COLLEGE OF MEDICINE AND HEALTH SCIENCES
DEPARTMENT OF NURSING

THE RELATIONSHIP BETWEEN NUTRITIONAL STATUS AND MENTAL DEVELOPMENT OF CHILDREN IN WOLISO TOWN, CENTRAL ETHIOPIA

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Acronyms

ANC: Antenatal care

BMI: Body mass index

CREDI: Caregiver Reported Early Development Instruments

EBF: Exclusive breast feeding

ECD: Early child development

IQ: Intelligence quotient

WHO: World health organization

ABSTRACT

Background Different: the study have showed that severe malnutrition during infancy negatively affect mental development. years of life are period of maximal growth and development of human brain.

Objective of the study: To investigate the relationship between the nutritional status and mental development of children aged (3-6 years) in Woliso town.

Method: simple systematic random sampling study design was used to The relationship between nutritional status and mental development of children in Woliso town central Ethiopia from March 1 – June 20 , 2023 G.C. systematic random sampling technique selected from children who are among age of 3-6 In different kindergarten in Woliso town . Data was collected from study participant through interview method from the children parents. data was analyzed by SPSS version 24 and finally data is presented by table.

Result study participants the mean age of the children was 4.48 years (SD= 1.017). greater than half of 204 (51.1%) were female children. At the age of 6 months, 38.6% of the children began supplementary food, while a small percentage of children (6.3%) were introduced to complementary food at an early stage. The remaining 55.1% started late with supplementary food, out of the 399 children, 240 (60.2%) started to stand on their legs at around one year of age. Among the children, 179 (44.9%) were able to remember facts or experiences .The proportions of children with different levels of proficiency vary across these skills. Different levels of proficiency are reported for each skill.

Conclusion: Most of children has low balanced diet. Vaccination coverage indicates higher awareness among urban residents. Individual differences were observed in motor skills, memory skills, and abilities, highlighting diverse developmental patterns.

Key word: Woliso town children, nutritional and mental status

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

Children are assets and the future generation. Therefore, they are expected to grow and develop optimally and become adults who are physically, mentally, socially, and emotionally healthy.

Children with various potentials can develop optimally and under these conditions.[1] One indicator of high quality human resources is cognitive intelligence (such as IQ). It is a basic factor and key for an individual to succeed in the future. Early years of life are period of maximal growth and development of human brain[2]. Development of young child is influenced by biological endowment and health of child, nutritional status of child, relationships with primary caregivers, family, and support systems in the community[3]. The rapid growth and development of children occurs at < 5 years of age, and the rapid growth phase of the brain occurs until the age of 18 months. However, growth of children is influenced by genetic programming and external influences. Nutrition is one of the external factors which influence growth and attainment of normal body dimension[4]. It serves to meet the requirement for cell multiplication and for the process in which the growing tissues and organs take an increased complexity of function. The level of nutrition is influenced directly by dietary intake and indirectly by the effect of infection, parasites, toxic and/or psychological stresses. The nutritional status of children in Ethiopia is mainly influenced by feeding practices and by the frequency of infection[5].

Nutrition plays a vital role as one of the most important environmental factors influencing cognitive performance as it provides the building blocks for neural formation and brain development. Inadequate nutrient intakes during the developmental stages of the children may adversely affect their cognition[6]. Under-nutrition in early childhood could result in poor cognitive and behavioral development, as well as school achievement. This is because the developing human brain requires all essential nutrients to form and to maintain its structure. Infant and child mental development is dependent on adequate nutrition. Children who do not receive sufficient nutrition are at high risk of exhibiting impaired cognitive skills. Hence understanding the relationship between nutrition and mental development and performance in children is important in terms of their attainment and productivity both in school and in later life[7].

Malnutrition during the period from 1-5 years of age results in a delay in physical growth, motor development, and cognitive developmental disorders. Lack of nutrition has an effect on changes in social behavior, decreased attention and learning ability, and poor learning outcomes. The negative impact on cognitive ability occurs not only in malnourished children (severe underweight) but also in short children (stunted) due to chronic malnutrition at an early age[8].

Studies in several countries have revealed that malnutrition at an early age affects children's physical growth and brain development[9]. Malnutrition has an immediate effect such as death and morbidity from a severe case and, in childhood where there is rapid growth, it has a long term effect on the well-being of the individual. Unfavorable condition during rapid growth periods can be expected to retard development and result in reduced physical growth and impaired mental and psychosocial development which may affect working capacity in a later life. Thus sever-malnutrition in infancy is said to affect mental development. In the fight against malnutrition, survival is the main concern. But there is the possibility of an increment in the number of survivors of malnutrition who may have impaired learning abilities affecting their future life[10]

In the developing world, malnutrition is one of the leading causes of mortality and morbidity. It is widespread and endemic in all developing countries and may reach epidemic proportions as a consequence of natural and/or man-made disasters. It is estimated that 40 million preschool children in developing countries are living in a condition of acute malnutrition, and more than three times this number in a chronic state of inadequate nutrition and associated illness [11].

In Ethiopia, malnutrition contributes to more than 50 percent of all infant and child deaths. The damage caused by malnutrition during the first 1,000 days (from the start of a woman's pregnancy to her child's second year) is usually irreversible in terms of its negative impact on the child's health, cognitive development, physical growth, and school and work performance later in life[12]

1.2 Statement of the problem

Despite long experience in fighting childhood illness and mortality, health care providers in low and middle income countries face new challenges in promoting child development[3]. Early childhood development in developing countries estimated that over 200 million children in developing countries are not reaching their full developmental potential. Developmental difficulty during early childhood is increasingly recognized in low and middle income countries as important contributors to morbidity in children and adults. Moreover, child development of the cognitive, social, emotional, and language and movement functions is influenced by the biological endowment and health of the child, as well as by the relationships with the primary caregivers, family, and support systems in the community[13].

Malnutrition problem exists only in developing countries where it affects 40% to 60% of the population, but also in developed countries not[14]. In Ethiopia, the major causes of malnutrition are persistent food insecurity, poor maternal and child feeding practices, high incidence of infectious diseases, and limited access to quality nutrition services. Household wealth, education, and family planning are also key drivers of children's nutrition. Twenty-seven percent of women in Ethiopia are malnourished and thirty eight percent of children suffer from stunting[15].Ethiopia's lowland pastoral areas and densely populated, food-insecure highland districts suffer frequent droughts, complicating access to and consumption of nutritious foods. The nutritional status of children plays a crucial role in their overall growth and development, particularly during the critical early years of life. Among children aged 3-6 years, optimal mental development is essential for their cognitive, social, and emotional well-being. However, there is a need to explore and understand the relationship between nutritional status and mental development in this specific age group. This research problem statement aims to investigate the extent to which nutritional status influences the mental development of children aged 3-6 years, in order to inform interventions and strategies that promote healthy cognitive development and improve the nutritional well-being of young children. Hence, this study is designed to determine the relationship between child's mental development and their nutritional status, and result obtained will be used by policy makers and program managers of health institutions at national and regional level of the country[16]

1.3 Significance of the study

Studying the relationship between nutritional status and mental development .can be especially valuable for developing countries or communities with limited access to nutritious food. can help identify specific nutrients, serve other researchers to make further researches on the relationship between nutritional status and mental development of children in different age groups throughout the country. Governments and healthcare organizations can use this evidence to develop guidelines and programs that promote healthy eating habits and ensure that young children receive the necessary nutrients for optimal cognitive development.

