomayot. Onge mich mar omendamoro amora ma ibiro mi jaduoko. Abiro mor ahinyanikonymoro amora ma ayudokaluoreginonroni.

APPENDIX III: HOUSEHOLD QUESTIONAIRE

Section A: Respondents' information

Kindly tick in the space provided (√) the correct answers or supply the required information, where required, please specify and elaborate.

This section aims at obtaining general background information.

1. Age of the respondent

Below 20 years ( ) 20 to 35 years ( ) 36 to 45 years ( )

45 to 50 years ( ) above 51 years ( )

2. Gender of the respondent?

Male ( ) Female ( )

3. Relationship type of respondents to children below five years

Parent ( ) Sibling ( ) Grandparent ( ) Uncle ( )

Aunt ( ) Friend or no relationship ( ) Any other (specify) ……

4. What is your highest level of education?

Above secondary ( ) Secondary-completed ( ) Secondary-not completed ( )

Primary School ( ) No formal education ( )

5. What is your main source of income?

Skilled labor (e.g. carpenter, tailor, jua kali) ( ) Formal employment ( ) Student ( )

Unskilled labor (e.g. shamba, construction) ( ) Business/self-employment ( )

Housewife ( ) None ( ) Other (Specify)……

6. What is your marital status?

Single ( ) Married ( ) Divorced ( )

Widowed ( ) Separated ( ) Any other (specify) ……

7. Demographic information of children below five years of age

Sex	Date of birth	Age in months
Male		
Female		

Section B: Social economic status

1. What is the main source of water for the household?

Common tap ( ) Own tap ( ) River ( )

Rain ( ) Borehole ( )

2. What type of fuel do you use for cooking?

Paraffin ( ) Charcoal ( ) Firewood ( )

Gas ( ) Electricity ( ) Others (Specify) ……

3. Observe whether there is a radio

Yes ( ) No ( )

4. Observe whether there is a TV

Yes ( ) No ( )

5. Family housing

Rented ( ) Owned ( )

6. Type of toilet facility does your household use?

Flush toilet ( ) Pit latrine ( ) Bush ( )

River ( ) Others (specify) ……

Section C: Nutritional literacy questions

1. Have you ever received education on good child feeding practices?

Yes ( ) No ( )

If yes, where did you receive the education?

MCH Clinic ( ) Relatives ( ) Friends( ) School ( )

Seminar/workshop ( ) Mass media/Radio ( ) Others(specify) ……

2. Has anybody demonstrated to you the preparation of the following?

a) Weaning Yes ( ) No ( )
b) Oral rehydration solution Yes ( ) No ( )
c) Suitable food for a sick child Yes ( ) No ( )
d) Who demonstrated the above mentioned to you?……

3. Is nutritional literacy useful to you? Yes ( ) No ( )

a) If yes, why? .....
b) If no, give reasons ……

4. Have you ever heard of the three food groups? Yes ( ) No ( )

5. Please name them for me 1. …….. 2. ……. 3. …….

6. Which food group does each of the following foods belong?

Maize meal …… Milk ……

Potatoes ……..... Oranges ……

Sukumawiki ……. Millet ……

Beans ……. Fish ……

Section D: Feeding practices questions

1.Who takes care of the child in your (mother) absence?

Father ( ) Sibling ( ) Grandmother ( )

Domestic worker ( ) Friends ( ) Others (specify) …….

2. Is the child still breastfeeding?

Yes ( ) No ( )

3. When did you initiate breastfeeding?

30 Minutes after delivery ( ) 1 hour after delivery ( )

Within first day ( )The following day after delivery ( )

4. Did you practice exclusive breastfeeding?

Yes ( ) No ( )

5. If yes, for how many months?

( )

6. What is the best age at which to stop breastfeeding a child?

…….Months

7. At what age did you start giving other foods/fluids to the baby?

…….Months

8. How many times do you feed your child a day?

1 ( ) 2 ( ) 3( ) 4( ) 5 ( ) 6 ( )

Others (specify) ……..

9. Are there foods that children are not traditionally allowed to eat?

Yes ( ) No ( )

10. If yes, which are these foods? List them ……

11. Why are these foods prohibited in the community? ……..

12. Please tell me the foods/fluids you gave to your child for the last two days.

……..

