

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



CAMBODIA

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 are preconditions related to the development of 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 Cambodia, the burden of N-RNCDs is a moderately important health issue in the adult population (See Table 1). In addition to the data shown in the table, the average body mass index (BMI) among women stayed constant at 21 between 2005 and 2010, but overweight prevalence rose from 10 to 11 percent (2005 and 2010 DHS). Using the suggested increased risk BMI cutoff of 23 for Asian populations, those figures rise to 21 and 22 percent, respectively (WHO 2004). Prevalence of diabetes has actually decreased from 7 percent in 1998 to 5 percent in 2008 (Danaei et al, 2011).

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

	Pre-NCD conditions (% of Adults)				N-RNCDs	
	Hypertension	Raised Glucose levels	Overweight*	Raised Cholesterol	Diabetes (% of Adults)**	CVD (% of Deaths)
Women	28%	5%	11%	32%	5%	-
Total	32%	5%	-	30%	5%	21%

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, 86 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, only 2 percent of Cambodian children under 5 fall into this category. For comparison, the percentage of children ages 2 to 5 who are considered overweight in the US is 11 percent (CDC, 2012). Taking a look at the current nutritional status of children under 5, children of highly educated mothers (1.9 percent of mothers) may be at risk of obesity and N-RNCDs, with high rates of overweight and stunted-overweight, but overall N-RNCD risk is low.

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

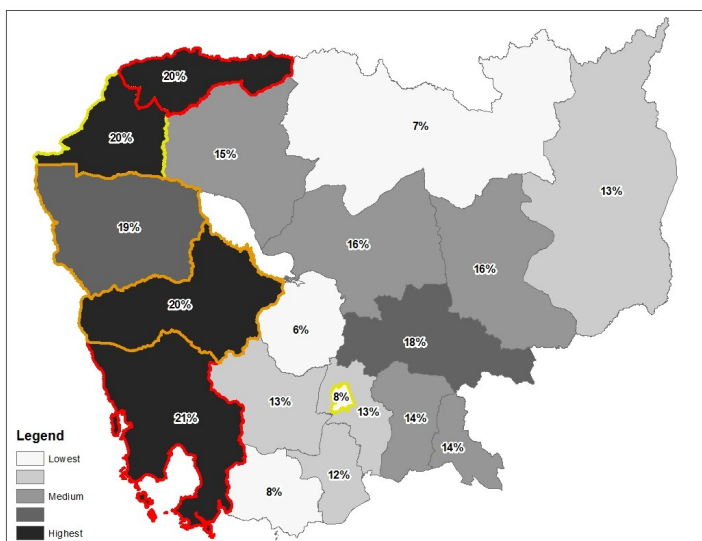
		% of Children under 5					% of Women 15-49
		Low birth weight	Stunted	Overweight	Stunted and Over-weight (same child)	Stunted child with Overweight Mother	Overweight
Educational attainment of mother	No education	16%	46%	1%	1%	3%	13%
	Primary	14%	40%	2%	1%	3%	12%
	Secondary	12%	32%	2%	1%	4%	9%
	Above secondary	8%	9%	9%	5%	0%	5%
Wealth index of family	Poorest	16%	49%	2%	1%	2%	5%
	Poorer	16%	44%	2%	1%	3%	9%
	Middle	15%	39%	0%	0%	3%	9%
	Richer	12%	34%	2%	1%	5%	14%
	Richest	10%	22%	3%	1%	3%	16%
Location of household	Urban	10%	27%	3%	1%	4%	16%
	Rural	15%	41%	1%	1%	3%	10%
Total		14%	39%	2%	1%	3%	11%

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.

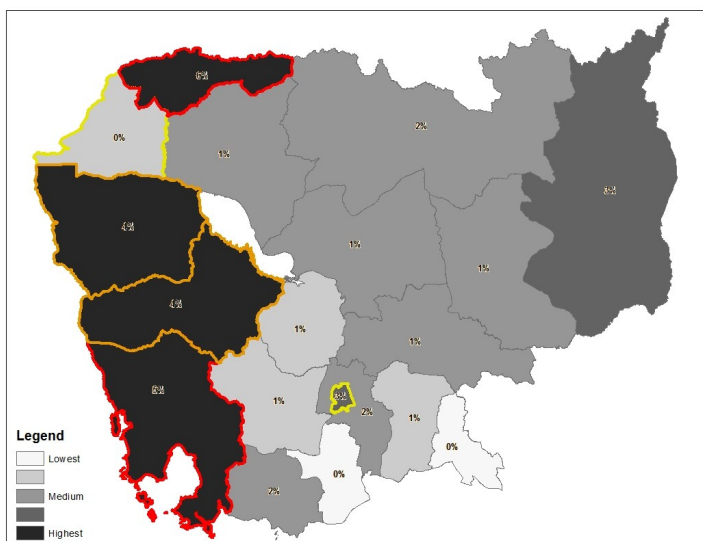
Looking further at Table 2, women with less education appear more likely to have a low birth weight baby, have a stunted child (by far still that largest nutritional concern among children under 5), or to be overweight. However, the opposite is true for their children's likelihood of being overweight, or stunted-overweight. Both children and women in urban areas had higher rates of being overweight as well, while stunting and low birth weight were more prevalent in rural areas.

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

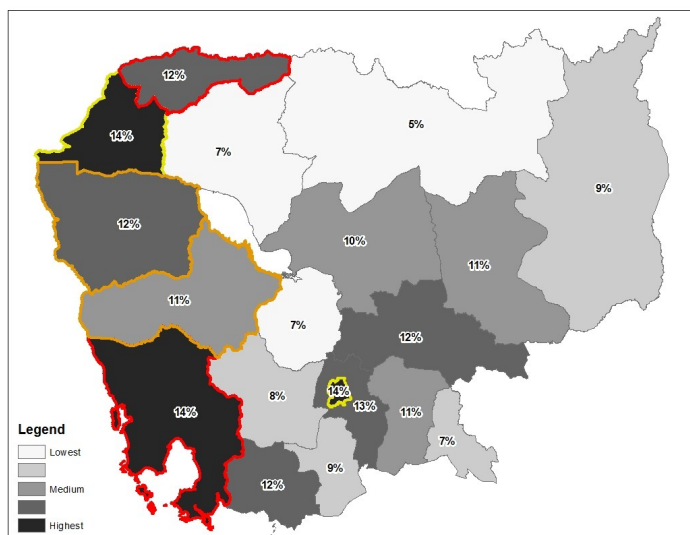


National level estimates do not adequately illustrate the wide sub-population variations that exist. The maps here show these rates at the state level. Ottdar Mean Chey and the pooled provinces of Preah Sihanouk & Kaoh Kong (red borders) are among the top 5 highest burden states across 3 key indicators: low birth weight, and child and maternal overweight. Children in Pursat and the pooled provinces of Battambang & Pailin (orange borders) also face very high risk factors; these provinces rank among the 5 highest burden states for low birth weight and child overweight. Two other provinces are in the top 5 burden states for 2 of the 3 indicators (yellow borders): Banteay Mean Chey (maternal overweight and low birth weight) and Phnom Penh (both maternal and child overweight). Except for Phnom Penh, these provinces mentioned as high risk areas all cluster in the West, bordering Thailand and the Gulf of Thailand.

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 Cambodia, identifying where undernutrition programs may need to be tailored or targeted to better avoid later life health conditions. It appears stunting is still the largest concern, though there are significant differentials by sub-group. 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 sub-populations 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, Mariel 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. 2005 and 2010. Cambodia 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.