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Breakfast Intake and Learning Concentration By
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<http://heanoti.com/index.php/hn/article/view/hn1311> Breakfast Intake and Learning Concentration Taufiqurrahman*, Viska Karera* *Health Polytechnic of Heath Ministry at Surabaya, Indonesia Email:

viskakarera@gmail.com ABSTRACT The concentration of learning is the ability to focus the mind on learning activities that can be influenced by breakfast intake as well as hydration status. Based on preliminary study on 10 students, it was found that there were 7 students who did not have breakfast and 8 students chose to consume energy drinks and mixed drinks instead of consuming water when thirst which caused the body to dehydrate. This study aims to analyze the relationship between breakfast intake and hydration status with learning concentration of students in elementary school Pacar Keling 6 Surabaya city, in February 2017 with cross sectional design. The subjects of the study were students of class III, IV and V chosen by random. The result of the analysis using Chi square test showed that there was a correlation between the intake of breakfast with the study concentration (p-value = 0,048) and there was no correlation between the hydration status and the study concentration (p-value = 0,307). It can be concluded that students with poor breakfast intake have low learning concentrations, the effects caused by mild dehydration conditions only in mood (mood) not on concentration and hydration status can be determined by the type of food and beverages consumed. Keywords: Breakfast, Learning concentration, Students, Elementary school INTRODUCTION Efforts to improve the quality of

nutrition for the development of quality human resources should essentially begin as early as possible, one of them school age children. One third of nutrition adequacy fulfillment is obtained from breakfast. Therefore breakfast should have the best quality of food and choice of food sources so as to meet as much as 25-30% of daily energy adequacy. Lack of nutrient intake in childhood especially in breakfast intake can decrease IQ, giving low ability and child can not concentrate maximally (Aprilia, et al., 2013). The results of the Indonesian Regional Hydration Study (TIRHS) study in some cities, 46.1% of the Indonesian population experienced low hydration status or mild dehydration, the number was higher in children and adolescents (49.5%) than adults (42.5%). The status of hydration is one of the causes of vulnerability of people difficult to concentrate (Hardinsyah, et al., 2012). Water is the largest constituent component in the body and also as the first nutrient for the brain, which

constitutes 60% of the total body weight. METHODS This research was conducted in February 2017. The population in this study were elementary school students Pacar Keling 6 Surabaya (population size = 225 students). The sample size was 52 students of grade 3, 4, and 5 selected randomly. Methods of data collection begins with filling the letter of willingness to be the respondent, then tested the concentration (Test Kraepelin), continued the interview to fill the food recall form breakfast and perform the test of hydration status by PURI method compared with the color chart urine. Data categorical type so presented in the form of frequency and percentage (Nugroho, 2014) and then tested the hypothesis using Chi-square test. RESULTS Among 52 respondents, most respondents had poor breakfast intake (73%), while the rest with good breakfast intake (27%). Most of respondents classified No Dehydration (56%), while the rest are Dehydrated (44%). Most of the respondents have relatively low learning concentration (80.8%) while the rest for high learning concentration (19.2%).

Table 1. Relationship between breakfast intake with learning concentration

Breakfast intake	Learning concentration	Low	High	Total	P-Value
Not Good	30	12	18	30	78.9
Good	12	8	4	12	85.7
Total	21	20	1	21	21.1
Total	14	38	14	100	100
P-Value	0.048				

Table 2. Relationship between hydration status with learning concentration

Hydration status	Dehydration	Not dehydration	Total	P-Value
Learning concentration Low	17	25	42	73.9
Learning concentration High	6	4	10	26.1
Total	23	29	52	100
P-Value	0.307			

Table 1 shows there is [a correlation between breakfast intake with study concentration \(p-value = 0.048\)](#). In contrast, Table 2 show no relationship between [hydration status and learning concentration \(p-value = 0.307\)](#).