13. Of the following foods, how many times do you feed the child in a week?

Maize meal ( ) Beans ( ) Bananas ( ) Eggs ( )

Meat ( ) Vegetables ( ) Irish potatoes ( ) Green grams ( )

Peas ( ) Fruits ( ) Cassava ( ) Sweet potatoes ( ) Weetabix ( )

Rarely eaten ( )

Not eaten (specify why) ……

14. What do you use for feeding liquids to the child?

Bottle feeding ( ) Cup feeding ( ) Cup and spoon feeding ( )

15. If the child is still breastfeeding, how do you intend to stop breastfeeding?

…….

16. In general, what is the main source of staple food in the household?

Own production ( ) Purchases ( ) Gifts from friends/relatives ( )

Food aid ( ) Battered ( )

17. Total number of food groups consumed in the household.

…….

18. How many meals has the household had in the last 24 hours (from this time yesterday to now)?

…….

Section E: Health seeking practices questions

1. During the past two weeks, did (name the child below 5 years) suffer from any illness/injury?

Yes ( ) No ( )

2. If yes, how many days did the child suffer? …….

3. Can you describe the symptoms?

a) Cough ( )
b) Diarrhea ( )
c) Vomiting ( )
d) Cold ( )
e) Skin infection ( )
f) Lack of appetite ( )
g) Others (specify) …….

4. Was anyone consulted for that illness? Yes ( ) No ( )

5. If no, what is the reason?

a) Lack of money ( )
b) No health facility nearby ( )
c) Mild illness ( )
d) Others (specify) …….

6. If yes, where did you go for consultation?

a) Health facility ( )
b) Traditional healer ( )
c) Pharmacy ( )
d) Ordinary shop ( )
e) Others (specify) …….

7. In the past one month, how many times did the named child show any symptoms of illness? ……..

8. What causes diarrhea? Name two causes.

……..

9. How can diarrhea be prevented? Give one suggestion.

……

11. At what age should a child complete the immunization schedule? ……..Months.

12. Show a picture of a marasmus suffering child to the mother/caregiver then ask, is this child healthy? Yes ( ) No ( )

a) Mention two sings 1……..2……
b) What do you call this condition? .....
c) Can a child with this condition be cured? Yes ( ) No ( )
d) If no, why not?

……

e) If yes, how can it be cured?

……

13. Does the household have mosquito net(s)? Yes ( ) No ( )

10. Give one reason why a child should be immunized.

……

15. If the child is over 9 months old, has he/she received his/her full immunization? Ask to see clinic card. Seen, Yes ( ) No ( )

BCG Yes ( ) No ( )

DPT Yes ( ) No ( )

Polio Yes ( ) No ( )

Measles Yes ( ) No ( )

Hepatitis B Yes ( ) No ( )

16. In your view, what are the consequences of not vaccinating children under-five years against childhood diseases?

Permanent disability ( ) Stunted growth ( )

Death ( ) Others (specify) ……..

Age verification: Clinic card ( ) Birth certificate ( ) Mother can remember (orally) ( )

Section F: Playing activities questions

1.Does the child have any playing materials at home?

Yes ( ) No ( )

2. Please, tick the playing materials available at home.

Balls ( ) Tyres ( )

Swings ( ) Dolls ( )

Slides ( ) Toy cars ( )

Bean bags ( )

3. Are these playing materials locally made or purchased?…….

4. Does the child often use the playing materials during play?

Yes ( ) No ( )

5. Are the playing materials adequate for the child?

Yes ( ) No ( )

6. How often do you take or accompany your children for outdoor activities?

Very often ( ) Rarely ( )

Often ( ) Very rarely ( )

Sometimes ( ) Not at all ( )

7. Which outdoor activities do your children often enjoy engaging in?

Climbing ( ) Construction ( )

Swinging ( ) Role playing ( )

8. Do you think that the time you allocate to your children for outdoor activities is adequate?

Yes ( ) No ( )

9. If no, what do you suggest should be done to ensure that children engage fully and satisfactorily in outdoor and play activities?

