



**BAOJ Nutrition**



Case Report

## Comparison of Zinc intake between Stunted and Non-Stunted Under-Five Children: Study in Jatinangor District Indonesia

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### Abstract

#### Background

The national prevalence of stunting has increased from 2007 to 2013 (36.8% to 37.2%). One factor involved in stunting is zinc intake. This research aims to compare zinc intake between stunted and non-stunted under-five children.

#### Methods

This case control study was conducted in ten pre-schools within nine villages in Jatinangor district from July to October 2014. Parents or guardians of under-five children were interviewed to obtain the data on children's characteristic and zinc intake using multiple 24-hour recall method. The sample size of 36 was determined by using categorical analytical unpaired one-sided formula. As such, the total sample size for 2 groups (case and control) within this research was 72 children. Because there was a possibility of subjects resigning and being dropped out, 10% of total sample was added, resulting in a total of 80 children.

#### Results

From height measurement result of 325 children, there were 83 stunted children. Randomization was then done to obtain 40 cases (stunting) and 40 controls (no stunting). This study also revealed that the percentage of stunted boys was higher than girls. Zinc intake of stunted children was lower, as proven significant by chi-square test ( $p = 0.000$ ; OR = 14.043; CI 95% = 2.969-66.428).

#### Conclusions

Zinc intake of stunted children is lower than non-stunted children. Children failing to reach the recommendation dietary allowance (RDA) for zinc intake are 14 times more likely to be stunted than those who meet zinc RDA.

**2Key Words:** Multiple 24-Hour Recall; Non-Stunted; Stunted; Under-Five Children; Zinc Intake

### Introduction

Stunting remains a major health problem in developing countries, such as Indonesia. The prevalence of stunting in Indonesia places number 42 out of 136 countries worldwide [1]. World Health Organization (WHO) defines stunting as a child with length-for-age more than 2 standard deviation (SD) below the median of

the NCHS/WHO international reference [2]. There had been an increase in the Indonesian national prevalence of stunting from 2007 to 2013 (36.8% to 37.2%) [3]. In 2010, the prevalence of stunting among under-five children in West Java Province was 17.1%, while that of severe stunting was 16.6%. Those numbers are higher than other provinces, such as Jambi, Jakarta, Yogyakarta, or Riau [3].

Some of the immediate factor on stunting process is dietary pattern and intake of various nutrition, such as energy, protein and some micronutrients, one of which is zinc [4]. A previous study conducted by Rahmawati et al., which involved 6-9 years old children, mentioned that there was a difference of hair zinc level between each group based on the stunting degrees. There was also a positive correlation between hair zinc level and z-score of height-for-age [5]. This research uses multiple 24-hour recall method to measure the amount of dietary zinc intake instead of using hair or blood samples. The purpose of this research is to compare the zinc intake between stunted and non-stunted under-five children, specifically 3-5 years old children.

### Methods

This categorical comparative analytic research used case control as a research design, with the case group being stunted under-five children, and the control group being non-stunted ones. The aim and methods used in this research had been approved by ethics committee of Faculty of Medicine Universitas Padjadjaran. This research was conducted in ten pre-schools in nine villages in Jatinangor district: Mekargalih, Cipacing, Sayang, Hegarmanah,

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