CHAPTER TWO: LITERATURE RIVIEW

2.1 Child Development

Child development involves changes in a child's biological, social, cognitive and emotional dimensions that occur between birth and at the end of adolescence. This is determined both by genetic and environmental factors[19]. There is a normal pattern of growth and development with a range at a particular age in which children reach a certain height, weight or ability to walk or talk. Growth is generally a smooth process in a healthy child. The genetic endowment provides a range of possible levels one may ultimately reach, depending on the quality of the experience in the environment. A variety of environmental factors including nutrition, disease, and psychological disturbances affects growth[20].

2.2 Child Nutrition

Food provides the energy and nutrients that young children need to be healthy. Early feeding experiences can have long-lasting consequences on eating habits and food preferences later on in life. A healthy diet consisting of ample fruits and vegetables in the first two years may increase future preferences for healthy food. In contrast, unhealthy habits, such as favoring food that is high in fat and sugar tend to persist over time[21]. Feeding problems are associated with a number of poor developmental, psychological and health outcomes. For instance, children who overeat are more likely to develop medical conditions and potential psychological issues, whereas insufficient calorie intake can result in stunted growth. Several factors play a role in the development of feeding problems. Feeding difficulties are likely to emerge when feeding has been paired with a painful or unpleasant experience that the child comes to associate with mealtime. Temperament traits such as the inability to self-regulate and to communicate one’s hunger level can make feeding routine challenging[22].

Similarly, a genetic predisposition for big or small appetite can increase the likelihood of feeding problems. Parents play a central role during feeding throughout the early years. Breastfeeding, for instance, not only protects against contagious diseases, but also allows infants to develop the ability to control their own calorie intake, an important healthy eating habit. Parents also contribute positively to their child’s feeding by modeling healthy eating habits and making mealtimes enjoyable[23]. When feeding problems emerge, mealtimes can become loaded with

anxiety and frustration for both children and parents. Misreading the child's signals can further aggravate problematic behaviors. Strategies to encourage eating such as punishment, distractions, and toys can work temporarily, but they tend to worsen problems over time. The most effective approach is responsive feeding, where reciprocal interactions during meals are based on the child's signals, and are age-appropriate[24]. At a larger scale, culture also contributes to feeding experiences by its influence on feeding choices, behaviors and exposure to different types of food. For instance, children's exposure to advertisements of unhealthy food is related to their preference for this type of food, and this is especially problematic in the African American and Hispanic American communities[25].

2.3 Feeding skill and its impact on child development

Feeding, like other sensorimotor skills, is a developmental skill that matures during the first two years of life. It is a highly complex sensorimotor process with developmental stages based on neurological maturation and experiential learning. However, feeding, unlike other sensor-motor skills, is heavily reliant on internal incentive or motivation to initiate ingestion, and is essential for survival of the newborn. Thus, the act of feeding is highly charged emotionally for the mother, whose primary responsibility, as viewed by the family, society and culture around her, is to ensure the early growth and well-being of her child. Therefore, from the very beginning the mother-infant feeding relationship is influenced by physiologic as well as interactional forces at multiple levels[26].

When feeding skills are intact and appetite is robust, feeding times, and later on, mealtimes are a source of pleasant socialization resulting in adequate nutrient intake and good growth[27].Demanding food at regular intervals such as sucking, eating and drinking with good rhythm, trying new food tastes or textures, and expressing satisfaction at the end of feeding are all considered good feeding behavior by children and adults as well. These pro-feeding behaviors invite praise and positive feeding interactions and thus reinforce the feeling of self-mastery in the young child and promote continued food acceptance and independent feeding behaviors[28].

However, when feeding skills are impaired (e.g.: poor oral-motor skills, taste and texture sensitivities) and or poor appetite (inadequate hunger), they manifest themselves in problematic feeding behaviors such as not signaling hunger, sucking or eating excessively slowly, gagging, and not bringing food to the mouth.3-7 In addition, associative conditioning to painful gastrointestinal cues is particularly powerful in young infants and this conditioning often

manifests itself in problematic feeding behaviors[29]. Temperamental characteristics and regulatory capacities of the infant may further modulate feeding behaviors. Maternal attempts at increasing her infant's nutrient intake by feeding more frequently or longer duration tend to result in stressful feeding experiences for both. While these efforts may work well initially for maintaining good weight gain, they tend to become ineffective and maladjusted mealtime interactions and behavioral mismanagement prevail. Maternal and family characteristics and societal expectations about the size of the young child and the type of food eaten further influence an already stressful feeding relationship[30].

2.4 Malnutrition and mental development

Malnutrition is a common health problem in the developing world, the tragedy of which may lie in the damage it inflicts on the growing brain. Under-nutrition is said to have a serious impact on child health and development affecting motor capabilities, perceptual function, school achievement socio-emotional maturity and may result in reduced working capacity in future life[31]. Neurons, the building blocks of brain, change in size, function and degree of interconnection with the child development. Along with an increase in brain size, functional organization of the nervous system takes place, which reflects its increasing responsiveness to stimuli from the environment[32].

The first neural growth spurt when the number of neurons in the developing brain reaches the adult level is at about 30 weeks of gestation, the second growth spurt occurs in the first postnatal year and 70% of adult brain weight is achieved by the end of the first year. By about five years of age the child brain has attained 90 % of its adult size. Hence, the period of maximum vulnerability is seen in prenatal and first postnatal months[33]. Nutritional deficiencies particularly those occurring very early in life and coinciding with a time of rapid growth may adversely affect brain development by reducing the rate of brain cell multiplication. Therefore, the dietary deficiency will impede brain growth quantitatively, the extent of which depends both on the age of onset, the duration and the extent of the insult. Studies have shown that malnutrition reduces the number and size of cells in the brain together with the lipid, nucleic acid, enzyme and protein contents[34]

Various studies done in Ethiopia also demonstrated abnormal trans-illumination and echo-encephalographic changes of the brain in severely malnourished children which showed

complete normalization As there are physical growth spurts, there is also a neural growth spurt period[35]. This period varies in different animals, in different regions of the brain and different cell types. If conditions are not optimal at a given time, that opportunity is lost and compensation may be impossible after treatment. Along with height and weight, head circumference, which is considered as gross brain size, was noted to be reduced in grossly undernourished children during infancy. Infants who have suffered from clinically diagnosed marasmus during the first year of life and have been rehabilitated showed evidence of lasting mental deficit when examined at follow up on global measures of intelligence[36].

