



# Dietary Practices of Caregivers to Children Aged 6 to 23 Months at Narok County Referral Hospital, Kenya

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## ABSTRACT

In Narok County, Kenya, where the challenge of achieving optimal child nutrition persists, particularly in the context of its arid and semi-arid climate, the prevalence of stunting among children is alarmingly high compared to other regions. Addressing this critical issue necessitates an enhancement of caregivers' dietary practices. A gap on dietary practices among caregivers of children aged 6 to 23 months extends beyond Narok County to encompass broader regions in Africa, including Kenya. Consequently, this study was designed to establish the dietary practices of caregivers within Narok County for children in this age group. All approvals including ethical clearance from Kabarak University Research and Ethics Committee (KUREC), research permit from NACOSTI and permit from Narok County Referral Hospital were sought before commencement of the study. This research adopted a descriptive cross-sectional design and a sample size of 108 children aged 6 to 23 months and caregivers were purposively recruited. Data were analysed using SPSS version 25 and ENA SMART soft wares. Findings indicate a variation in dietary practices where 68.5% of children were still breastfeeding at the time of data collection; 88% of children were exclusively breastfed during the first 6 months of age. Cereals were consumed more than four times a week by 85.2% of the children although majority of them (76.9%) did not meet the minimum dietary score. The overall prevalence of wasting, underweight and stunting was 29.6%, 15.7% and 23.1% respectively. The occurrence of stunting in children was related to dietary practices ( $\chi^2_{0.245}=2$ ,  $p$ -value=0.011). The timing of complementary feeding displayed a moderate positive correlation with WAZ ( $r=0.305$ ,  $p=0.001$ ) and WHZ ( $r=0.047$ ,  $p=0.627$ ). In conclusion caregivers' dietary practices varied across the caregivers and contributed to nutrition outcome of the children in dietary diversity, food adequacy and nutrient intake. There need to promote proper responsive feeding practices among caregivers to children of this age group.

**Keywords:** Caregivers, children, dietary practices, malnutrition



## INTRODUCTION

Malnutrition is a global concern with an estimated 230 million children affected, as reported by UNICEF (2021). Cesare et al. (2021) estimated that 149.2 million children under the age of five years were stunted, 45.4 million were wasted, and 38.9 million were overweight. African Union (2020) estimated that 12.7 million children under the age of 5 years were acutely malnourished, with 3.5 million among them being severely wasted in sub-Saharan Africa. Maternal malnutrition affects fetal development, which leads to malnutrition in children in developing nations (IFPRI /SCN, 2000).

Achieving optimal child nutrition remains a fundamental challenge for improving human development. The limited time and capacity of caregivers, coupled with inadequate access to food, result in many children being unable to obtain the nutrients they need for healthy growth (FAO, 2003). However, dietary practices of caregivers to children can help improve the situation. Global research has shown that addressing malnutrition early is an effective way to combat the problem (Olack et al, 2011). Healthy eating habits in childhood can reduce health problems in adulthood (Haines *et al*, 2019). A well-nourished population is essential for productivity and improved standards of living, the United Nations International Children's Fund (UNICEF, 2020) has demonstrated that there is strong link between optimal nutrition during childhood, national development and the potential of future generations.

According to the Kenya demographic and health survey report (2022), 5% of children under five years old in Kenya are wasted, and 18% are stunted. This rate of malnutrition is classified as an emergency by the World Health Organization (WHO). Regardless of implementation of nutritional interventions by the Government of Kenya (GOK) and various development agencies over several decades, acute and chronic malnutrition still persist in the country. According to a study by Chege and Kuria (2017), poor dietary practices among caregivers are linked to low nutritional knowledge on child nutrition. In Narok county, the level of stunting for children under five years was 27.2% and wasting was 7.7% (SMART Survey, 2018), which is classified as high and slow progress according to WHO standards (FSNAU, 2019). The burden of malnutrition puts a strain on caregivers' resources and health services therefore leading to economic deprivation. There is no documented evidence on caregivers' dietary practices to children in Narok County, this has been hindering the design of an effective intervention programs by policymakers and stakeholders; this study was aimed at investigating the dietary practices among caregivers of children aged 6 to 23 months, with a view of making the necessary recommendation for intervention in Narok and similar Arid.

## MATERIALS AND METHODS

### *Study Design*

This research adopted a descriptive cross-sectional study design using a quantitative data collection approach. This involved collection of data at a single point in time from a sample population and drawing inferences on other populations with similar demographics.