DISCUSSION Respondents in this study consisted of 25 male students (48%) and 27 female students (52%). Most (35%) of them are 10 years old. When viewed from the age factor, children and adolescents in the growth period requires more energy than adults. This is because the rate of metabolism in adults tends to decline with age. Men need more energy than women. This is because the male metabolic rate is higher than the metabolic rate of women (Hardinsyah, et al., 2012). Rampersaud, et al. (2015) in the United States states that 30% of children and adolescents are not accustomed to breakfast so that the food intake is not sufficient for daily needs. According to Rampersaud breakfast is very important and beneficial for everyone as it is in school children who are useful to concentrate while studying. In Indonesia, the prevalence of non-breakfast behavior in children and adolescents is 16.9% - 59% and in adults 31.2% (Briawan, 2015). The results of data analysis of Riskesdas 2013 food consumption in 35,000 school- aged children showed that almost half (44.6%) of children who ate only consumed less than 15% of their energy needs, which should be 25-30% requirement. In urban one of them in Surabaya, often school children do not have breakfast because of the busyness and difficulty of parents facing children, such as difficulty waking up the child (59%), difficult to invite children breakfast (19%), difficult to ask children to eat breakfast (10%), and worried children are late school (6%) (Balitbang Kemenkes RI, 2013). When compared with the conditions in America (30%), Indonesia is higher the problem with the prevalence of children not breakfast by 16.9% - 59%. In this study also shows that there are still many respondents whose breakfast intake is classified as not good at 73%. According to The Indonesian Regional Study cited by Hardinsyah, et al. (2012), in some cities, 46.1% of Indonesia's population experience low hydration status or mild dehydration. The number is higher in children and adolescents (49.5%) than adults (42.5%). Meanwhile, city dwellers with the highest rates of mild dehydration were Makassar (59.4%), followed by Jakarta (53.1%), Malang (50%), Surabaya (47.5%), and Malino (35.7 %). From the results of PURI tests (Check Your Own Urine) obtained as much as 56% had no dehydration and 44% dehydrated. This is slightly lower when compared with national results according to The Indonesian Regional Study of 47.5% who are dehydrated. Briawan (2013) mentions that 37.3% of children and adolescents in Indonesia drink less than 8 glasses

per day and 24.1% of fluid intake less than 90% of daily needs. This matches the WHO statement that recommends drinking water 1,500-2,000 ml per day or equivalent to 6-8 glasses per day. A person who is dehydrated for hours due to daily activities may experience a concentration disorder (Hardinsyah, et al., 2012). From the results of concentration tests using Kraepelin test method, 42 respondents (80.8%) had low thinking scores and as many as 10 respondents (19.2%) had high thinking scores. Some factors that influence the concentration of thinking are the factors of age, physical factors and factors of experience and knowledge (Muctar, 2014). The results showed that respondents who need breakfast intake is not met well has a classification of thought concentration tend to be low. Children who do not have sufficient breakfast will have an impact on the ability to concentrate while doing the task in the classroom. This is similar to the opinion of Rifameutika (2013) that child's learning behavior is one of the positive impacts of breakfast. Empty stomach can make blood glucose levels decreased resulting in the supply of glucose to the brain disrupted and will affect the brain work (Soekirman, 2014). Breakfast habits will maintain blood glucose within normal limits because the digested food will be broken down into simpler forms in the mouth, stomach and intestines so that when it reaches its gut its very simple form is called a monosaccharide. This monosaccharide is further absorbed by the body into the bloodstream in the form of glucose. In this study, there is a relationship between breakfast intake to the concentration of learning because breakfast is a good source of glucose and as a major energy source for brain work. When glucose levels drop, the body searches for glucose reserves by taking the glycogen to be converted into glucose with the help of the glucose-6-phosphate enzyme in the liver and expelling it into the bloodstream. Other tissues do not have glucose-6-phosphatase enzymes that can not alter glycogen with the help of glucose-6-phosphate enzymes into glucose. It is dangerous if the body does not get food intake as well as reserves of glycogen in the liver runs out, it can cause the brain does not get energy supply, causing a decrease in cognitive function one of them is the concentration of learning which resulted in decreased achievement in school (Faridi, 2002). Kurniasari (2015) reported [that there was a correlation between energy intake originating from breakfast with concentration](#) in school and Muctar (2014) reported that there was a relationship of thought concentration between children who had breakfast with non-breakfast children. The results showed that most of the respondents had a low level of calorie consumption which led to low learning concentration. The lack of sufficient energy levels in the respondents is probably due to an unqualified breakfast quality. Like most respondents only have breakfast with tea or just eat with a little rice and fried eggs. The results also showed a higher proportion of non-dehydrated respondents who had lower than high concentrations of thinking criteria. Hardinsyah, et al. (2012) mentioned that acute dehydration symptoms (short-term dehydration) vary according to weight reduction. Dehydration is categorized as mild dehydration and moderate dehydration. In the mild dehydration stage the body has a fluid deficiency of 1-2,9% (graph of urine color 4-6), whereas in the dehydration stage the body has fluid deficit of 3-4% (urine color chart 7-8). In long-term short-term dehydration, the body may experience fluid deficiency up to 5-6% which can lead to difficult concentration, headache, failure of temperature regulation and increased breathing frequency. D'Anci (2013) states that [the effects caused by mild dehydration are only in the mood and do not cause interference with concentration](#). Szinnai, et al. (2014) also mentioned that short-term dehydration does not cause changes in cognitive function because there is still fluid or electrolyte reserves in the body stored in the blood vessels. One of the functions of blood vessels is as a reservoir system of body fluids that in an emergency can immediately dialihklan into various forms of body fluids that can be used to balance the normal function of the body