2.5 Malnutrition and Future Prosperity of Children

Malnourished children not only face direct damage to their bodies and minds, but are less confident to learn and aspire to change the situation they were born into. In the longer term, malnutrition can have a big impact on earnings when children reach adulthood[37]. The effects of malnutrition on physical stature, the ability to do physical work, and on cognitive development, can lock children into poverty and entrench inequalities. Children who are malnourished go on to earn 20% less as adults than the children who are well nourished[38].

CHAPTER THREE: OBJECTIVES

3.1 General Objective

- To investigate the relationship between the nutritional status and mental development of children aged (3-6 years) in Woliso town .

3.2 Specific Objectives

- To describe nutritional status of children 4-6 years in Woliso town
- To determine the mental development of children between 4-6 years.
- To explain the relation between mental development of children and their nutritional status.

CHAPTER FOUR: METHODS AND MATERIALS

4.1 Study design and period

A community-based systematic study was conducted in Woliso town from March, 1 to June 20, 2023. The study was conducted in Woliso town, which is the capital town of Southwest Shoa, Zone, Oromia, Ethiopia. The town is located 114 km from Addis Ababa and has a population of 37680 people living in the town.also 3270 children live in the town , and they belong to different ethnic groups of the country [39] The climate of the area is Woinadega. There are five kindergarten schools in the town. All children aged three to six years and their respective primary caregivers living in four kebeles in Woliso town during the study period will be included in the study.

4.2 Source population

All Children aged four to six years residing in Woliso town will be the study population.

4.3 Study population

A total of 399 children will be selected from Kindergarten found in Woliso town by systematic sampling technique

Inclusion criteria

A single child per household who is in four to six age groups will be included in the study. When more than one child per household is found, one will be selected by lottery method.

Exclusion criteria

Severely sick children who could not participate in the study will be excluded from the study.

4.4 Sample Size Determination

Single population proportion determination formula used to calculate sample size. By considering a 38% severe and moderate stunting prevalence of developmental problems among children aged under-five years from a previous local study[40] by considering a 95% confidence interval, 5% margin of error of and adding 10% for non-response rate.

4.5 Sampling procedures

Systematic sampling used to select representative samples.

$n=(Z^2\alpha/2\ p(1-p))/d^2$

Where: n_o = sample size

d= margin of error

N = total number of population

p= proportion of population

α= level of significance

$n=(1.96^2\ 0.38(1-0.38))/0.05^2$ =362

Therefore, the final sample will be: 362+37 (10% non-response rate) =399

Systematic sampling used to select representative samples

In the woliso town there are 3270 children

3270/399= 8.195

K =8

4.6 Study variables

Dependent Variables: Mental development of the child

Independent Variables: Socio demographic characteristics such as child's age, sex, and resident; parent's education level, occupation, and income , nutritional status .

4.7 Operational definition

Malnutrition: lack of proper nutrition, caused by not having enough to eat, not eating enough of the right things, or being unable to use the food that one does eat.

Nutritional status*:* an individual's health condition as it is influenced by the intake and utilization of nutrients

Mental development: the progressive changes in mental processes of child due to maturation, learning, and experience

Cognitive development: It is the development of knowledge, skills, problem solving and dispositions

Cognitive intelligence: is children's abilities to learn, remember, reason, solve problems, and make sound judgments

Psychosocial development: is the psychological and social aspect in the development of a child

4.8 Data Collection Tools and Procedures

The required data collected by using body dimension measurements and a pretested structured questionnaire. The questionnaire initially prepared in English and then translated into the local language, Afan Oromo and Amharic. The Caregiver Reported Early Development Instruments (CREDI) are developed. Five core domains of early child development (ECD) as the central foci of the CREDI defined: motor development (including fine and gross motor skills), language development (including expressive and receptive language skills), cognitive development (including executive function, reasoning, problem solving, and pre-academic knowledge), social-emotional development (including emotional and behavioral self-regulation, emotion knowledge, and social competence), and early mental health difficulties (including internalizing and externalizing symptoms). Also used balls ,papers, pen, pencil to assess their skill.

4.9 Data Quality Assurance

Quality of data maintained by using educated data collectors and supervisors who had previous experience of data collection and supervision; provided intensive training to data collectors and supervisors focusing on the aim of the study, administration of the structured questionnaire, survey instruments, body dimensions measurements and ethical considerations conducting test of questionnaires before the actual data collection work, considering 5% of the sample size of those individuals who are not included in the actual study to check the accuracy of responses and

estimate time needed (some modifications were made on the basis of these results); and regularly calibrating weighing scales with known weight object.

4.10 Data Processing and Analysis

All collected data checked again manually for completeness and internal consistency missing data or incomplete data excluded to assure quality control. then data enter and analysis done using SPSS correlation type used in the analysis.

4.11 Ethical Considerations

Ethical approval obtained from Ethical Review Committee of Wolkite University, College of Medicine and Health Sciences. Permission also obtained from the concerned bodies of Woliso town administrative bodies. Study participants informed regarding the aims of the study. They participant also be informed for both verbal and written consent. Verbal and written consent for children participating in the study received from their parents or primary caregivers.

4.12 Dissemination of the study finding

The study's findings and conclusions with relevant stakeholders, such as researchers, educators, policymakers, and the general public. Dissemination aims to increase awareness and understanding of the study's results and implications, and it can be done through various channels and methods. The finding of this paper will be presented in conferences prepared at town, woreda and zone level in Southwest shoa.

CHAPTER FIVE

5.1 RESULT

The majority (52.4%) of the respondent were mothers , and the mean age of the respondents was 22.35 with standard deviation 1.92.more than two-third (66.7%)were degree/diploma level. Nearly half of the respondents (47.9%) were muslims, and 65.7% had a monthly income of 2000-5000 ethiopian birr per month .

Table 1 socio demographic characteristics

Variable	Category	Frequency	Percent(%)
Respondent	Mother	209	52.4
	Father	163	40.9
	Other relatives	27	6.5
Address	Ayetu	154	38.6
	Ejersa	102	25.6
	Burka gudina	77	19.3
	Hora	66	16.5
Academic status	Illiterate	8	2
	1-8	56	14
	9-12	68	17
	Degree / diploma	266	66.7
	Other	1	0.3
Occupation	Unemploede(house wife)	45	11.3
	Privet sector	73	18.3
	Farmer	17	4.3
	Civil servant	237	59.4
	Other	27	6.8
Religion	Orthodox	191	47.9
	Muslim	114	28.6
	Protestant	72	18
	Catholic	18	4.5
	Other	4	1
	<500	29	7.3
	500-1000	38	9.5

Income	1000-2000	53	13.3
	2000-5000	262	65.7
	>5000	17	4.3
A live mother	Yes	395	99.6
	No	4	1
A live father	Yes	339	92.2
	No	30	7.5
Mothers attend ANC	Yes	279	95
	No	20	5
Where child deliver	Home	57	14.3
	Health institution	340	85.2
	Other	2	0.5
Age	3	84	21.1
	4	112	28.1
	5	131	32.8
	6	72	18
Sex	Male	204	51.1
	Female	195	48.9

child's nutritional status

The age of supplementary food children start at 5month 25 (6.3%), at 6 month 154(38.6%), at 7 month 149(37.3%),at 8 month 64(16%) at 9 month 7(1.8%) children feed fruit juice 375(94%) Fish oil (omeg -3 fatty acid) 183(45.9%) feed.