### *Study Area*

The study was carried out at the Narok County Referral Hospital (NCRH), located in Narok Town ward, Narok County, Kenya. It is one of the major public health facility that provide referral health care services to the people of Narok and other neighbouring counties such as Bomet and Kisii. The study was conducted at the maternal and child health clinic (MCH), paediatric ward and the nutrition unit of the hospital where children aged 6-23 months and their caregivers receive nutritional care and maternal child health services.

### **Sample Size Determination**

The sample size was determined using Fisher et al. (1998) formula and prevalence of rate of 6.8% (SMART, 2018). The population of children aged 6-23 months in NCRH catchment area is estimated to be 5859 (KHIS, 2021). Therefore, the formula:  $n=(z^2*pq)/d^2$  was applied as follows: where Z value of 1.96,  $q(1-p)$ , 0.05 error and 95% CI and a sample size of 108 was established.

### **Sampling procedure**

Purposive sampling techniques was used to select the study location due to subject availability and on the basis of certain considerations such as prevalence of malnutrition (Patton, 1990). Similarly, Purposive Sampling Technique was used to select subjects who qualify the inclusion criteria: Caregivers to children aged 6-23 months and attending Narok County Referral Hospital (NCRH) who gave consent to participate in the study, children aged 6-23 months and attending NCRH whose legal caregivers gave assent to participate in the study and children who were malnourished. Narok County and NCRH was purposively chosen on the basis of high prevalence of malnutrition (County Health Report, 2022). Consistency was maintained to avoid changing standards.

### **Study Variables**

The following were considered as independent variables: Dietary practices included meal regularity (24-hour recall) and food frequency, dietary types (dietary diversity score using the ten food groups) and nutrient intake (energy, proteins, vitamins and minerals). The dependent variable was nutritional status as the outcome for children aged 6 to 23 months.

### **Data Collection**

Before data collection, all the requisite approvals were obtained from Kabarak University Research Ethics Committee, NACOSTI and Narok County Referral Hospital. Research assistants were recruited based on their previous research experiences. During the actual data collection, the participants were identified, consented and recruited subject to the inclusion criteria. A semi-structured questionnaire was administered which included all the study variables as per the research objectives. The data was collected in a private room convenient to ensure subject privacy and confidentiality. All questionnaires were filled and reviewed to ensure that all questions were correctly completed.

### **Data Analysis**

The collected raw data were cleaned and analysis using the Statistical Package for the Social Sciences (SPSS) version 25. Dietary practices were assessed using descriptive analysis and individual dietary diversity scores were categorized as met (<5) or not met ( $\geq 5$ ) according to the IYCF guidelines (WHO and UNICEF, 2021), nutrient intake, meal frequency and food frequency. Results were presented in graphs and tables.

### **Ethical Consideration**

Ethical clearance was obtained from Kabarak University Ethics Committee Ref No KUREC-050623, followed by a research permit from National Council for Science and Technology (NACOSTI) Ref No 135190. Permission was also sought from the County Director of Health, Narok County and NCRH Medical Superintendent. A pilot survey was carried out to ascertain the accuracy of the questionnaire in Narok County Referral Hospital. The participants were informed on the objectives of the study, taken through a detailed informed consent, the eligibility criteria, the risks, benefits and that participation in this study was voluntary and hence they had the right to withdraw at any point during the study.

## RESULTS

### Care givers Dietary Practices

Table 1 below presents a comprehensive overview of breastfeeding and complementary feeding practices among 108 children aged 6 to 23 months. The majority (68.5%) of the children were still breastfeeding at the time of data collection. 88.0% were exclusively breastfed during the first six months of their lives. 81.5% of the children were introduced to complementary feeding at the recommended age of 6 months, while a smaller fraction was introduced earlier (12.0%) or later (5.6%). Regarding the cessation of breastfeeding, 17.6% stopped breastfeeding between 13 to 23 months followed by 7-12 months (10.2%) and  $\leq 6$  months (3.7%) respectively. Cessation of breastfeeding was influenced by a variety of factors, including the child's preference (16.7%), insufficient breast milk (2.8%), and other personal reasons such as time constraints (5.6%). Remarkably, 73.1% of caregivers successfully met the minimum meal frequency recommendations tailored to their child's age effectively addressing their nutritional needs. These findings underscore the multifaceted nature of feeding practices and highlight the significance of informed guidance to optimize infant and young child nutrition.

