

NUTRITION-RELATED NON-COMMUNICABLE DISEASE (N-RNCD) COUNTRY PROFILES



TANZANIA

Evidence has been mounting to support the hypothesis that maternal undernutrition, as well as in-utero and infant and young child undernutrition, increase the risk of developing N-RNCDs later in life (Barker, 1992 and Gluckman, 2010). Recent empirical studies have demonstrated that many common manifestations of undernutrition, such as intra-uterine growth restriction (IUGR), low birth weight, and stunting are all significantly associated with later development of hypertension, insulin resistance, and obesity. These conditions lead to N-RNCDs such as Type II diabetes mellitus (diabetes) and cardiovascular disease (CVD). Addressing maternal, infant, and young child undernutrition is therefore not only important to preventing the immediate threats of child morbidity and mortality, but also to reducing the risk of N-RNCDs later in life.

In Tanzania, the burden of N-RNCDs is already a problem in the adult population (See Table 1). In addition to the data shown in the table, the average body mass index (BMI) among women rose from 22 to 23 between 2004-05 and 2010, and prevalence of overweight rose from 18 to 22 percent (2004-05 and 2010 DHS). Prevalence of diabetes varied little from around 8 or 9 percent between 1998 and 2008 (Danaei et al, 2011).

Table 1: Estimated Age-Standardized Adult N-RNCD Prevalence, Tanzania 2008

	Pre-NCD conditions (% of Adults)				N-RNCDs	
	Hypertension	Raised Glucose levels	Overweight*	Raised Cholesterol	Diabetes (% of Adults)**	CVD (% of Deaths)
Women	44%	9%	22%	26%	9%	-
Total	45%	8%	-	24%	8%	12%

Source: Alwan, Ala and World Health Organization. (2011). *Global status report on noncommunicable diseases 2010*. Geneva, Switzerland: World Health Organization. *Overweight Data from DHS 2010. **Diabetes Data from Global Burden of Metabolic Risk Factors of Chronic Diseases Database (Danaei et al, 2011).

Table 2 shows percent of infants who were born low birth weight, children who are stunted, overweight, stunted and overweight, or who are stunted with an overweight mother, and overweight women, broken down by socio-economic characteristics. Of those children who were low birth weight, 90 percent were born after 8 month or full-term pregnancies, meaning the reason for their low weight was not due to length of gestation. Regarding overweight, 5 percent of Tanzanian children fall into this category. For comparison, the percentage of children ages 2 to 5 who are considered overweight in the U.S is 11 percent (CDC, 2012). Taking a look at the current nutritional status of children under 5, there is reason to be concerned that obesity and N-RNCDs will continue to rise as this population grows into adulthood.

Table 2: National Survey Indicators on Nutritional Status, by Background Characteristics, Tanzania 2010

		% of Children under 5					% of Women 15-49
		Low birth weight	Stunted	Overweight	Stunted and Overweight (same child)	Stunted child with Overweight Mother	Overweight
Educational attainment of mother	No education	9%	45%	5%	3%	5%	16%
	Primary	10%	42%	5%	3%	6%	22%
	Secondary	14%	23%	5%	1%	7%	27%
	Above secondary	12%*	0%*	17%*	0%*	0%*	75%*
Wealth index of family	Poorest	10%	48%	5%	3%	4%	9%
	Poorer	8%	45%	5%	3%	4%	10%
	Middle	10%	44%	5%	3%	7%	14%
	Richer	11%	38%	5%	2%	7%	25%
	Richest	13%	27%	6%	2%	9%	41%
Location of household	Urban	14%	31%	6%	2%	9%	36%
	Rural	9%	44%	5%	3%	5%	15%
Total		10%	42%	5%	3%	6%	22%

Definitions: Low Birth Weight (<2500g or classified by mother as small or very small at birth); Stunted (HAZ<-2SD); Child Overweight (WHZ>+2SD); Maternal Overweight (BMI≥25)

Source: DHS 2010 data, weighted estimates of percent of all children under 5 or percent of women 15-49. *Very small sample of children for these mothers.

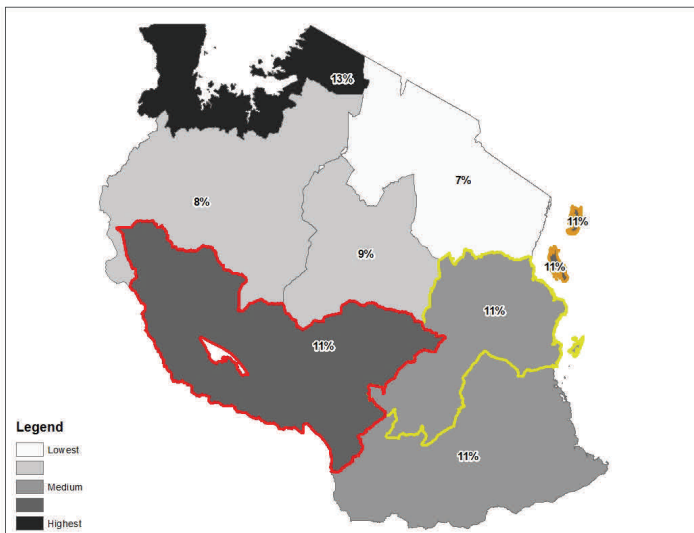


This document is made possible by the generous support of the American people through the U.S. Agency for International Development (USAID) and Feed the Future, the U.S. Government's global hunger and food security initiative, under the terms of the Cooperative Agreement AID-OAA-A-11-00031 (SPRING), managed by the JSI Research & Training Institute, Inc. (JSI). The contents are the responsibility of JSI, and do not necessarily reflect the views of USAID or the U.S. Government.