Table 2 nutritional status of children

Variable	Category	Frequency	Percent(%)
Supplementary of start age	5 month	25	6.3
	6 month	154	38.6
	7 month	149	37.3
	8 month	71	17.8
feed your child with milk	Yes	263	65.9
	No	136	34.1
type of milk you feed	Raw milk	108	27.1
	Boiled milk	150	37.6
	Pasteurized milk	5	1.3
what is the source of the milk	Cow milk	226	56.6
	Milk powder	34	8.5
	Other	3	0.8
feed your child with locally prepared gruel/thin porridge	Yes	342	85.7
	No	57	14.3
Do you feed your	Yes	254	63.7

child with cerefam	No	145	36.3
Do you feed your child with fruit juice	Yes	375	94%
	No	24	6
type of fruit juice you frequently feed your infant	Orange	100	25.1
	Papaya	92	23.1
	Avocado	102	25.6
	Mango	65	16.3
	Other	17	4.3
Do you feed your child with fish oil (omega-3 fatty acids)	Yes	183	45.9
	No	216	54.1

child's health status

From our study participant children 340(85.2%) are vaccinated. More than one-fourth 109(27.3%) of children are ill in the past two weeks, from those 109 ill children 63(15.8%) know the type of illness, also during the illness 74(18.5%) taken to health institution . For 96(24.1%) was recommends commercial/ therapeutic food.

Table 3 Health status of child

Variable	Category	Frequency	Percent(%)
Was the child vaccinated	Yes	340	85.2
	No	59	14.8
Was this child ill in the past two weeks?	Yes	109	27.3
	No	209	72.7
If the child was sick, do you know the type of illness	Yes	63	15.8
	No	46	11.5
What was done to the child during the illness	Taken to health institution	74	18.5
	Given home care only	30	7.5
	Assisted by	5	1.3

	traditional healer		
	Nothing else	-	-
Is the physician/health care provider recommends commercial/therapeutic foods	Yes	96	24.1
	No	303	75.9
Are there concerned bodies such as health extension worker scare given for the child	Yes	230	57.6
	No	169	42.4
How often supervise you	Once a week	69	17.3
	Once a month	121	30.3
	Other	37	9.3

mental development of the child

About 240 participant children were stand with own leg at one year .the majority of children in this study 327(82%) can ability to throwing and catching ball. Greater than half of participant 276 (69.2%) has ability to draw figures that represent something. Also near to half of children 179(44.9%) has ability to remember facts or what they experienced.

Table 4 children performance

Variable	Category	Frequency	Percent (%)
Stand with own leg at 1 year	Yes	240	60.2
	No	128	32.1
	Do not remember	31	7.8

Ability to throw and catching ball	Yes	327	82
	No	40	10
	Do not	32	8
Ability to draw figures	Yes	179	44.9
	No	123	30.8
Ability to remembering facts	Yes	179	44.9
	No	202	50.6
	Don’t remember	18	4.5
Remembering name of person	Yes	334	83.7
	no	43	10.8
	Do not remember	22	5.5
Ability to use spoon and fork	Very good	76	19
	Good	110	27.6
	Medium	114	28.6
	Poor	99	24.8
Ability to use pen , pencil	Very good	145	36.3
	Good	178	44.6
	Medium	64	16
	Poor	12	3

Remembering daily activity	Very good	88	22.1
	Good	179	44.9
	Medium	89	22.3
	Poor	43	10.8
Ability to completing daily activity	Very good	113	28.3
	Good	179	44.9
	Medium	89	22.3
	Poor	43	10.8
Ability to judging distance	Very good	122	30.6
	Good	179	44.6
	Medium	81	20.3
	Poor	18	4.3
Ability to read clock	Yes	117	29.3
	No	189	47.4
	Don’t remember	93	23.3
Ability to read	Very good	96	24.1
	Good	130	32.6
	Medium	120	30.1
	Poor	53	13.3

Ability to writing	Very good	73	18.3
	Good	162	40.6
	Medium	114	28.6
	Poor	50	12.5
Mathematical skill	Very good	45	11.3
	Good	132	33.1
	Medium	153	38.3
	Poor	69	17.3

5.2DISCUSSION

Adequate nutrition during infancy and early childhood is essential to ensure the growth, health, and development of children to their full potential as nutritional deficiencies at all stages of growth have long-term damaging effects on the intellectual and psychological development of children. One of the most nutrition is breast milk, which provides a baby with ideal nutrition and supports growth and development [3].

The current study revealed that among 399 children included in this study the majority 334 (83.7%) were breast feed in the first 6 months of age. Our study also showed that (38.6%) of the children begin to feed supplementary food after 6 months. This is similar to the study done in Hoseana town in which breast feeding infants were 80% and most of the infants began feeding with supplementary foods after six months [8]. This data highlights that the majority of children

have been transitioning to alternative forms of feeding in their right age from 6 months age. However, this study indicated that a few (1.8%) children have started consuming supplementary food later, at about 9 months of age. With respect to the type of supplementary food the children consume, 263 (65.9%) prefer to fed on milk. Of which, 27.1% are fed on raw milk, 37.6% are fed on boiled milk, and only 1.3% which are fed pasteurized milk. The source of milk for the majority of children is cow milk (56.6%), while some children receive milk powder (8.5%), and others use alternative sources (0.8%). This study is similar to the study done in Jimma town in which 83 % of mothers prefer milk obtained from different sources to feed their infants [18]

In the present study, it was indicated that there were common practices of providing locally prepared gruel and Cerefam to the children in addition to milk. For instance, in this study, (85.7%) are fed on locally prepared gruel; 63.7% are fed on commercially prepared cereal based weaning foods such as Cerefam. This result is somewhat higher than the study conducted in Jimma town in which 50% of infants who feed on cereal based weaning foods [18]. With respect to fruit juice consumption, a total of 375 children (94%) consume fruit juice. The types of fruit juice include orange 25.1%, papaya 23.1%, avocado 25.6%, mango 16.3%, and other fruits 4.3%. This information highlights the prevalence of fruit juice consumption and the variety of fruits used in children's diets. In the present study 45.9% are fed on Fish Oil (Omega-3 Fatty Acid). Similar study conducted in India also revealed that 55.6% of infants feed on Omega-3 Fatty Acid supplements [31]. This data demonstrates the utilization of fish oil as a dietary supplement among a significant portion of the children.