**Table 1:**  
**Feeding Habits of Children 6 to 23 Months**

Characteristic	Category	(N=108)	%
Breastfeeding	Yes	74	68.5
	No	34	31.5
Exclusively breastfed	Yes	95	88.0
	No	13	12.0
Timing of complementary feeding	Not yet introduced	1	0.9
	Early introduction before 6 months	13	12.0
	Timely introduction at 6 months	88	81.5
	After 6 months	6	5.6
Cessation of breastfeeding	$\leq 6$ months	4	3.7
	7-12 months	11	10.2
	13-24 months	19	17.6
Reason for stopping breastfeeding	No enough breast milk	3	2.8
	No time to breastfeed	6	5.6
	Baby refused to breastfeed	2	1.9
	Child wanted to stop	18	16.7
	Pregnancy	3	2.8
	Breastfeeding younger child	1	0.9
	mother went back to school	1	0.9
Minimum Meal frequency	Met	79	73.1
	Unmet	29	26.9

### Food Frequency

As shown in the table 2 below, Cereals were consumed significantly more than four times a week by (85.2%) of the children reflecting their fundamental role in the diet. 59.2% of the participants reported not to have given roots and tubers to their children. The consumption of vegetables (60.2%) and fruits (75.0%) was relatively prevalent, indicating a commitment to incorporating plant-based options. Dairy products and meat consumption was noteworthy, with many consuming them more than four times a week at 53.7% and 69.4% respectively, possibly due to the availability of livestock. Fish and seafood consumption (17.2%) was moderately prominent. Usage of eggs (7.0%) was relatively low, while legumes and nuts (76.9%) were consumed regularly, likely due to their practicality in the pastoralist context. Sugar (38.7%), and oils/fats (36.2%) spice condiments and beverages (30.8%) were used in moderation.

**Table 2:**  
**Frequency of Food Consumption by Children 6 to 23 Months in the Past Seven Days**

Food Groups	Never Consumed in the Past 7 Days %	Consumed <4 Times in a Week %	Consumed >4 Times in a Week %
Cereals	1.9	13.0	85.2
Roots and tubers	59.2	38.0	2.87
Vegetables	19.4	60.2	20.4
Fruits	12.0	75.0	13.0
Dairy products	3.7	42.6	53.7
Meat	28.7	69.4	1.9
Fish and sea foods	70.0	12.8	17.2
Eggs	60.6	32.4	7.0
Legumes and nuts	19.4	76.9	3.7
Sugar	24.9	13.8	38.7
Oils and fats	12.2	51.6	36.2
Spice condiments and beverages	56.7	12.5	30.8

### Minimum Dietary Diversity

As depicted in the Table 3 below, the dietary diversity score provides insight into the variety of food groups consumed by each child in the 24 hours prior to data collection. The findings indicate that the majority (79.6%) of the participants did not meet the minimum dietary diversity score, indicating a lack of variety in their food consumption. In contrast, 20.4% managed to meet the minimum dietary diversity score for children aged 6 to 23 months. The mean dietary diversity was  $3.71 \pm 1.14$  and the minimum food group consumed was 1 and the maximum 7 food groups. This distribution emphasizes the prevalence of insufficient dietary diversity among the participants, underlining the importance of interventions to promote a wider range of food choices in this age group.

**Table 3:**  
**Dietary Diversity Score for Children 6 to 23 Months**

Dietary Diversity Score	N=108	%
≤4 (unmet)	86	79.6
≥5 (met)	22	20.4

### Nutrient Intake

The majority (76.9%) of children met the energy requirements, indicating a satisfactory energy intake, 62.0% of children had their protein intake, while the proportions having micronutrient intake varied: 30.6% for Vitamin A, 26.9% for Iron, 22.2% for Zinc, and 24.1% for Iodine. Additionally, 35.2% met the recommended Calcium intake. These findings highlight both strengths and potential nutritional gaps, underlining the importance of promoting well-rounded diets and considering targeted interventions to enhance nutrient intake for the optimal growth and development of young children in this age group. (see table 5 below).

**Table 5:**  
**Proportion of Children 6 to 23 Months Consuming Adequate Nutrient**

Nutrient	N (108)	%
Energy (kcal)	83	76.9
Protein (g)	67	62.0

Nutrient	N (108)	%
Vitamin A ( $\mu\text{g RE}$ )	33	30.6
Iron (mg)	29	26.9
Zinc (mg)	24	22.2
Iodine ( $\mu\text{g}$ )	26	24.1
Calcium (mg)	38	35.2

## DISCUSSION

Dietary practices one of the essential components for healthy living, alongside adequate sanitation and proper nutrition (Roche et al., 2017). The burden of child malnutrition puts a strain on caregivers' resources and cost of health services thereby leading to economic deprivation. There is no documented evidence on caregivers' dietary practices to children in Narok County, this has been hindering the design of an effective intervention programs by policymakers and stakeholders; this study was aimed at investigating the dietary practices of caregivers to children aged 6 to 23 months with a view of making the necessary recommendation for intervention in Narok and similar Arid and semi-arid areas.

