

## Conference Paper

# Factors Associated with Nutritional Status of Adolescents Age 12-15 Years in Indonesia (Secondary Data Analysis of *RISKESDAS* 2007)

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## Abstract

Adolescent prone to nutritional problems because it is a period of transition from childhood to adulthood marked by changes in physical, physiological, and psychosocial. They have based Household Health Survey (Household) in 2004 the prevalence of more nutritional status according to BMI percentile at age 12-15 years by 8.6%, and malnutrition of 10.3%. The purpose of this research is knowing the relationship between adolescents sociodemographic factors, nutrient intake, fruit and vegetable consumption habits, exercise behavior, smoking behavior, and nutritional status were the predictors for this study. This cross-sectional study used secondary data from Riskesdas 2007. The population was all of the households representing 33 provinces in Indonesia, and the sample was 53837 household member aged 12-15 year. Study results showed that 9.2% of adolescents experience more nutrition and 90.8%, not more food. The effect of the statistical test showed that there is an association between gender, education, protein intake, smoking behavior, exercise behavior, and nutritional parents' nutritional status with adolescents' status age 12-15 years. The author recommends it is providing information about the nutritious balanced among others by eating a varied diet, not smoking, physical activity and weight monitoring.

**Keywords:** Nutritional status; youth; characteristic; cross-sectional; Indonesia

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Received: 26 December 2018

Accepted: 23 February 2019

Published: 7 March 2019

Publishing services provided by  
Knowledge E

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Selection and Peer-review under the responsibility of the 2nd International Meeting of Public Health 2016 Conference Committee.

## 1. Introduction

Human Resources (HR) is a critical component in achieving the goal of health development. Nutrition is part of the health sector is essential and dangerous attention from the government. Teenagers are the human resources with the most potential in a country because young people are the future generation. Youth will be the quality of human resources if new nutritional needs are met (Ramadani 2010). According to the World Health Organization (WHO), a teenager is a child who reaches the age of 10-19 years. Teens prone to nutritional problems because it is a period of transition from childhood to adulthood marked by changes in physical, physiological, and psychosocial. Besides,

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the group has been in a rapid growth phase (Growth Spurt) so that the nutrients required relatively more significant amount (Aritonang et al. 2009). According to de Onis in 2000, the prevalence of school-age children with overweight in most developing countries found in Latin America and the Caribbean (4.4%), and Africa (3.9%), and Asia (2.9%). But the absolute number of the largest in Asia for more than 60% (or 10.6 million people) live in this region. While based on a study of 445 children and adolescents aged 2-19 years in the US, the prevalence of obesity known by the National Health and Nutrition Examination Survey (NHANES III) 1999-2000 in males 27.7% and women by 33.3% (Hanley 2000). Based Household Health Survey (Household) in 2004 the prevalence of more nutritional status according to BMI percentile at age 12-15 years by 8.6%, and malnutrition of 10.3%. The nutritional status adolescence associated with various factors that affect it, including the intake of energy and nutrients, gender, education, habits of consumption of fiber (fruits and vegetables), physical activity, smoking, and genetic factors is nutritional status of parents of teenagers (Robert and Williams 2000; and Brown 2005). The high prevalence of nutritional status and the state of malnutrition among adolescents and the many factors causing the problem of nutrition in adolescents, behind the author to determine the factors associated with the nutritional status of adolescents aged 12-15 years in Indonesia in 2007 based on the results Riskesdas 2007.

## 2. Methods

The data used in this study uses data from Health Research (Riskesdas) Indonesia 2007 which has been implemented by the Ministry of Health of the Republic of Indonesia in 2007. Therefore, the research design used according to the research design Riskesdas 2007 that cross-sectional design. Independent and dependent variables measured at the same time when Riskesdas held. Populasi in this research is all households representing 33 provinces in Indonesia. The sample in this research is all households (RT) and household members (HAART) in 2007. The total number of samples Riskesdas as many as 258 466 (93.1%). From each of the chosen households, household members aged 12-15 years sampled in this study. In a national sample of household members aged 12-15 years as many as 57 838 children. Univariate analysis was conducted to elucidate the characteristics of each of the variables studied both the dependent variable is the nutritional status of adolescents, as well as the independent variables include the components of young people (sex and education), the intake of nutrients (energy and protein), habits of consumption of fruits and vegetables, though sports, teen smoking behavior, and heredity (father nutritional status and nutritional status of mothers). The

bivariate analysis performed using chi-square test Stats to see the relationship between independent variables and the dependent variable is categorical.

