

ABSTRACT

Iron deficiency, mainly from iron deficient diets, impedes cognitive, psychomotor and physical development, especially of school age children. Flour fortification with iron, an effective intervention for increasing iron intake, is influenced by the amount of fortified food consumed. Intra-household food distribution (IHFD) patterns may influence how much food a child gets, hence amount of iron from fortified flour. However, information on such influence on iron intake of school age children, a group with high iron requirements that must be met by food intake, is lacking. The purpose of this study was to determine the influence of IHFD pattern on potential iron intake from iron-fortified flour by school age children (3 to 8 years). IHFD patterns were identified; the amount of iron a child could consume, assessed; and the association between the two determined in a study conducted in Kanyawegi Sub-location, Kisumu North District where piloting of small-scale flour fortification with iron was underway. The study was guided by a descriptive framework consisting of six IHFD patterns: Needs Rule, Resource Control Model, Bargaining Model, Cultural Rule, Functional Model and Contributions Rule. Using sequential exploratory mixed methods approach, information on types of IHFD patterns in the study area was elicited from focus group discussions (FGDs) among Community Health Volunteers and caregivers. Existing patterns were identified and subsequently used to develop a questionnaire. The questionnaire was administered to caregivers in 296 households with a school age child, selected by simple random sampling from a census-generated list. Households (n=154) drawn from those with identifiable IHFD patterns (n=264) were grouped into those that favour (n=77) and those that do not favour (n=77) the child. Flour products intakes were assessed in index children from the 154 households using 24-hour dietary recall. World Health Organization (WHO) and Kenya recommended fortification levels of 20 and 15 mg iron/kg flour, respectively, were used to calculate linear regression, was -55.5 (-61.9, -48.2) % (p=0.000). Although both WHO and Kenya levels support potential amount of iron each child could obtain through flour fortification, based on amount of flour consumed from flour based food products. Most households (75%) practiced IHFD patterns that do not favour the child, predominantly Cultural Rule and Functional Model. Median iron intakes (IQR) of children with IHFD patterns that favour the child was 6.4 (4.5, 9.0) mg and 4.8 (3.2, 6.7) mg iron; and 2.9 (1.7, 3.9) mg and 2.2 (1.4, 2.9) mg for those with patterns that do not favour the child, for WHO and Kenya fortification levels, respectively. Adjusted geometric mean difference in iron intake between the groups generated using multiple adequate iron intakes of 3-8 year old children in general; at Kenya fortification levels children may not meet their requirements where IHFD patterns that do not favour the child are practiced interventions.. Such children would obtain less than half as much iron through flour fortification, as children from households practicing IHFD patterns that favour the child. Therefore, IHFD pattern influences potential iron intake with lower benefits where patterns not favouring children are practiced. Such children may not meet their requirements therefore need additional targeted iron interventions.