……

10. Do you ever join the child in his/her play?

Yes ( ) No ( )

11. What difference does it make when you join the child in play?

……

12. Do you think your presence in the child's play has any impact on the way the child plays?

Yes ( ) No ( )

13. Which skills is the child likely to learn when he/she is involved in outdoor play activities?

Turn taking ( ) Cooperation ( )

Sharing ( ) Making friends ( )

Solving disputes ( ) Empathy ( )

Patience ( ) Group work ( )

14. How often do your children engage in the following activities?

Activity	**Always**	**Sometimes**	**Never**
Playing in groups			
Playing alone			
Sharing play materials			

15. Fill in the type of play your children are mostly engaged in by ticking where applicable.

Type of play	**Always**	**Sometimes**	**Never**
Cooperative play e.g. group work			
Manipulative play e.g. construction			
Pretend play e.g. role playing			
Creative play e.g. drawing, singing, acting			
Physical play e.g. climbing trees, swinging			
Imaginative play e.g. imagining an event			

THE END

APPENDIX IV: DHOLUO HOUSEHOLD QUESTIONAIRE

Okang' maokwongo: Weche go kuomjaduoko

Wakwayo mondo ikiewkamathuoloomiyi (tick) wach ma iparonienadier kata inyaloduokogiwachwechemoko ma openji. Wakwayo mondo iyangadimbawechegimaber.

Eiokang' niwadwaro mondo wayudweche mag chakruok

1. *Higa mar jaduoko*

   Tin nihigni pier ariyo( ) Higni pier ariyonyaka pier adekgiabich ( ) Higni pier adekgiauchielnyaka pier ang'wengiabich ( ) Higni pier ang'wengiabichnyakapieroabich( )Hignipieroabichgiwiye ( )

2. *Chal mar jaduoko*

   Dichuo ( ) Nyako/dhako ( )

3. *Ket mar jaduokoginyithindo ma nipiny mar higniabich*

   Janyuol ( ) Omin ( ) Kwaro kata dayo ( ) Ner ( )

4 *Isekalosikulsekondari ( ) Isetiekosikulsekondari ( ) Ok ne itiekosikulsekondari( )*

   Isekalosikulsekondari ( ) Isetiekosikulsekondari ( ) Ok ne itiekosikulsekondari( )

5. *Itiyotich mane ma odagi?*

   Fundi (kaka fundi bao, jatweng'o, juakali) ( ) Ondiki e tich mar misara ( ) Nyathi sikul ( ) In jalwedo (kaka epuodho kata gedo) ( ) Ohala / ng'atomatimotijege ( )

   Min ot ma ok ondiktich ( ) Onge moro amora ma itimo ( ) Tich moro (yangimaber)

6 *.Kidomarigikenychalnade?*

   Pokadonjo e keny( )Asedonjo e keny ( ) Ne aweyokeny ( )Jaoda/ min odaosenindo ( ) Ok wan kanyoachielgijaoda ( ) Moro amora (yangiadimba) ……

7. *Weche mag kwan, kidogihigni mar nyithindomanipinynihigniabich.*

Kido/ket	*Chieng' nyuol mar nyathi*	*NyathiJadwecheadi?*
Dichuo		
Nyako		

Okang' mar ariyo: Chal mar dak

1 Pi ma jo ottiyogodoyakanye?

Fereji ma oriw ( ) Ferejimarwa wan wuon ( ) Aora ( ) Pi tado mar koth ( ) Kisima ma okuny ( )

2 Ang'o no ma utiyogodo e tedo?

Mauta ( ) Maka ( ) Yien amoda ( )

Gas ( ) Sitima ( ) Yore ma moko (yangiadimba)……..……..

3. Ng'iyo ka nitieredio

E, nitie( ) Da,onge ( )

4 Ng'iyo ka nitie TV/ television

E, nitie ( ) Da, onge

5. Chal mar dak mar jo ot

Ot ma opangi ( ) Ot mar wa wan wuon ( )

6. Kido mar karkonyruok ma jo ottiyogodo

Cho mar pi ( ) Cho ma okuny () Bungu ( ) Aora ( ) Moro kendo ma opogore (yangiadimba) ……..

