The Relationship Between Iron, Zinc, and Copper Intake and Hemoglobin Levels Among Female Students of SMPN Sukorambi in Sukorambi District

Arini Alfa Minati

Clinical Nutrition Study Program

Department of Health

ABSTRACT

Anemia among adolescent girls remains a significant health problem and can be influenced by the intake of micronutrients such as iron, zinc, and copper. Deficiency of these nutrients may interfere with the hemoglobin formation process, thereby increasing the risk of anemia. This study aimed to determine the relationship between iron, zinc, and copper intake and hemoglobin levels among female students of SMPN Sukorambi in Sukorambi District. This study used an analytic observational design with a cross-sectional approach. The sample consisted of 53 female adolescents aged 13–15 years selected using purposive sampling technique. Data on iron, zinc, and copper intake were collected through interviews using the *Semi Quantitative Food Frequency Questionnaire (*SQ-FFQ), while hemoglobin levels were measured using the cyanmethemoglobin method. Data analysis was performed using the Spearman correlation test with a significance level of $\alpha = 0,05$. The results showed that the median hemoglobin level of respondents was 12,6 g/dL, with a range of 6,80–15,30 g/dL. The Spearman correlation test indicated a significant relationship between iron intake and hemoglobin levels ($p = 0,000$; $r = 0,490$), as well as between zinc intake and hemoglobin levels ($p = 0,018$; $r = 0,325$). Meanwhile, copper intake did not show a significant relationship with hemoglobin levels ($p = 0,160$). The conclusion of this study is that iron and zinc intake are associated with hemoglobin levels among adolescent girls, while copper intake has no significant relationship with hemoglobin levels.

Keywords: Hemoglobin, Adolescent Girls, Iron, Zinc, Copper.