

## Dietary Intake in Children (6-48 Months) and Mothers (15-49 Years) in Different Farming Systems in Kenya Using Multipass 24-Hour Recall

Wakhungu, H.K.<sup>1,9</sup>, Abong', G<sup>1</sup>, Muthike, C<sup>1</sup>, Muema, J.<sup>2,3,4,5,6</sup>, Mutono N<sup>3,4,5,6</sup>, Omondi, G.P<sup>7</sup>, Thumbi, S.M<sup>2,3,4,5</sup>, Bukania, Z<sup>8</sup>.

<sup>1</sup>Department of Food Science, Nutrition and Technology, University of Nairobi, Kenya

<sup>2</sup>Institute of Tropical and Infectious Diseases, University of Nairobi, Nairobi, Kenya

<sup>3</sup>Center for Epidemiological Modelling and Analysis, University of Nairobi, Nairobi, Kenya

<sup>4</sup>Feed the Future Innovation Lab for Animal Health, Washington State University, USA

<sup>5</sup>Washington State University Global Health Program - Kenya, Nairobi, Kenya

<sup>6</sup>Paul G. Allen School for Global Health, Washington State University, Pullman, USA

<sup>7</sup>Animal Health Innovation Lab, Department of Clinical Studies, University of Nairobi, Kenya

<sup>8</sup>Center for Public Health Research, Kenya Medical Research Institute, Nairobi, Kenya

<sup>9</sup>Kenya Institute for Public Policy Research and Analysis, Nairobi, Kenya

<sup>1</sup>Corresponding Author Email; hilwak88@gmail.com

### Abstract

There is paucity of knowledge on the influence of farming systems, a proxy for contextualizing community-based food networks, and sociocultural perspectives necessary for creating impactful nutritional programs and policies for young children from infancy to early childhood in Kenya and their mothers, especially in Kenya. This study sought to evaluate nutrient intakes of young children and their mothers from Pastoral, Agro-pastoral and Mixed farming system in Kenya. Mothers and their child were recruited from households in Narok south as part of the Animal Health Innovation Study. One day Multiple pass 24-h dietary recall was completed for a sample of infants 6-11 months, and toddlers aged 12 to 48 months (n = 161), and women of reproductive age (15-49 years) (n = 161) via face-to-face interviews with the primary caregiver. Nutrient intakes were estimated using CS Dietary Software and compared with the Adequate Intakes, Recommended Dietary Allowance and/or Estimated Average Requirement. The mean intake of key nutrients varied across farming systems. Children aged 6-11 months, met the Adequate Intake and Recommended Dietary Allowance levels for protein and Vitamin A. However, deficiencies were noted in thiamine, vitamin C, vitamin B6, selenium, and niacin across different farming systems, with insufficient Iron intake, particularly in pastoral and agro-pastoral systems (3mg/d vs. 7 mg/d and 5 mg/d vs. 7 mg/d respectively). Folate intake was significantly lower in pastoral and mixed farming systems, with levels below the recommended 100 µg dfe/d. Calcium intake was sufficient across all farming systems, while phosphorus intake was consistently below the AI of 180 mg/d in children aged 12-48 months. In the mixed farming group, intake exceeded the Recommended Nutrient Intake for calcium, while phosphorus intake remained low across all age groups in agro-pastoral and mixed farming systems. Magnesium intake fell below AI levels in all groups (<65AI). Among women of reproductive age (15-49 years), the agro-pastoral group exhibited the highest carbohydrate intake, while the mixed farming group had the highest protein intake (51.07±6.5). Women met vitamin A recommendations, with zinc, iron, and selenium intake falling below the Adequate Intake in all groups. To address nutritional disparities and improve overall health outcomes and well-being for children and mothers in diverse agricultural settings in Kenya, it is important to prioritize an understanding sociocultural contexts and/or regional variations in designing and implementation of targeted interventions.

**Keywords:** Agro-pastoral, child, mother, mixed-farming, nutrient-intakes, pastoral-farming