Okang' mar adek: Penjogomag lonygipuonj e wechegiyore mag chiemo

1a) Bende iseyudopuonj e yore mabecho mag chiemo mag nyitihindo?

Aseyudo( ) Podi ka ayudo ( )

1b) Ka iseyudo, ne enkanyemaneiyude?

Klinik mar MCH ( ) Wede ( ) Osiepe ( ) Sikul ( )Semina ( ) Gigo mag fwamboweche/ redio/nyakalondo ( ) Yore ma moko (yang adimba)……..……

2. Ng'ato a ng'atabendeosepuonji kaka ilosomago ma openjpinykae?

e) *Golo nyathi e thuno E ( )* D*a /A a ( )*
f) *Medo ninyathi pi ma imadhoE ( ) Da/Aa ( )*
g) *Chiemo ma oromoginyathi ma two E ( )* D*a/Aa ( )*
h) Ng'anomaneonyisi kaka imedoninyathi pi ma imadho e dende?

……..

3 Bende puonj mag lonygiyoremagchiemokonyi? E ( ) Da/A a ( )

a) Ka gikonyi, to enang'o ma omiyo? ……..
b) Ka ok gikonyi to enang'o ma omiyo? ……..

4. Bende isewinjowachmarkidoadek mag chiemo ma kare? E ( ) Da/ A a ( )

5. Wach nanyingegi 1. …….. 2 …… 3 ……..

6. *Wachi kido mar chiemomaondikpiny ka gi?*

Rabuon …….. Machungwa ……..
Alot skuma …… Bel ……..
Oganda …….. Rech ……

Okang' mar ang'wen: Penjogo mag yore chiemo

1. *Ng'anomaritonyathisama in kata minuonge?*
   Wuonwa ( ) Omera/ owadwa kata nyaminwa ( ) Dani ( )
   Ja tich ma ondiki ( ) Osiepe ( ) Jo ma moko (yang adimba)……..
2. *Nyathi pod dhoth?*
   E ( ) Da/ A a ( )
3. *Ne ichakonyathidhothethunokaraang'o ?*

Bang' dakikapieroadek ka osenyuole ( ) Bang' saaachiel ka osenyuole ( )

Eiodiyochiengmaneonyuole( )Kiny ne bang' ka osenyuole ( )

4. *Bende ne imiyonyathidhoth mar thunokende?*

E ( ) Da/ A a ( )

5 *Ka enkamano to ne ennidwecheadi? ( )*

6. *Nyathi berkaigolodhoth mar thunokuome ka oromnade?*

Dweche ……..

7. *Nyathi ne rom nade ka ne ichakomiyechiemogigikmadho ?*

Dweche ……..

8. *Nyathi imiyochiemondaloadi e iodiyochieng' ?*

Dichiel ( ) Diriyo ( ) Didek ( ) Ding'wen ( ) Dibich ( ) Diuchiel ( )

Ma moko (yang adimba) ……

9. *Bende nitiekido mag chiemo ma nyathi ok oyiemondoocham?*

Nitie ( ) Onge ( )

10. *Ka nitie, gin chiemo mage? Kwan gi ……*

11. *Ang'o ma omiyochiemogiikwedokuomnyathi? ……..*

12. *Wachnakido mag chiemo/ gik ma imadhomaneimiyonyathi e indaloariyomokalo*

13. *Ndaloadieiodiyochieng' ma imiyonyathichiemo ma okwanpinygi?*

Kuon oduma ( ) Oganda ( ) Rabolo ( ) Tong' ( )

Ring'o ( ) Alode ( ) Rabuonwaru ( ) Dengu ( )

Pis ( )*Olemo ( ) Muogo ( ) Rabuonnyaluo ( ) Witabix ( )*

Chiemo ma nyathichamomatin ( )

Chiemo ma nyathi ok cham (yangiadimbagimaomiyo)……

14. *Ang'o no ma itiyogodo e miyonyathi gig madho?*

Chupa dhoth ( ) Kikombe ( ) Kijiko gi kikombe ( )