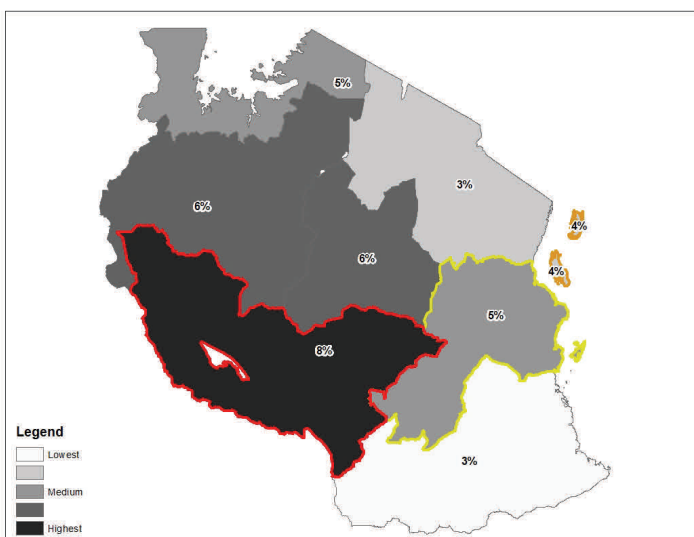
Looking further at Table 2, prevalence of child overweight, stunted child—overweight mother pairs, and maternal overweight all increase with education and in urban households, as does low birth weight, which is somewhat surprising. This pattern is lessened but still present for wealth, with the highest prevalence of low birth weight occurring in the richest wealth quintile. Stunting is still quite high in the least advantaged sub-groups. The extremely high percentages for overweight in the top education category may be due to the low number of women who fell into that category (0.3 percent of mothers), but overall these results could suggest some double burden of undernutrition to overnutrition.

Percentage of children who are born low birth weight (<2500g)

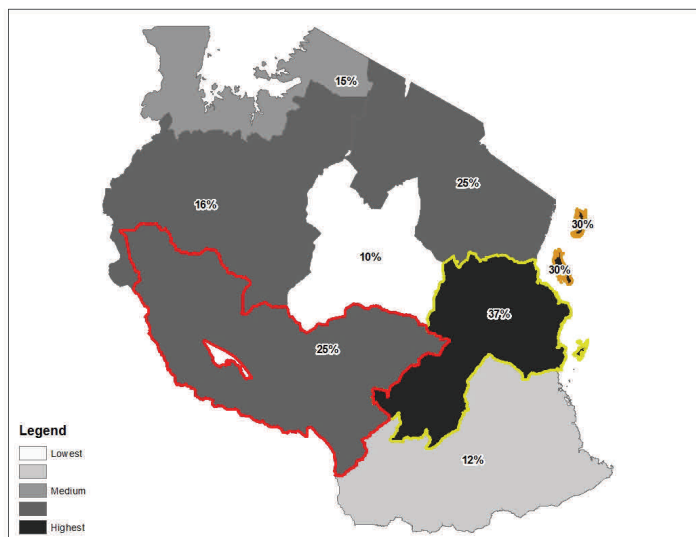


National level estimates do not adequately illustrate the wide sub-population variations that exist. The maps here show these rates at the regional level. The Southern Highlands (red border) are in the 3 highest burden regions for overweight children (8 percent) and low birth weight (11 percent). Zanzibar (orange border) exhibits high rates of both maternal overweight (30 percent) as well as low birth weight (11 percent). The Eastern region (yellow border) has the highest rate of maternal overweight (37 percent).

Percentage of children who are overweight (WHZ>+2SD)



Percentage of women who are overweight (BMI≥25)



Source: DHS 2010 data, weighted estimates of percent of all children under 5 or women 15-49.

This descriptive analysis begins to explore where future risks may lie for N-RNCDs in Tanzania, identifying where undernutrition programs may need to be tailored or targeted to better avoid later life health conditions. Here child and maternal overweight overlay stunting as significant nutritional conditions. More in-depth analysis is needed to understand the determinants and dynamics influencing these relationships. SPRING is currently working to develop more evidence on why certain subpopulations are more at risk and how this information can be used to adjust nutrition programs.

References:

Barker DJB, ed. 1992. *Fetal and infant origins of adult disease*. London: BMJ Publishing Group.

CDC. 2012. CHD Health Data Interactive, for NHANES Data (Round: 2007-2010). Centers for Disease Control and Prevention.

Danaei, Goodarz, Marie M Finucane, Yuan Lu, Gitanjali M Singh, Melanie J Cowan, Christopher J Paciorek, John K Lin, et al. 2011. "National, Regional, and Global Trends in Fasting Plasma Glucose and Diabetes Prevalence Since 1980: Systematic Analysis of Health Examination Surveys and Epidemiological Studies with 370 Country-years and 2.7 Million Participants." *The Lancet* 378 (9785) (July): 31-40.

Demographic and Health Surveys. 2004-05 and 2010. Tanzania Demographic and Health Survey. MEASURE DHS.

Gluckman PD, Hanson MA, Buklijas T. 2010. *A conceptual framework for the developmental origins of health and disease*. *J DOHaD* 1: 6-18.

WHO. 2004. Appropriate Body-mass Index for Asian Populations and Its Implications for Policy and Intervention Strategies. *Lancet* 363: 9403.