With respect to child’s health status the current study indicated that 85.2% of children were vaccinated. This is higher than the report of Ethiopian Mini Demographic and Health Survey (2019) in which coverage of children who received all routine immunizations was 57% [35]. The difference is probably due to all the children included in this study were urban residents in which awareness regarding the importance of vaccination is higher compared to rural residents. This indicates the overall vaccination coverage among the surveyed children and the proportion of unvaccinated children. Regarding children with health problem, 18.5% were taken to a health institution for treatment, while 7.5% received home care only, and 1.3% were assisted by traditional healers. For 96 children (24.1%), commercial or therapeutic food was recommended

during their illness. This is done by the involvement and support provided by health extension assistants in catering to the children's feeding and special care needs.

Regarding to mental development of the child out of the 399 children, 60.2% started to stand on their legs around one year of age. This data highlights the development of gross motor skills and the variability in the age at which children achieve this milestone. Among the children, 82% can throw and catch a ball. These findings indicate the prevalence of fine motor skills related to throwing and catching objects. Out of the 399 children, 69.2% can draw figures that represent something. This study supports that movement of legs and hands were positively as shown in [5, 7, 36]. This information reflects the development of artistic and representational skills among the children.

In the current study even though, 44.9% of children can remember facts or experiences. a significant number of children, 83.7% can remember the name of people. This finding provides insights into the variability in memory skills among the surveyed children. On the other hand 19% have a very good ability to use a spoon and fork, while 27.6% have a medium ability, and 24.8% have a poor ability. Similar breakdowns are provided for using a pen, pencil, or ruler, remembering daily activities, and completing daily activities. These findings illustrate the range of fine motor skills and abilities among the children [36].

With respect to Reading, Writing, and Mathematical Skills, 24.1% have very good reading skills, 40.6% have good skills, 30.1% have medium skills and 13.3% have poor skills. These findings offer insights into the literacy and numeracy abilities of the surveyed children.

Overall, the difference observed in the data can be attributed to combination of biological, cultural, socio-economic, and environmental factors that shape nutrition practices, health outcomes, and development trajectories among children .

5.3CONCLUSION

The data reveals variations in feeding practices, such as delayed introduction of supplementary food, common consumption of milk, fruit juice, and fish oil supplementation. Vaccination coverage indicates higher awareness among urban residents. Individual differences were

observed in motor skills, memory skills, and abilities, highlighting diverse developmental patterns. The study also provides insights into the literacy and numeracy abilities of the surveyed children. Overall, it underscores the significance of nutrition, healthcare, and developmental support for children's well-being.

5.4 RECOMMENDATION

- Breastfeeding: Encourage and support breastfeeding, as it has numerous health benefits for both the mother and the child. Provide resources and education to help increase the rate of breastfeeding among mothers
- Introduction of supplementary food: Promote the introduction of supplementary foods at the appropriate age. Encourage parents to start introducing solid foods to their infants around 6 months of age, as recommended by the World Health Organization (WHO).
- Overall, it is important to provide comprehensive nutritional education to parents and caregivers, emphasizing the importance of a balanced diet and appropriate feeding practices for children's.
- Vaccination: Continue to prioritize vaccination efforts and ensure that the vaccination coverage is increased. Implement awareness campaigns to educate parents about the importance of vaccinations in preventing diseases and protecting children's health.
- Supervision frequency: Increase the frequency of supervision and follow-up visits by health extension workers or other healthcare professionals. Consider more regular check-ins, such as weekly or monthly visits, to monitor the health status of children, provide guidance, and address any concerns or questions parents may have.
- Parental education and support: Caregivers play a vital role in ensuring optimal nutrition and development for children. Providing parents and caregivers with education and support on topics such as breastfeeding, introduction of complementary foods, safe food practices, and early childhood development can empower them to make informed decisions and provide better care for their children

- Continued research and monitoring: Regular studies and surveys can help monitor the nutritional status and developmental outcomes of children. These findings can guide policymakers and healthcare professionals in identifying areas of improvement and implementing targeted interventions to ensure the well-being of children.

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7. REFERENCES

[1] P. Darbyshire, “Children are our future. Really?,” *J. Child Heal. Care*, vol. 23, no. 3, pp. 339–342, Aug. 2019, doi: 10.1177/1367493519867195.

[2] R. I. Karpinski, A. M. Kinase, N. A. Tetreault, and T. B. Borowski, “High intelligence : A risk factor for psychological and phy overexcitabilities,” *Intelligence*, vol. 66, no. November 2016, pp. 8–23, 2018, doi: 10.1016/j.intell.2017.09.001.

[3] S. B. Workie, T. Mekonen, T. C. Mekonen, and W. Fekadu, “Child development and nutritional status in 12-59 months of a limited setting of Ethiopia,” *J. Heal. Popul. Nutr.*, vol. 39, no. 1, pp. 1–9, 2020, doi: 10.1186/s41043-020-00214-x.

[4] M. S. Brown, “Nutrition tutorial,” *J. Nutr. Educ.*, vol. 16, no. 2, p. 92, 1984, doi: 10.1016/s0022-3182(84)80183-1.

[5] H. Eshete, Y. Abebe, E. Loha, T. Gebru, and T. Tesheme, “Nutritional Status and Effect of Maternal Employment among Ch Months in Wolayta Sodo Town, Southern Ethiopia: A Cross-sectional Study,” *Ethiop. J. Health Sci.*, vol. 27, no. 2, pp. 155– 10.4314/ejhs.v27i2.8.

[6] E. L. Prado and K. G. Dewey, “Nutrition and brain development in early life,” *Nutr. Rev.*, vol. 72, no. 4, pp. 267–284, Apr. 2 10.1111/nure.12102.

[7] T. A. Abdel-Rahman, “Assessment of Nutritional Status and Cognitive Development of Preschool Children at Minia Gover *Can. J. Clin. Nutr.*, vol. 5, no. 1, pp. 72–94, 2017, doi: 10.14206/canad.j.clin.nutr.2017.01.08.

[8] B. M yalew, “Prevalence and Factors Associated with Stunting, Underweight and Wasting: A Community Based Cross Sect Children Age 6-59 Months at Lalibela Town, Northern Ethiopia,” *J. Nutr. Disord. Ther.*, vol. 4, no. 2, 2014, doi: 10.4172/21

[9] O. Warsito, A. Khomsan, N. Hernawati, and F. Anwar, “Relationship between nutritional status, psychosocial stimulation, development in preschool children in Indonesia,” *Nutr. Res. Pract.*, vol. 6, no. 5, pp. 451–457, 2012, doi: 10.4162/nrp.201

[10] A. Soliman *et al.*, “Early and long-term consequences of nutritional stunting: From childhood to adulthood,” *Acta Biomed* pp. 1–12, 2021, doi: 10.23750/abm.v92i1.11346.