15. *Ka nyathi pod dhoth, ichanonadegolonyathikuomdhoth mar thuno?*

16. *Chiemo mane e ma thoth ne uchamo e idala?*

Chiemo ma wapidho ( ) Chiemo ma onyiew ( ) Chiemo ma osiepe/wedemiyowa ( )

Chiemo ma serikalmiyojinono( ) Chiemo ma olokigigikmoko ( )

17. *Kido te mag chiemo ma ichamo e idala.*

18. Osechiemdidieidalakuomsechepieroariyogiang'wen ma osekalo (chakrenyorosa ma kama) ?

……

Okang' mar abich: Penjo go ma luoregingima mar nyathi

1 E iwigeariyo ma osekalo, nyathi (wachnyinge) bendeosebedogi two/ hinyruokmoro amora?

E, osebedogodo ( ) Da/ A a, pok obedogodo ( )

2. Ka poni ne osebedogodo, ne ennindaloadi?

3. Bende inyalopimoranyis mag two no endo?

h) Ahonda ( )

i) Diep ( )

j) Ng'ok ( )

k) Homa ( )

l) Two mar del kaka guonyo ( )

m) Nyathi odagichiemo ( )

n) *Mago ma moko (yang adimba) ……..*

4.Bende ne unenong'ato kaka daktari? E, ne waneno ( ) Da/A a, ok ne waneno ( )

Ka ok ne uneno, ne ennang'o?

e) Midekre mar pesa ( )

f) Onge karthiethmani ma chiegni ( )

g) Two ne tin ( )

h) *Nikechmagomamoko (yang adimba) ……*

6. Ka ne unenong'ato, ne enkanyemaneudhiyo e?

f) Kar thieth/osibtal ( )

g) Ajuoga ( )

h) Kemist/dukakamaiuso e yath ( )

i) Duka ( )

j) Kwonde ma moko (yang adimba) ……..

7. E idweachiel ma osekaloni, endidi ma nyathi ma iwachoniosenyisoranyis mag two?

……

8. Ang'o ma kelodiep? Wach gikmokoariyo.

……..

9. Diep inyalogeng' nade? Wach paromariachiel.

……

11. Nyathi onegotiekchanjo mage ka oromnade? Dweche ……

12 Tang' picha mar nyathi ma tworegi……. ni min/jaritnyathikaetoipenje ka nyathi no ngima.

f) Wach ranyisariyo mag two 1…….. 2 ……..

g) Iluongonade two ni? ……..

c) Bende nyathi ma nigi two niinyalothiedhi? E ( ) Da/ A a ( )

d) Ka oknyalthiedhe, ang'o ma omiyo ok nyalthiedhe?

……

e) Ka inyalothiedhe, ithiedhenade? ……..

13. Bende nitiye net kata nede mag suna e idala? E, nitie ( ) Da/A a, onge ( )

14. Wach wachachielgimaomiyonyathinyakater e chanjo

……

*15. Ka nyathiosekalodwecheochiko, bendeoseyudochanjo mage tete? * Penji mondo otang' ni kadi mar klinik. One E ( ) Da/ A a ( )*

BCG E ( ) Da/ A a ( )

DPT E ( ) Da/ A a ( )

Polio E ( ) Da/ A a ( )

Ang'iew E ( ) Da/ A a ( )

Hepatitis B E ( ) Da/A a ( )

16. Kuomparomarienwechemagemanyalotimoreninyathi matin nihigniabich ma ok oter e chanjo?

Ng'ol ma nyakachieng' ()Tamruokmardongo ( )

Tho ( ) Wechemamoko(yang adimba ……

***Ng'eyohiknyathi**: Kadi mar klinik ( )*

Kadi mar nyuol ( )

Miyo/ min nyathinyaloparogiwiye kata chunye ( )

1. Nyathi nigigiktugo e idala? E, engo ( ) Da/A aoongegodo ( )

2. Kiew giktugo ma nyathinigodo e idala.

Mipiche( )Tie mitoka/gudurum/nyangeya( )

Gikswuoyoruok ( )Doli ( )

Pichni ( )Mitoka mag tugo ( )

Guniamatindo mag tugo ( )