The findings of this study showed that majority (68.5%) of the children were still breastfeeding at the time of data collection, and 88.0% were exclusively breastfed during the first six months of their lives. These findings were consistent with the studies done in Spain and Kenya, where it was proven that majority of lactating mothers were exclusively breastfeeding their children during the first six months of their lives (Lechosa *et al.*, 2020; KDHS, 2022). Breast milk provides a baby with ideal nutrition and supports growth and development; it supplies all the necessary micro and macro nutrients in the right proportions; protects against allergies, diseases and malnutrition; it improves health growth and brain developments (WHO, 2021). In addition, majority of the children (81.5%) were introduced to complementary feeding at the recommended age of 6 months, while a smaller fraction introduced it earlier (12.0%) or later (5.6%). Several factor have proven to influence mother's decision to introduce complementary feeds, these includes: fear of transmitting HIV to the baby, insufficient breast milk, mother's profession, family's socioeconomic status, maternal age, place of residence and educational level, marital status and psychological support (Kostecka *et al.*, 2020; Wang *et al.*, 2019).

Majority of caregivers (73.1%) successfully met the minimum meal frequency recommendations tailored to their child's age, effectively addressing their nutritional needs. Cereals were significantly consumed for more than four times a week by 85.2% of participants. This results were consistent with a study conducted in Kajiado and Kitui by Chege et al. (2015). Roots and tubers exhibit a substantial proportion of participants who never consumed them (59.2%), vegetables (60.2%) and fruits (75.0%) were relatively prevalent, indicating a commitment to incorporating plant-based options. Dairy products and meat consumption were noteworthy, with many consuming them more than four times a week (53.7% and 69.4% respectively), possibly due to the availability of livestock. Fish and seafood consumption (17.2%) was moderately prominent. The usage of eggs (7.0%) was relatively low, while legumes and nuts (76.9%) were consumed regularly, likely due to their practicality in the pastoralist context. Sugar (38.7%) and oils/fats (36.2%) was used in moderation, possibly due to their limited availability. The high consumption of spice condiments and beverages (30.8%) could be attributed to their role in flavoring and preservation, contributing to the unique dietary patterns of this pastoralist group. These findings underline the multifaceted nature of feeding practices and highlight the significance of informed guidance to optimize infant and young child nutrition. Infants and young children who don't meet the minimum meal frequency and diversity tend to be vulnerable to malnutrition, especially stunting and micronutrient deficiencies, leading to increased morbidity and mortality (WHO, 2022). However, food availability, education level, nutritional knowledge, family size and poverty contribute to caregiver's choice in meeting minimum meal frequency of infants (Beyene *et al.*, 2015).

The evaluation of minimum dietary diversity in this study indicated that majority (79.6%) of the participants did not meet the minimum dietary diversity score, indicating a lack of variety in their food

consumption. Majority consumed cereals and tubers (rice and potatoes). The mean dietary diversity was  $3.71 \pm 1.14$  and the minimum food group consumed was 1 and the maximum 7 food groups; The findings were similar to studies carried out in Nigeria and Southern Ethiopia which found that children did not meet minimum dietary diversity. This was associated with caregivers' knowledge on nutrition and dietary practices, place of residence, age of the child, maternal education, birth order, poverty and family size (Tegegne *et al.*, 2017; Feyisa *et al.*, 2020; Ekerete *et al.*, 2016). This distribution emphasizes the prevalence of insufficient dietary diversity among the participants, underlining the importance of interventions to promote a wider range of food choices in this age group. By eating a variety of foods, children are able to get different vitamins, minerals, nutrients, and phytochemicals that can prevent nutrient deficiencies and chronic diseases (Temesgen *et al.*, 2018)