[11] K. Y. Saghir Ahmad, “Malnutrition: Causes and Strategies,” *J. Food Process. Technol.*, vol. 6, no. 4, 2015, doi: 10.4172/215

[12] A. A. Yirga, H. G. Mwambi, D. G. Ayele, and S. F. Melesse, “Factors affecting child malnutrition in Ethiopia,” *Afr. Health Sc* pp. 1897–1909, 2019, doi: 10.4314/ahs.v19i2.13.

[13] UNICEF, “Early childhood development: A statistical snapshot. Building better brains and sustainable outcomes for childr *Snapshot*, p. 8, 2014, [Online]. Available: UNICEF/NYHQ2006-0162/Kamber

[14] O. Müller and M. Krawinkel, “Malnutrition and health in developing countries,” vol. 173, no. 3, pp. 2000–2003, 2005.

[15] T. Ayele, “A Review of the Trends and Causes of Food Insecurity in Ethiopia A Review of the Trends and Causes of Food In Ethiopia,” no. February, 2021, doi: 10.7176/FSQM/99-02.

[16] K. E. Y. Messages, “ETHIOPIA Food Security Outlook Food aid remains insufficient amid very high levels of hunger and ma June 2022, 2023.

[17] E. L. Prado and K. G. Dewey, “Nutrition and brain development in early life,” *Nutr. Rev.*, vol. 72, no. 4, pp. 267–284, 2014, 10.1111/nure.12102.

[18] N. Zare *et al.*, "An investigation into the relationship between nutritional status, dietary intake, symptoms and health-rel in children and young people with juvenile idiopathic arthritis: a systematic review and meta-analysis," *BMC Pediatr.*, vol 12, 2023, doi: 10.1186/s12887-022-03810-4.

[19] K. Madej, "Child development," *SpringerBriefs Comput. Sci.*, vol. 0, no. 9783319428741, pp. 15–32, 2016, doi: 10.1007/97 8_3.

[20] I. Huybrechts, I. De Bourdeaudhuij, and S. De Henauw, "Environmental factors: opportunities and barriers for physical ac eating among children and adolescents.," *Verh. K. Acad. Geneeskd. Belg.*, vol. 72, no. 5–6, pp. 277–293, 2010.

[21] J. L. Harris and J. a Bargh, "The Relationship between Television Viewing and Unhealthy Eating: Implications for Children Interventions," *Heal. Commun*, vol. 24, no. 7, pp. 660–673, 2009, doi: 10.1080/10410230903242267.The.

[22] W. Gantz, N. Schwartz, and J. Angelini, "Television Food Advertising to Children in the United States," *Menlo Park. CA He Found.*, 2007.

[23] T. N. Robinson, D. L. G. Borzekowski, D. M. Matheson, and H. C. Kraemer, "Effects of fast food branding on young childre preferences," *Arch. Pediatr. Adolesc. Med.*, vol. 161, no. 8, pp. 792–797, 2007, doi: 10.1001/archpedi.161.8.792.

[24] F. S. Hussenoeder *et al.*, "Analyzing the link between anxiety and eating behavior as a potential pathway to eating-relate outcomes," *Sci. Rep.*, vol. 11, no. 1, pp. 1–7, 2021, doi: 10.1038/s41598-021-94279-1.

[25] L. M. Powell, G. Szczypka, and F. J. Chaloupka, "Adolescent Exposure to Food Advertising on Television," *Am. J. Prev. Med* SUPPL., pp. 553–560, 2007, doi: 10.1016/j.amepre.2007.07.009.

[26] L. Voniati, A. Papaleontiou, R. Georgiou, and D. Tafiadis, "The Effectiveness of Oral Sensorimotor Intervention in Children Disorders," *Curr. Dev. Disord. Reports*, vol. 8, no. 4, pp. 201–211, 2021, doi: 10.1007/s40474-021-00236-y.

[27] Toddler and Infant Forum, "Developmental stages in infant and toddler feeding," *Toddler Factsheet 3.5*, pp. 1–11, 2014, www.infantandtoddlerforum.org

[28] K. Dayanand and and R. W. R. Olivia E. Atherton1, Jennifer L. Tackett2, Emilio Ferrer1, "乳鼠心肌提取 HHS Public Access vol. 176, no. 5, pp. 139–148, 2018, doi: 10.1177/0748730419892105.When.

[29] C. J. Manno, C. Fox, P. S. Eicher, and M. E. Kerwin, "Early oral-motor interventions for pediatric feeding problems: What, *Early Intensive Behav. Interv.*, vol. 2, no. 3, pp. 145–159, 2005, doi: 10.1037/h0100310.

[30] M. Ramsay, "Feeding skill, appetite and feeding behaviours of infants and young children and their impact on growth and development," *… Early Child. Dev. [online]. …*, no. October, pp. 1–9, 2004, [Online]. Available: http://www.child-encyclopedia.com/Pages/PDF/RamsayANGxp.pdf

[31] P. De and N. Chattopadhyay, "Effects of malnutrition on child development: Evidence from a backward district of India," *Glob. Heal.*, vol. 7, no. 3, pp. 439–445, 2019, doi: 10.1016/j.cegh.2019.01.014.

[32] T. Wubbels, P. Den Brok, J. Van Tartwijk, and J. Levy, "Introduction to," *Interpers. Relationships Educ.*, pp. 1–15, 2012, do 6091-939-8_1.

[33] P. Wipt and K. M. George, *基因的改变NIH Public Access*, vol. 23, no. 1. 2008. doi: 10.1007/s11065-012-9214-1.Brain.

[34] S. E. Cusick and M. K. Georgieff, "The role of nutrition in brain development: The golden opportunity of the 'First 1000 Da development in late fetal and early postnatal life," *J Pediatr*, vol. 175, pp. 16–21, 2016, doi: 10.1016/j.jpeds.2016.05.013.

[35] E. Girma *et al.*, “Mental health stigma and discrimination in Ethiopia: evidence synthesis to inform stigma reduction inter
Ment. Health Syst., vol. 16, no. 1, pp. 1–18, 2022, doi: 10.1186/s13033-022-00540-z.

[36] A. Sheppard *et al.*, “Molecular Evidence for Differential Long-term Outcomes of Early Life Severe Acute Malnutrition,” *EB*
18, pp. 274–280, 2017, doi: 10.1016/j.ebiom.2017.03.001.

[37] UNICEF, “Malnutrition UNICEF Canada: For every child.” 2022. [Online]. Available: https://www.unicef.ca/en/malnutritio

[38] European Parliament, “The social and economic consequences of malnutrition in ACP countries,” *Backgr. Doc. Eur. Parlia*
2014.