3. Giktugogi, ulosogikosounyiewogi? ……

4 Nyathi bendethorotugogigiktugogosamaotugo? ……..

5. Bende giktugo go oromonyathitugogodo?.....

6. Enndalokwanmachalnade ma iteroganyithindi kata idhigakodgitugooko mar dala?

Ding'enyahinya ( ) Matin ( )Ding'eny ( )Matin ahinya ( ) Samoro ( ) Onge kata matin ( )

7. Tuke mage ma oko ma nyithindiomor ka gitugo?

Idhogikmoko ( )Gedo gichwecho ( )SwuoyoruokTuko ma luore ( )Tuke mag wuondruokni gin ng'atomoronono ( )

8. Bende iparoniseche ma imiyonyithindothuolo mar tugookooromokodgi?

E, oromo( ) Da/A a, ok oromo ( )

9. Ka ok oromo, iparonade kaka inyalotim mondo nyithindooyudseche ma oromogi e tugooko?

10. Bende inbendeitugogaginyithindogi e tukegi?

E ( ) Da/A a ( )

11. Pogruok mane mani tie sechema inbendeitugoginyithindogi ma opogoregisama ok itugkodgi?

……

12. Bende iparoninitie kaka samaitugokodnyithindo to giyudogimoromanyien e itugogi?

E, nitie ( ) Da, onge ( )

13. Engeno kata medruok mane ma nyathinyaloyudo ka otimotuke go maoko?

Tuke ma luore( )**Winjruok ( )*

Riwogikmoko ( ) Loso osiep ( )

*Ng'adobura( )**Bedo gichuny mar winjo lit mar ng'ato ( )*****

Bedo gikinda ( ) Tiyo kanyakla ( )

14. Ni sechemaromnade ma nyithinditugotuke ma okwanpinygi?

Tugo	***Sa ka sa***	***Samoro***	***Onge kata matin***
Tuke mag kanyakla			
Tugokend			
Riwogiktugo			

15. Ndikikido mar tugo ma nyithindithorotugo

Kido mar tugo	***Sa ka sa***	***Samoro***	***Onge kata matin***
Tugo mar kanyoachiel kaka e riwruok			
Tugo mag losogikmokogilwedokakogedogichwecho****			
Tugowuondruokniinng'atomorononо			
Tugomadwaroparomatut kata paromakende kaka goro, wergitugogima ne osetimore kata manyalotimore			
Tugo mar jiwo del kaka idhoyien, swuoyoruok			
Tugomadwaroparomatut kendo paromakende kaka tugogimoromaneoseotimore			

GIKO

APPENDIX V: INTERVIEW SCHEDULE/KEY INFORMANT GUIDE

Key informant guidelines for Community Health Workers

1. What healthcare education messages are included in the MCH services?

……

2. How frequent are the lessons per individual mother?

……..

3. Which communication skills do you use to pass messages?

……

4. Which language is generally used?

……

5. Do caregivers understand the language used?

……

6. Do caregivers follow the advice given at the MCH clinic?

……..

7. How much success on improved healthcare practices of under-fives can you associate with the program?

……..

8. Give reasons you can attribute to the success/failure of the program in achieving improved healthcare practices among under-fives?

Success

……

Failure

……

9. What recommendations can you give to improve service delivery on healthcare messages?

……

……..

10. What healthcare messages are given to mothers at the maternity ward?

……..

……

11. What percentage of mothers delivers at the hospital among the Ndhiwa Community?

……

THE END

APPENDIX VI: FOCUS GROUP DISCUSSION GUIDE

Date ……/……/……

Venue …….

Facilitator …….

Number of discussants …….

Time: Start……. Finish …….

Time for discussion 1 hour: 30 minutes

INSTRUCTIONS

1. Instructions.
2. Explain purpose of the study.
3. Assure discussants of confidentiality.
4. Ask discussants for their informed consent to participate in discussion.
5. Explain importance of recording the discussion.