Taking of essential nutrients is necessary for maintaining good health and proper body functions. In this study, majority of the participants (76.9%) consumed energy foods such as ugali, rice and bread which was satisfactory. A good number of the children (62.1%) consumed protein rich foods such as meat, fish, milk and beans. These results were comparable to Baye *et al.* (2013) findings on a study carried out in Northern Ethiopia. There were substantial number of children who were not taking food rich in micro nutrients, for instance, food rich in vitamin A, Iron, Zinc and iodine was being taken by 30.6 %, 26.9%, 22.2%, and 24.1% respectively. The findings concurred with the SMART survey done in Narok in 2018 (KDHS, 2018). Hidden hunger is an adverse challenge especially in children causing micronutrient deficiencies, it is as a result of poor dietary diversity and disease. Micronutrients are essential for the reliability and optimum functioning of immune system. Children with subclinical shortage of micronutrients are more susceptible to develop frequent and more severe infections thus causing a harmful cycle of undernutrition and recurring diseases (Singh, 2004)

## CONCLUSION

Majority of the children met the minimum dietary diversity (MDD) by consuming food from at least four out of the seven groups.

## RECOMMENDATION

There is need to promote proper responsive feeding practices among caregivers to children of this age group.

### ***Conflict of Interest***

Authors declare no conflict of interest.

### ***Funding***

The study was mainly funded by researchers. No external funding was received.

### ***Author Contributions***

SN: Data collection and analysis, manuscript writing and revisions; PC: study supervision and manuscript review and; MW: study supervision and manuscript review.

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## DISCUSSION

- Baye, K., Guyot, J. P., Icard-Verniere, C., & Mouquet-Rivier, C. (2013). Nutrient intakes from complementary foods consumed by young children (aged 12–23 months) from North Wollo, northern Ethiopia: the need for agro-ecologically adapted interventions. *Public health nutrition*, 16(10), 1741-1750.
- Beyene, M., Worku, A.G. & Wassie, M.M. Dietary diversity, meal frequency and associated factors among infant and young children in Northwest Ethiopia: a cross-sectional study. *BMC Public Health* 15, 1007 (2015). <https://doi.org/10.1186/s12889-015-2333-x>
- Chege, P. M., Kimiywe, J. O., & Ndungu, Z. W. (2015). Influence of culture on dietary practices of children under five years among Maasai pastoralists in Kajiado, Kenya. *International Journal of Behavioral Nutrition and Physical Activity*, 12(1), 1-6.
- Da Costa, K. A. O., Antunes, M. M., De C., Cabral, P. C., & Da Silva, G. A. P. (2018). Feeding style of adolescent mothers and complementary feeding practice of their infants. *Revista de Nutricao*, 31(1), 49–58. Retrieved from <https://doi.org/10.1590/1678-98652018000100005>
- Efron, B. (1998). RA Fisher in the 21st century. *Statistical Science*, 95-114.
- Feyisa, B. B., Tefera, G. M., Endris, B. S., Asayehu, T. T., & Gebreyesus, S. H. (2020). Feeding practice, energy, and nutrient intake adequacy among children aged 6–23 months in Southern Ethiopia: a community based cross-sectional study. *Food science & nutrition*, 8(12), 6680-6690.
- FSNAU. (2005). A guide to data collection, analysis, interpretation and use. FSAU, Nairobi
- Haines, J., Haycraft, E., Lytle, L., Nicklaus, S., Kok, F. J., Merdji, M., ... & Hughes, S. O. (2019). Nurturing children's healthy eating: position statement. *Appetite*, 137, 124-133.
- IFPRI/ACC/SCN, (2000): The International Food Policy Research Institute, Administration Coordination Committee and Sub-Committee on Nutrition, the 79 World Nutrition Situation: Nutrition throughout the Life Cycle, 4th Report explaining Child Malnutrition in Developing Countries: A Cross-Country Analysis - Research Report 111
- Kang, M., Choi, S. Y., & Jung, M. (2021). Dietary intake and nutritional status of Korean children and adolescents: A review of national survey data. *Clinical and Experimental Pediatrics. Korean Pediatric Society*. <https://doi.org/10.3345/cep.2020.01655>
- Kenya National Bureau of Statistics, Ministry of Health/Kenya, National AIDS Control Council/Kenya et al. (2015) *Kenya Demographic and Health Survey 2014*. Rockville, MD: Kenya National Bureau of Statistics, Ministry of Health/ Kenya, National AIDS Control Council/Kenya, Kenya Medical Research Institute, National Council for Population and Development/Kenya, and ICF International
- Kostecka, M., Jackowska, I., & Kostecka, J. (2020). Factors Affecting Complementary Feeding of Infants. A Pilot Study Conducted after the Introduction of New Infant Feeding Guidelines in Poland. *Nutrients*, 13(1), 61. <https://doi.org/10.3390/nu13010061>
- Kotut, B. C. (2021). Morbidity, health and nutrition status of infants born to young mothers in Transmara West Narok County, Kenya. *Editon Consortium Journal of Physical and Applied Sciences*, 1(1), 1-13. Epstein LH, Paluch RA, Beecher MD, Roemmich JN (2008). *Increasing healthy eating vs. Reducing high energy-dense foods to treat pediatric obesity*. *Obesity (Silver Spring)*;16(2):318-326.
- Lechosa-Muñiz, C., Paz-Zulueta, M., Sota, S. M., de Adana Herrero, M. S., Del Rio, E. C., Llorca, J., & Cabero-Perez, M. J. (2020). Factors associated with duration of breastfeeding in Spain: a cohort study. *International Breastfeeding Journal*, 15(1), 1-9.