[39] M. A. Tariku Gurara Tulem, “Prevalence of Food Insecurity and Associated Factors Among Households in Waliso Town ,”

[40] A. K. Tekile, A. A. Woya, and G. W. Basha, “Prevalence of malnutrition and associated factors among under - five children
evidence from the 2016 Ethiopia Demographic and Health Survey,” *BMC Res. Notes*, pp. 1–6, 2019, doi: 10.1186/s13104-

[41] R. Lamsal, D. J. Dutton, and J. D. Zwicker, “Using the ages and stages questionnaire in the general population as a measur
children not at risk of a neurodevelopmental disorder,” *BMC Pediatr.*, vol. 18, no. 1, pp. 1–9, 2018, doi: 10.1186/s12887-

[42] Y. Li, L. Tang, Y. Bai, S. Zhao, and Y. Shi, “Reliability and validity of the Caregiver Reported Early Development Instruments
impoverished regions of China,” 2020.

[43] D. C. McCoy, M. Waldman, and G. Fink, “Measuring early childhood development at a global scale: Evidence from the Ca
Early Development Instruments,” *Early Child. Res. Q.*, vol. 45, pp. 58–68, 2018, doi: 10.1016/j.ecresq.2018.05.002.

APPENDIX-1

Wolkite University

College of Medicine and Health Sciences

Department of Nursing

CONSENT FORM (English version) My name is……. I came from wolkite university and I am 4th year nursing student. I want to study the relationship between nutritional status and mental development of children in Woliso town, Central Ethiopia. I can only start asking you the set of specific questions after I have confirmed your willingness. As I have told you before your participation is fully voluntary. If you think that you have got enough information, and you don't have any ambiguity and hesitation about the study you will be welcomed to be part of the study participants as respondent. I would like to remind you again that you have the right to withdraw from the study at any place and point of time. Not participating or withdrawing will not have any effect on the services that you are expected to get. Having saying these I kindly ask you to take active part and contribute to the study.

Are you willing to participate in the study? (Interviewer: Please mark with alternative choice provided to confirm respondent's permission.)

Agree_____ Not agree_____

Sign_____

Dear respondent,

Your response to the questions has significant impact on the quality of data and result. Thus, you are kindly requested to respond genuinely.

Questionnaire prepared for children's parents

Code: _____

Part 1: General Information regarding the child and child's parent

1. Child's parent responding to questionnaire A. Mother B. Father
   C. Others_____
2. Address: Town_____ Kebele _____
3. Age _____
4. Academic status A. Illiterate B. 1- 8 C. 9-12 D. diploma or degree
5. Occupation A. Unemployed/House wife B. Private sector/Business C. Farmer D. Civil servant E. other_____
6. Religion: A. Muslim B. Orthodox C. Protestant D. Catholic E. others_____
7. What is the approximate monthly income of the family?
   A. Less than 500 Birr
   B. 500 - 1000 Birr
   C. 1000 - 2000 Birr
   D. 2000 - 5000 Birr
   E. > 5000 Birr
8. Is the child's mother alive? Yes____ No____
9. Is the child's father alive? Yes____ NO____
10. What is the number of children born alive?____
11. Did the mother attend antenatal care while pregnant? Yes__ No___
12. Where is the child delivered? A. Home B. Health institution C. Other, specify_____
13. Age of the child _____ Sex _____
14. Birth order of the child _____

Part II: Questionnaires related to child's nutritional status

1. Is your child breast feeding? A. Yes B. No
2. At what age of your child, you began to feed with supplementary food? _____

3. Do you feed your child with milk? A. Yes B. No

3.1 If yes, what type of milk you feed your infant?

A. Raw milk B. Boiled milk C. Pasteurized milk D. Others_____

3.2 If yes, what is the source of the milk?

A. Cow milk B. Milk powder C. Other_____

4. Do you feed your child with locally prepared gruel/thin porridge? A. Yes B. No

5. Do you feed your child with cerefam (commercial cereal and fruit/vegetable blend)?

A. Yes B. No

6. Do you feed your child with fruit juice? A. Yes B. No

6.1 If yes, what type of fruit juice you frequently feed your infant?

A. Orange B. Papaya C. Avocado D. Mango E. Other_____

7. Do you feed your child with fish oil (omega-3 fatty acids)? A. Yes B. No

Part III: Questionnaires related to child's health status

1. Was the child vaccinated? A. Yes B. No

2. Was this child ill in the past two weeks? A. Yes B. No

3. If the child was sick, do you know the type of illness? A. Yes B. No

4. What was done to the child during the illness?

A. Taken to health institution C. Assisted by traditional healer

B. Given home care only D. Nothing else

5. Is the physician/health care provider recommends commercial/therapeutic foods such as plumpy net for your child? A. Yes B. No

6. Are there concerned bodies such as health extension workers and other physicians who assist you on feeding and special care given for the child?

A. Yes B. No

7. If your answer is yes how often do they supervise you?

A. Once a week B. Once a month C. Others_____

Part IV: Questionnaires regarding mental development of the child

1. Your child starts to stand on his/her own leg in around one year of age

   A. Yes B.No C. I don't remember

2. Your child has ability to throw and catching a ball

   A. Yes B.No C. I don't know

3. Your child has the ability to to draw figures that represent something

   A. Yes B.No

4. Your child has ability to remember facts or what he/she has experienced (e.g., birth date)

   A. Yes B.No C. I don't know

5. Your child has ability to remember the names of people (e.g., name of teacher, school peers)

   A. Yes B.No C. I don't know

6. Your child's ability to use spoon, fork, etc

   A. Very good B. Good C. Medium D. Poor

7. Your child's ability to use pen, pencil, ruler

   A. Very good B. Good C. Medium D. Poor

8. His/her remembering daily activities

   A. Very good B. Good C. Medium D. Poor

9. His/her ability in completing daily activities

   A. Very good B. Good C. Medium D. Poor

10. Your child's ability in judging a distance or size

    A. Very good B. Good C. Medium D. Poor

11. Your child can read the clock and tells the actual time

    A. Yes B. No C. I don't know

12. Your child's reading skill

    A. Very good B. Good C. Medium D. Poor

13. Your child's writing skill

    A. Very good B. Good C. Medium D. Poor

14. Ability to learn learning basic mathematical skills (mainly addition and subtraction)

    A. Very good B. Good C. Medium D. Poor

UNKA HEEYYAMA (Afaan Ingiliffaa) . Maqaan koo……. Yuunivarsiitii wolkite irraan dhufe barataa narsii waggaa 4ffaati. Guddinaa fi wantoota kanaan walqabatan LBW daa'imman reefuu dhalatan irratti qorachuu nan barbaada. Tuuta gaaffilee addaa si gaafachuu kanan jalqabu erga fedhii kee mirkaneessee booda qofa. Akkuman kanaan dura isinitti hime hirmaannaan keessan guutummaatti tola ooltummaati. Yoo odeeffannoo gahaa argatte jettee yaadde, akkasumas waa'ee qorannichaa wal-xaxaa fi duubatti deebi'uu tokkollee yoo hin qabaanne akka deebii kennituutti qaama hirmaattota qorannichaa ta'uuf si simatama. Bakka fi yeroo kamiyyuu qo'annoo keessaa ba'uuf mirga akka qabdan irra deebi'ee isin yaadachiisuu barbaada. Hirmaachuu dhiisuun ykn ofirraa baasuu dhiisuun tajaajila argachuun si irraa eegamu irratti dhiibbaa tokkollee hin qabu. Kanneen erga jedhee booda qorannicha irratti dammaqinaan akka hirmaattan fi gumaacha akka gootan kabajaan isin gaafadha. Qo'annaa kanarratti hirmaachuuf fedhii qabdaa? (Gaaffii fi deebii: Hayyama deebii kennituu mirkaneessuuf saanduqa kenname keessatti "⎷" jechuun mallatteessi.) Walii galuu_____ Walii hin galu_____ . Mallattoo_____