FGD Guide:

1. Is breastfeeding important? If Yes/ No why?

I. How long is a mother supposed to breastfeed?

II. At what age or when are you supposed to give children other foods?

III. When do you stop breastfeeding and why?

IV. What are these other foods you give to the children?

2. Is mother to child relationship important?

I. How do you know that a child is hungry?

II. Do children need any help when eating? At what ages?

III. Who should help them? How often should they eat?

IV. How is food served in the family?

V. What do you do when a child refuses to eat?

3. Are there foods that are not supposed to be eaten by children? What are these foods?

4. Is it important to engage in playing activities with the children? What activities do you engage in with them?

5. What is immunization? Is it important? Are your children immunized? If No, why?

THE END

APPENDIX VII: STRUCTRURED OBSERVATION CHECKLIST

Q.N	Questions	Response	Code
1.	Kitchen	Present Absent	1 2
2.	Kitchen condition	Clean Dirty	1 2
3.	Food preparation surface	Clean Dirty	1 2
4.	Utensils for cooking and serving food	Clean Dirty	1 2
5.	Food storage utensils	Clean Dirty	1 2
6.	Dish rack	Present Absent	1 2
7.	Method of refuse disposal	Refuse pit Burning Dumping Others (specify)	1 2 3 99
8.	Toilet facility	None Pit latrine Private latrine Flush toilet	1 2 3 4
9.	Source of drinking water	Vendor/well Piped water inside/outside	1 2
10.	General cleanliness of the compound	Clean Littered Presence of excrater Outgrown grass Others (specify)	1 2 3 4 99

11.	Mothers activity when feeding the child	Eating Encourages child to eat Concentrates on child	1 2 3
12.	How child is served food	Shares plate with other children Eats from individual plate Shares plate with mother	1 2 3
13.	Immunization schedule followed	Yes No	1 2
14.	Presence of playing materials	Yes No	1 2
15.	Caregiver engagement into playing activities	Yes No	1 2

APPENDIX VIII: MASENO UNIVERSITY ETHICS AND REVIEW COMMITTEE APPROVAL

MASENO UNIVERSITY ETHICS REVIEW COMMITTEE

Tel: +254 057 351 622 Ext: 3050
Fax: +254 057 351 221

Private Bag – 40105, Maseno, Kenya
Email: muerc-secretariate@maseno.ac.ke

REF: MSU/DRPI/MUERC/00875/20

Date: 9th December, 2020

TO: Teresia Yula Musembi
PG/MA/DS/00034/2017
Department of Development Studies
Maseno University
School of Development and Strategic Studies

Dear Madam,

RE: An Analysis of the Influence of Caregivers' Formal and Nutrition Literacy Levels on Healthcare of Children Born to Adolescent Girls in Ndhiwa, Homabay County

This is to inform you that **Maseno University Ethics Review Committee (MUERC)** has reviewed and approved your above research proposal. Your application approval number is MUERC/00875/20.The approval period is 9th December, 2020 – 8th December, 2021.

This approval is subject to compliance with the following requirements;

i. Only approved documents including (informed consents, study instruments, MTA) will be used.
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by Maseno University Ethics Review Committee (MUERC).
iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to Maseno University Ethics Review Committee (MUERC) within 24 hours of notification.
iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to Maseno University Ethics Review Committee (MUERC) within 24 hours.
v. Clearance for export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days upon completion of the study to Maseno University Ethics Review Committee (MUERC).

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) https://oris.nacosti.go.ke and also obtain other clearances needed.

Yours sincerely

MASENO UNIVERSITY APPROVED 09 DEC 2020 ETHICS REVIEW COMMITTEE

Prof. Philip O. Owuor, PhD, FAIAS, FKNAS
Chairman, MUERC

APPENDIX IX: NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION RESEARCH LICENCE

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **467565**

Date of Issue: **15/January/2021**

RESEARCH LICENSE

This is to Certify that Miss.. Teresia Yula Yula of Maseno University, has been licensed to conduct research in Homabay on the topic: THE INFLUENCE OF CAREGIVERS' NUTRITION LITERACY LEVELS ON HEALTHCARE OF CHILDREN BORN TO ADOLESCENT GIRLS IN NDHIWA, HOMA BAY COUNTY for the period ending : 15/January/2022.

License No: **NACOSTI/P/21/8510**

467565

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

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