Pakistan Journal of Nutrition 12 (9): 854-859, 2013
ISSN 1680-5194

Nutrient Intake, Morbidity and Nutritional Status of Preschool Children are Influenced by Agricultural and Dietary Diversity in Western Kenya

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Abstract: A cross sectional survey was set up to assess the influence of agrobiodiversity and dietary diversity on morbidity, nutrient intake and the nutritional status of preschool children in Western Kenya. About 34.8% preschool children were severely stunted, 21.5% severely underweight and 8.3% were severely wasted. There was a positive and strong relationship between agricultural biodiversity, dietary diversity and caregivers' level of education. Morbidity level and dietary diversity had significant influence on underweight levels and stunting. Consideration of agrobiodiversity in terms of dietary diversity can improve the nutrition and health status of a preschool child.

Key words: Agrobiodiversity, dietary diversity, preschool, nutrition status, western Kenya

INTRODUCTION

Agrobiodiversity encompasses the variety and variability of animals, plant and microorganisms which are necessary to sustain key functions of the agro-ecosystem, its structure and processes for and in support of, food production and security (FAO, 1999). Agro-biodiversity composes biodiversity at the inter and intra-specific level of edible food crops and animals that are used in the production systems for food and agriculture. Different farming systems exist at inter-specific level with different combinations of edible food plants and animals. At the intra-specific level different numbers of varieties or breeds may be cultivated per crop or animal species, thus in low to high genetic variety, depending upon the diversity between and within varieties or breeds. Agrobiodiversity influences safety and security of food and agricultural production and could be more effectively used to improve diets and nutrition (Johns *et al*., 2006). Increasing biodiversity at the farm level can be translated into dietary diversity in households.

Agricultural biodiversity is essential for a sustainable improvement in food and nutrient security and is absolutely essential in coping with predicted impacts of climate change as the underpinnings of more resilient farm ecosystems (Frison *et al*., 2011). The erosion of the ecosystem diversity has affected the availability of some indigenous food crops (Tabuti *et al*., 2004) and wild animals used for food. A change in biodiversity has a direct effect on the change in the variety and diversity of human diets and quality of foods and nutrients intake. Major changes in local systems of production, mostly due to human activities (Walingo *et al*., 2009), with a shift from subsistence agriculture and an increasing orientation to markets both for income and food purchase (Johns and Sthapit, 2004) affect dietary diversity of local population. These changes diminish the opportunities for hunting and gathering (Johns and Eyzaguirre, 2006), an important source of a variety of sources of protein in households.

There is an intricate linkage between agrobiodiversity, dietary diversity and malnutrition, especially dietary quality and health. In tackling malnutrition much can be gained by linking agriculture and ecology to human nutrition (Deckelbaum *et al*., 2006) especially that both biodiversity and hunger hot spots almost overlap (DeClerck *et al*., 2011). Dietary diversity is often defined as the number of foods from all food groups eaten by either an individual (s) or household (s) and is positively correlated with nutrient density and adequacy of diets of people or groups (Kennedy *et al*., 2007; Steyn *et al*., 2006; Mirmiran *et al*., 2004; Foote *et al*., 2004). There is an association between child dietary diversity and nutritional status that is independent of socioeconomic factors (Arimond and Ruel, 2004). Dietary diversity is associated with greater intake of energy and other nutrients (Hatloy *et al*., 1998), so that a very low diverse monotonous diet limits the intake of micronutrients. Low dietary diversity is a predictor of stunting and the inclusion of a variety of food groups is essential to improve child nutritional status (Rah *et al*., 2010). Children with diarrhea reportedly come from low socioeconomic backgrounds and tend to suffer from decreased diversity (Rah *et al.,* 2010). Dietary diversity has been associated with wasting (Arimond and Ruel, 2004). Besides improving nutrients intake, a high dietary

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