

소아재활

발표일시 및 장소 : 10 월 27 일(토) 10:50-11:00 Room E(5F)

OP4-1-6

The Excess of Mortality in Underweight Children of a Developed Country: 9-year Follow-Up

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Objectives

There is no study on the effects of underweight in the general pediatric population of a developed country where malnutrition is rare. The objective of this study was to demonstrate the effect of underweight on mortality in general pediatric population of a developed country, based on a 9-year follow-up of a nationwide birth cohort.

Methods

This study was based on the birth cohort of 2008-2013 in South Korea. We enrolled children who participated in National Health Screening Program for Infants and Children (NHSIC) at least once. NHSIC records screening data of growth and development of all children. Data on gender, age, birth weight, final weight-for-age (WA), and death were collected from the NHSIC database. Underweight was defined as WA<3rd percentile. All-cause mortality from the age of 1 year was calculated.

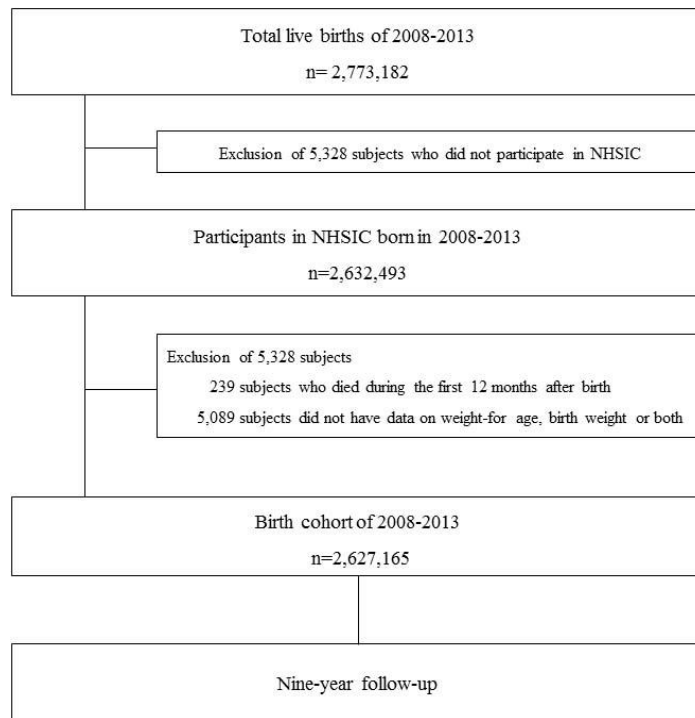
Results

The birth cohort of 2008-2013 consists of 2,627,165 subjects, representing 94.7% of total live births. There were 1,338 deaths from the age of 1 year, yielding 0.51 deaths per 1,000 live births of all-cause mortality during the 9-year follow-up. There were 1,125, 163 and 50 deaths in subjects with $3rd \leq WA \leq 97th$, $WA < 3rd$, and $WA > 97th$ percentile, indicating 0.45, 2.25, and 0.68 deaths per 1,000 live births, respectively. The survival curves of the birth cohort are shown in Figure, indicating that subjects with $WA < 3rd$ percentile showed significantly worse survival than subjects with $WA \geq 3rd$ percentile in both genders ($p=0.000$). After adjusting for BW as well as gender and age, subjects with $WA < 3rd$ percentile still showed 4.16 of adjusted hazard ratio (95% CI 3.51- 4.93) of death from the age of 1 year (Table).

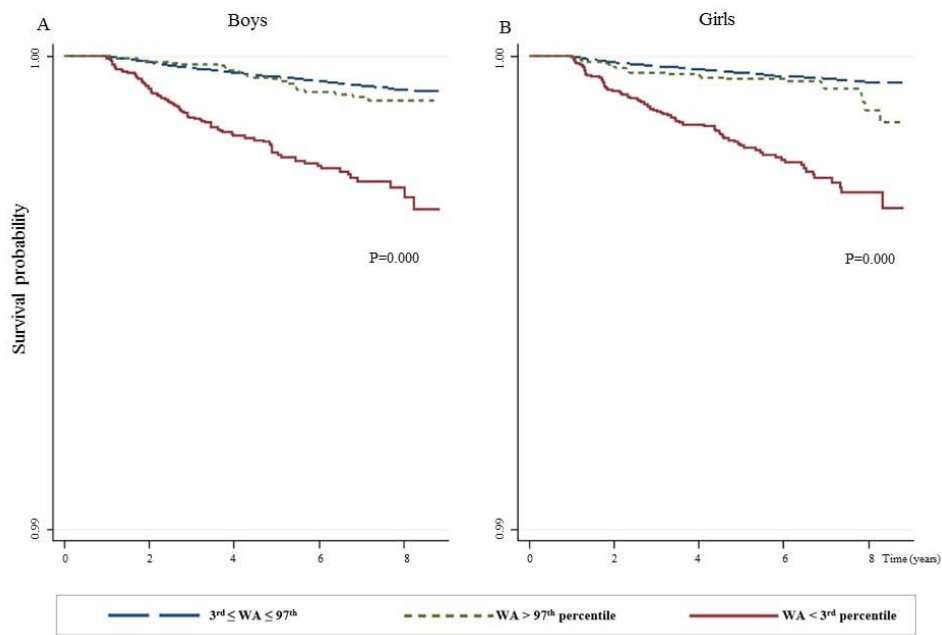
Conclusions

The Results show that underweight is clearly linked to an increased risk of mortality in the general pediatric population. This seems to be the first population-based study on the effect of underweight on child mortality in a developed country. Although a number of children in developed countries suffer from energy excess rather than nutrient deficiency,

about 45% of all child deaths are linked to malnutrition worldwide. Regardless of various etiologies and definitions of underweight, every society has underweight children. This finding incites awareness of underweight as a red flag of increased child mortality, not only in developing countries but also in developed countries. Clinicians need to determine the underlying causes of underweight and thus prevent deaths that can be seen more frequently in underweight children.



The flow diagram of development of the birth cohort of 2008-2013. NHSIC, National Health Screening Program for Infants and Children.



Survival after the age of 1 year by 3 categories of weight-for-age (WA). Kaplan-Meier estimates of survival after the age of 1 year for boys (A) and girls (B) show worse survival of children with WA<3rd percentile than children with WA≥3rd percentile in both genders (p=0.000).

Variables	Hazard ratio	95% confidence interval	
		Lower	Upper
Weight-for-age (WA)			
3 rd ≤ WA ≤ 97 th percentile	1.00	1.00	1.00
WA < 3 rd percentile	4.16	3.51	4.93
WA > 97 th percentile	1.42	1.07	1.89
Birth weight (BA)			
BW ≥ 2500 g	1.00	1.00	1.00
BW < 1000 g	3.12	1.55	6.31
1,000 g ≤ BW < 2,500 g	2.08	1.74	2.48
Gender			
Boys	1.00	1.00	1.00
Girls	0.80	0.71	0.89

^a Adjusted for age.

Adjusted hazard ratios of death after the age of 1 year by Cox proportional hazard model