Kutaa II: Gaaffiilee haala soorataa daa'imaa wajjin walqabatan

Lakk.	Gaaffii	Deebii	
1.	Mucaan keessan harma hodhaa jiraa?	a. Eyyee b. Lakkii	
2.	Mucaa keessan umrii meeqatti nyaata dabalataa nyaachuu jalqabde/be?		
3.	Mucaa keessan aannan obaaftuu?	a. Eyyee b. Lakkii	
	3.1 Yoo eeyyee ta'e daa'ima kee gosa aannan akkamii obaafta?	a. Aannan sa'aa b. Aannan danfiifame c. Aannan paastara ta'e d. Kanneen biroo	
	3.2 Eeyyee yoo ta'e maddi aannani maali?	a. Aannan sa'aa b. Daakuu aannani c. Kan biroo___	
4.	Mucaa keessan daabboo/daakuun haphii naannootti qophaa'een nyaachiftuu?	a. Eyyee b. Lakkii	
5.	Mucaa keessan cerefam (midhaan daldalaa fi fuduraa/kuduraa walitti makame) nyaachiftuu?	a. Eyyee b. Lakkii	
6.	Mucaa keessan dhangala'aa fuduraa nyaachiftuu?	a. Eyyee b. Lakkii	
	6.1 Yoo eeyyee ta'e, daa'ima kee gosa dhangala'aa fuduraa akkamii yeroo baay'ee nyaachifta?	a. Burtukaana b. Paappaaya c. Avokaadoo d. Maangoo	

		e. Kan biroo	
7.	Mucaa keessan zayita qurxummii (omega-3 fatty acids) nyaachiftuu?	a. Eyyee b. Lakkii	

Kutaa III: Gaaffiilee haala fayyaa daa'imaa wajjin walqabatan

1.	Daa'imni talaalamee turee?	a. Eyyee b. Lakkii , lakkii yoo ta'e hanga yoomitti?	
2.	Mucaan kun torban lamaan darban keessa dhukkubsatee turee?	a. Eyyee b. Lakkii	
3.	Yoo daa'imni dhukkubsatee ture gosa dhukkubaa beektaa?	a. Eyyee b. Lakkii	
4.	Yeroo dhukkuba mucaa maaltu godhame?	a. Dhaabbata fayyaa geeffame b. Kunuunsa manaa qofa kenname c. Fayyisaa aadaatiin gargaarama d. Waan biraa miti	
5.	Ogeessi fayyaa/dhiyeessaan kunuunsa fayyaa nyaata daldalaa/wal'aansaa kan akka plumpy net daa'ima keessaniif gorsaa?	a. Eyyee b. Lakkii	
6.	Qaamoleen dhimmi ilaallatu kan akka hojjettoota ekisteenshinii fayyaa fi hakiimonni biroo nyaata kennuu fi kunuunsa addaa daa'imaaf kennamu irratti si gargaaran jiruu?	a. Eyyee b. lakkii	
7.	Deebiin kee eeyyee yoo ta'e yeroo meeqa si to'atu?	a. Torbanitti al tokko b. Ji'atti al tokko c. Kaan_ Kutaa	

IV: Gaaffiiwwan guddina sammuu daa'imaa ilaallatan

Lakk.	Gaaffii	Deebii	
1.	Mucaan keessan naannoo waggaa tokkootti miila ofiitiin dhaabbachuu jalqaba	a. Eeyyee b. Lakki c. Hin yaadadhu	
2.	Mucaan keessan dandeettii kubbaa darbachuu fi qabachuu qaba	a. Eeyyee b. Lakki c. Hin beeku	
3.	Mucaan keessan dandeettii fakkiiwwan waan tokko bakka bu'an kaasuun ni danda'ama	a. Eeyyee b. Lakki	
4.	Mucaan keessan dandeettii dhugaa jiru ykn waan isa mudate yaadachuu qaba (fkn, guyyaa dhalootaa) .	a. Eeyyee b. Lakki c. Hin beeku	
5.	Mucaan keessan dandeettii maqaa namootaa yaadachuu qaba (fkn, maqaa barsiisaa, hiriyoota mana barumsaa) .	a. Eeyyee b. Lakki c. Hin beeku	
6.	Dandeettii daa'imni keessan mankaa, shuukaa fi kkf fayyadamuu	a. Baay'ee gaarii b. Gaarii c. Giddugaleessa d. Hiyyeessa	
7.	Dandeettii daa'imni keessan qalama, sarara itti fayyadamuu	a. Baay'ee gaarii b. Gaarii c. Giddugaleessa d. Hiyyeessa	
8.	Hojii guyyaa guyyaa yaadachuu isaa	a. Baay'ee gaarii b. Gaarii c. Giddugaleessa d. Hiyyeessa	
9.	Dandeettii hojii guyyaa guyyaa xumuruu irratti qabu	a. Baay'ee gaarii b. Gaarii c. Giddugaleessa d. Hiyyeessa	
10.	Dandeettii daa'imni keessan fageenya ykn guddina murteessuu irratti qabu	a. Baay'ee gaarii b. Gaarii c. Giddugaleessa d. Hiyyeessa	
11.	Mucaan keessan sa'aatii dubbisuu fi sa'aatii qabatamaa himuu danda'a	a. Eeyyee b. Lakki c. Hin beeku	
12.	Dandeettii dubbisuu mucaa keessanii	a. Baay'ee gaarii b. Gaarii	

		c. Giddugaleessa d. Hiyyeessa	
13.	Dandeettii barreessuu mucaa keessanii	a. Baay'ee gaarii b. Gaarii c. Giddugaleessa d. Hiyyeessa	
14.	Dandeettii herregaa bu'uuraa (baay'isuu ida'uu fi hir'isuu) barachuu barachuu .	a. Baay'ee gaarii b. Gaarii c. Giddugaleessa d. Hiyyeessa	

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በጥናቱ ላይ ለመሳተፍ ፍቃደኛነኝ_____ ፍቃደኛ አይደለሁም_____

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