- Maingi M, Kimiywe J, Iron-Segev S. (2020). Maternal knowledge in complementary feeding following Baby Friendly Community Initiative in Koibatek, Kenya. *Matern Child Nutr.* Oct;16(4): e13027. doi: 10.1111/mcn.13027. Epub 2020 Jun 3. PMID: 32495498; PMCID: PMC7507556.
- MOH/UNICEF. Standardized Monitoring and Assessment of Relief and Transitions (SMART, 2018) nutrition survey report for Narok County, Kenya.
- Olack B, et al, (2011): Nutritional status of under five children living in an informal urban settlement in Nairobi, Kenya. *Journal of Health population and Nutrition.*
- Patton, M. (1990). Purposeful sampling. *Qualitative evaluation and research methods*, 2, 169-186.
- Roche, R., Bain, R., & Cumming, O. (2017). A long way to go—Estimates of combined water, sanitation and hygiene coverage for 25 sub-Saharan African countries. *PloS one*, 12(2), e0171783.
- Sabates, R., & Di Cesare, M. (2021). Can maternal education sustain or enhance the benefits of early life interventions? Evidence from the Young Lives Longitudinal Study. *Compare: A Journal of Comparative and International Education*, 51(5), 651-669.
- Senbanjo, I., Olayiwola, I., & Afolabi, Wasiu A. O. (2016). Dietary practices and nutritional status of under-five children in rural and urban communities of Lagos State, Nigeria. *Nigerian Medical Journal*, 57(6), 307. <https://doi.org/10.4103/0300-1652.193854>
- Singh M. (2004). Role of micronutrients for physical growth and mental development. *Indian journal of pediatrics*, 71(1), 59–62. <https://doi.org/10.1007/BF02725658>
- Solomon, D., Aderaw, Z., & Tegegne, T. K. (2017). Minimum dietary diversity and associated factors among children aged 6–23 months in Addis Ababa, Ethiopia. *International journal for equity in health*, 16(1), 1-9.
- Temesgen, H., Yeneabat, T. & Teshome, M. Dietary diversity and associated factors among children aged 6–23 months in Sinan Woreda, Northwest Ethiopia: a cross-sectional study. *BMC Nutr* 4, 5 (2018). <https://doi.org/10.1186/s40795-018-0214-2>
- Turconi G, Guarcello M, Maccarini L, et al., (2008). Eating habits and behaviors, physical activity, nutritional and food safety knowledge and beliefs in an adolescent Italian population. *J Am Coll Nutr.* ;27(1):31-43.
- UNICEF. (2020). *The state of the world's children 2019 children ...* - UNICEF. Retrieved January 8, 2022, from <https://www.unicef.org/media/60826/file/SOWC-2019-EAP.pdf>
- Union, A. (2020). The Digital Transformation Strategy for Africa (2020-30).
- Wang, L., van Grieken, A., van der Velde, L. A., Vlasblom, E., Beltman, M., L'Hoir, M. P., Boere-Boonekamp, M. M., & Raat, H. (2019). Factors associated with early introduction of complementary feeding and consumption of non-recommended foods among Dutch infants: The BeeBOFT study. *BMC public health*, 19(1), 388. <https://doi.org/10.1186/s12889-019-6722-4>
- WHO. (2018) Strengthening action to improve feeding of infants and young children 6–23 months of age in nutrition and child health programmes [Report of proceedings].
- WHO. (2022): <https://www.who.int/nutrition/publications/infantfeeding/en/index.html>, as retrieved on 5<sup>th</sup> September, 2023 at 10.00 AM.
- World Health Organization. (2003). Diet, nutrition, and the prevention of chronic diseases: report of a joint WHO/FAO expert consultation (Vol. 916). World Health Organization.