

## **Prevalence and factors associated with iron deficiency and inadequate dietary zinc intake among children aged 6 – 59 months at Moi Teaching and Referral Hospital, Eldoret, Kenya**

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**Introduction:** Micronutrients are chemical elements required in small quantities that are vital for normal growth and development. Micronutrient deficiency affects at least 2 billion people globally. In Kenya, Zinc (83%) and Iron deficiencies (35%) are most prevalent. Pregnant, lactating women and children less than 5 years of age are most affected.

**Objectives:** This study aims to estimate prevalence and determine factors associated with zinc deficiency, inadequate dietary zinc intake, iron deficiency, and iron deficiency anaemia among children 6 – 59 months treated at Moi Teaching and Referral Hospital (MTRH). It also describes the infant and young child feeding practices associated with these deficiencies.

**Methods:** This was a cross sectional study with a sample size of 354 participants recruited using systematic random sampling. Sociodemographic, clinical, laboratory and anthropometric data was collected. The laboratory tests included: serum iron, ferritin, total iron binding capacity and complete blood counts. We used 24-hour dietary recall to assess for adequacy of dietary zinc intake. Dietary diversity scores were assessed using the WHO food groups. Levels of stunting were used as a population indicator for zinc deficiency. Odds ratios were calculated at 95% confidence interval and p values < 0.05 were considered statistically significant. Univariate, bivariate and multivariate analyses were carried out on the categorical variables.

**Results:** The median age of the study participants was 31 months (IQR 15, 46) with a male majority (61%). The prevalence of inadequate zinc intake was 60% with a median age of 20 months (IQR 11, 48). Fifty percent (50%) of the study participants did not meet the minimum dietary diversity (MDD) score of at least four WHO food groups. Inadequate MDD was associated with inadequate dietary zinc intake (OR 3.1, p<0.001). Twenty six percent (26%) of the participants were stunted. There prevalence of iron deficiency was 77% (based on transferrin saturation levels) and 63% (based on serum ferritin levels). The factors associated with decreased the odds of iron deficiency (ID) included: Adequate MDD (OR 0.9, p = 0.83) and deworming (OR 0.2, p<0.001), exclusive breastfeeding for 6 months (OR 0.6, p = 0.47). Factors associated with iron deficiency included: pre-term birth (OR 3.7, p = 0.18), hypochromia (OR 3.8, p<0.001), microcytosis (OR 1.4, p = 0.23). The median age for iron deficiency anaemia (IDA) was 23 months (IQR 11, 43). Microcytosis (OR 2.5, p<0.001) and hypochromia (OR 2.8, p = 0.001) were associated with IDA.

**Conclusions:** Inadequate dietary zinc intake is still common. Iron deficiency and iron deficiency anaemia are still highly prevalent diseases of public health importance. Concurrent iron and zinc deficiency are common. Adequate minimum dietary diversity is necessary for prevention of iron and zinc deficiency