### 3. Results

The proportion of the nutritional status of adolescents aged 12-15 years in Indonesia in 2007 was malnourished nothing more was 90.8%, while 9.2% of adolescents experience better nutritional status. The proportion of male adolescents aged 12-15 years is greater (51.8%) than girls (48.2%), youth education most is a finished primary school (61.3%). Based on the known energy intake 89.0% of adolescents consume energy AKG  $\leq$ 100%, and 65.4% of adolescents consume protein  $\leq$ 100% RDA. Based on fruit and vegetable consumption habits are known to 58.7% of adolescents frequently eat vegetables, and 62.2% of adolescents frequently eat the fruit. Of 61.5% of teenagers regularly exercise, and by 96.0% unknown teenagers do not smoke. Based on the results of the analysis of the nutritional status of the elderly father known by 82.4% of respondents have no more nutritional status, and 69.2% of women respondents have no more nutritional status.

Based on analysis of the relationship between gender and nutritional status of adolescents found that there was 9.7% adolescent male sex have better nutritional status while women who have better nutritional status there is 8.7%, amounting to 10.0% of teens who have low education have better nutritional status while teenagers who have better nutritional status of higher education by 8.9%, amounting to 10.1% of adolescents with more protein intake ( $>$  100% RDA) has a better nutritional status and 8.7% of adolescents with protein intake no more ( $<$ 100% RDA) has a better nutritional status. 10.3% of adolescents do not regularly exercise have better nutritional status and 8.6% of adolescents who use regularly have the nutritional status, 9.3% of teens do not smoke have a better nutritional status and 7.5% of adolescents who smoke have a nutritional status more, 13% of adolescents with better nutritional status father had a better nutritional status and as much as 8.4% of adolescents with no more father nutritional status have better nutritional status, 11.7% of adolescents with better nutrient status mothers have better nutritional status and 8.1% of adolescents with no more nourished mothers have better nutritional status.

### 4. Discussion

Based on the results of the bivariate analysis known the significant correlation between sex with adolescent nutritional status. Kusumajaya research results (2007) said that teenage boys are most likely more than the nutritional status of young girls. Boys of

TABLE 1: Univariate Analysis Results.

Variables	Amount (N)	Percentage (%)
The nutritional status of adolescent		
a. Nutritional more (IMT $\geq$ 85 percentil)	4962	9.2
b. Nutritional no more (IMT<85 percentil)	48875	90.8
Gender		
a. Male	27865	51.8
b. Female	25972	48.2
Education of adolescent		
a. Low ( $\leq$ Did not finish elementary school)	13449	25.1
b. High ( $\geq$ Graduated from elementary school)	40124	74.9
Energy intake per day		
a. Intake more >100% AKG	5045	11.0
b. Intake no more, $\leq$ 100% AKG	40965	89.0
Protein intake per day		
a. Intake more >100%AKG	15891	34.5
b. Intake no more $\leq$ 100%AKG	30119	65.5
Consumption of fruit in one week		
a. Not frequent consumption if < 2 times a week	20338	37.8
b. Frequent consumption if $\geq$ two times a week	33499	62.2
Consumption of vegetables in one week		
a. Not frequent consumption if <5 times a week	22224	41.3
b. Frequent consumption if $\geq$ five times a week	31613	58.7
Exercise		
a. Not a routine	20635	38.5
b. Routine	33011	61.5
Smoking behavior		
a. No smoking	51599	96.0
b. Smoking	2134	4.0
The nutritional status of the father		
a. Nutritional more (IMT>25)	9462	17.6
b. Nutritional no more (IMT $\leq$ 25)	44351	82.4
The nutritional status of the mother		
a. Nutritional more (IMT>25)	16573	30.8
b. Nutritional no more (IMT $\leq$ 25)	37238	69.2

school age consume an amount of energy and nutrients is more significant than girls (Robert and Williams 2000). One crucial element that can affect the nutritional status of a person is the educational background — individuals who are knowledgeable good nutrition more comfortable in choosing and preparing food according to their needs (Mc Williams 1993). The results of this study showed teenagers with the most significant

TABLE 2: Bivariate Analysis Results.

