Different Result of Cognitive Impairment Screening in Adolescent Aged 10-12 Years with Normal and Short Stature in Pangandaran District

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Abstract   In Indonesia, the prevalence of short stature in adolescents aged 13-15 years and 16-18 years are respectively 35,1% and 31,4%. The growth of adolescentsis related in line to the development with the cognitive function. To find out the difference result of cognitive impairment screening in adolescents aged 10-12 years with normal and short stature. This was a cross-sectional analytic study conducted during December 2016 – March 2017 in Pangandaran District, West Java. Body height of the subjects were measured and they answered questions in Mini–Mental State Examination (MMSE) to assess the cognitive function. Data analysis to determine the different results of cognitive impairment screening in adolescent with normal and short stature use statistical Wilcoxon rank sum test. A total of 144 subjects met the inclusion criteria, comprising 45 subjects with short stature and 99 subjects normal. Median (min; max) MMSE scores for adolescent with short stature and normal were 24 (14; 30) and 27 (9; 30). There were significant differences in the median of MMSE scores between adolescents with normal and short stature (median difference = -2.00, CI 95% (-3.00;-0.00), p = 0.013). There were significantly different results of this study in cognitive impairment screening in adolescents aged 10–12 years between normal and short stature. The result of cognitive impairment screening in short statured adolescents aged 10-12 yearswas lower compared to those of normal stature adolescents.

Keywords: *adolescents, normal stature, short stature, cognitive, MMSE*

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1. Introduction

Adolescence is a phase where changes, either physical, cognitive, or psychosocial, occur betweenchildhood and adulthood periods. Most adolescents with good health state encounter changes towards adulthood without much hassle. To get through the phase, every child deserves/needs adequate nutrition and good health status for further growth and development process. The lack of nutrition and poor health status may cause delayed growth and development. [1]

Among the various changesduring the adolescence, the most important is the cognitive function change from concrete thinking to formal operational or abstract thinking. During the adolescence, young people are more capable in using symbols to represent objects from reality and articulate abstract concepts. This process occurs as a result of brain maturation, formed by psychosocial interaction. [1]

Growth is the indicator of child health, nutritional status, and genetic background. Child growth is the result of interaction among various factors such as genetic, environment, and hormones. Disorders in any of those factors may cause growth disorder that manifests as short stature or tall stature. Accurate and continuous anthropometric measurement is very important in evaluating child growth. Short stature is a symptom, not a disease. The shorter the child, the more the suspicion on the presence of pathological disorders of the body. Early detection of short stature needs to be done, so that intervention could be done as soon as possible since short stature has an impact to the child's psychosocial, life quality, cost of medical treatment, and environmental facilities needs. [2]

Body weight measurement based on age represent the child's long term nutritional status (chronic). The result of the measurement will then be compared to the World Health Organization (WHO) standard child growth chart to determine the nutritional status. A child with poor nutrition is labelled as underweight, wasted, and stunted, while child excessive nutrition is labelled as overweight. [3,4]

Low body weight, thin, and short can be found at the same time and show worse mortality and morbidity rate compared to only one or two of those signs. [5,6]

Data analysis involving 53.767 children from Africa, Asia, and Latin America showed that stunted and underweight children have three times higher mortality rate compared to those of normal nutritional status. [6]