Variables	Nutritional more N	Nutritional no more N	OR	p value
Gander				
a. Male	2694	25171	1.119	0.0001
b. Female	2268	23074		
Education of adolescent				
a. Low	1345	12104	1.134	0.001
b. High	3582	36542		
Protein intake per day				
a. Intake more	1605	14294	1.172	0.0001
b. Intake no more	2633	27479		
Exercise				
a. Not a routine	2121	18514	1.223	0.0001
b. Routine	2827	30184		
Smoking behavior				
a. No smoking	4797	46802	1.265	0.006
b. Smoking	160	1974		
The nutritional status of the father				
a. Nutritional more	1233	8229	1.635	0.0001
b. Nutritional no more	3724	40627		
The nutritional status of the mother				
a. Nutritional more	1943	16573	1.506	0.0001
b. Nutritional no more	3018	37238		

nutritional status in adolescents with low education (10%) as well as research Huda (2010). The Rinjati study (2002) showed no difference in BMI at the educational level, the difference in results is probably due to differences in the number of samples and the methods used. Protein intake has a significant association with the nutritional status of adolescents, in addition to protein as an energy source also have functions that cannot be replaced by other nutrients, namely to build and maintain the cells and tissues of the body. As a source of energy, protein, carbohydrate because it produces the equivalent of 4 kcal/g protein (Almatsier 2003). According to the Ministry of Health of the Republic of Indonesia (2003), physical activity and exercise regularly can be useful to prevent overweight, the survey results revealed teenagers who do not regularly exercise at risk 1.223 times through better nutrition compared with adolescents who use regularly, this is according to research Kusumajaya (2007). Teens who do not smoke risk 1,265 times more malnourished than adolescents who smoke. Arisman (2009) says that cigarettes can reduce appetite, blood vessels of the heart, gastrointestinal tract thus interferes

with the absorption process, while Insel (2011) says nearly a quarter of adolescents High School were smokers and some young women who smoke are trying to control appetite and weight. Teens who smoke often have an input of energy and other nutrients are low or declining. Although the results of this analysis in mind that teens who do not smoke are more likely to experience more nutrition than those who smoke do not mean it recommended that to reduce, weight should be with smoke, considering the impact of smoking is not good for health. Smoking is one of the significant risk factors for chronic diseases such as lung cancer, upper respiratory tract cancer, heart disease, stroke, bronchitis and even to death. The nutritional status of parents have a meaningful relationship with the nutritional status of adolescents, it is consistent with the results of research Rijanti (2000) and Dharmawan (2001), adolescents who have parents with nutritional status are more likely to have the nutritional status as well (Khomsan 2004).

## 5. Conclusions

Limitations of the study in using secondary data are any data missing. The proportion of the nutritional status of adolescents aged 12-15 years in Indonesia in 2007 was malnourished nothing more was 90.8%, while 9.2% of adolescents experience better nutritional status. A significant relationship between sex, education, protein intake, smoking, exercise, and nutritional status of the parents (father and mother) with the nutritional status of adolescents aged 12-15 years. The author suggests for the health authorities to cooperate with education authorities in providing information about the nutritional balanced and risk behavior in adolescents, for educational establishments add a special curriculum on lifestyle with balanced nutrition and monitoring of weight and height in school, for parents improve knowledge, seeking children to get an education, to practice lifestyle with balanced nutrition, to monitor the weight of children and for adolescents are more open to information, practice the lifestyle with balanced nutrition among others by eating a varied diet, not smoking, physical activity and watching weight.

## Acknowledgments

Completion of this thesis is inseparable from the help of others because the author would like to thank the Ministry of Health of Republic Indonesia, Mrs. dr. Endang L. Achadi, MPH. Dr. PH and Mr. lip Syaiful, SKM. M.Kes who have helped over the years.

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