when not getting adequate fluid intake. CONCLUSION Based on research results can be concluded that There is a relationship between breakfast intake with study concentration but no relationship between hydration status and learning concentration. REFERENCES Aprilia, H., et al. (2013). Relationship Between Breakfast and Consumption Level of Nutrition with Primary School Student Concentration (Hubungan Makan Pagi dan Tingkat Konsumsi Zat Gizi dengan Daya Konsentrasi Siswa Sekolah Dasar). Media Gizi Indonesia, 9(1). Balitbang Kemenkes RI. (2013). Basic Health Research (Riset Kesehatan Dasar / RISKESDAS). Jakarta: Balitbang Kemenkes RI. Briawan, D. (2015). National Breakfast Week (Pekan Sarapan Nasional (PESAN)). Naskah Akademik, PERGIZI PANGAN Indonesia, PERSAGI, PDGMI & PDGKI, Jakarta D'Anci, K.E., Constant, F., Rosenberg, I.H. (2013). Hydration and cognitive function in children. Nutrition Reviews. DOI: 10.1111/j.1753-4887. Faridi, A. (2002). Morning Breakfast and Blood Glucose Levels with Concentrations of Learning to Elementary School Students (Hubungan Sarapan Pagi dan Kadar Glukosa Darah dengan Konsentrasi Belajar pada Siswa Sekolah Dasar). Jurusan Gizi Masyarakat dan sumberdaya Keluarga. Fakultas Pertanian. Bogor: Institut Pertanian Bogor Hardinsyah, Gustam, Briawan. (2012). Dehydration Risk Factors for Adolescent and Adult Indonesia (Faktor Resiko Dehidrasi pada Remaja dan Dewasa Indonesia). Jurnal Gizi dan Pangan, 8. Kurniasari, R. (2015). Hubungan Frekuensi dan Asupan Gizi Makan Pagi Dengan KADAR Hemoglobin (Hb) Darah dan Konsentrasi di Sekolah Pada Murid Kelas V dan VI SDN Jetis 1 dan SDN Jetishardjo 1. Yogyakarta: Gadjah Mada University Press. Muctar, M. (2014). Breakfast and Snack Related to Concentration Ability in Teens (Sarapan dan Jajan Berhubungan Dengan Kemampuan Konsentrasi Pada Remaja). Jurnal Gizi Klinik Indonesia, 8(1): 28- 35. Nugroho, H.S.W. (2014). Descriptive Data Analysis for Categorical Data (Analisis Data Secara Deskriptif untuk Data Kategorik). Ponorogo: Forum Ilmiah Kesehatan (FORIKES). Rampuaserd, G.C., Pereira, M.A., Girard, B.L., Adams, J., (2015). Review: Breakfast Habits, Nutritional Status, Body Weight, and Academic Performance in Children and Adolencenst. Journal of America Dietetic Association, 105: 743-760. Rifaumetika. (2013). Ovierviews on Breakfast Science Topic. Factors Influencing Breakfast Skipping Behavior in Adult and Adolencenst. Breaksfast Science Library. Soekirman. (2014). Nutrition Science and Its Application for Family and Society (Ilmu Gizi dan Aplikasinya untuk Keluarga dan Masyarakat). Direktorat Jenderal Pendidikan Tinggi Departemen Pendidikan Nasioanal, Jakarta. Szinnai, G., Keller, U., Schachninger, H. (2014). Dehydration does not influence cardiovascular reactivity to behavioural stress in young healthy humans. Clin Physiol Imaging, 27(5): 291-297. [Health Notions, Volume 1 Issue 3 \(July-September 2017\) ISSN 2580-4936](#) [Health Notions, Volume 1 Issue 3 \(July-September 2017\) ISSN 2580-4936](#) [Health Notions, Volume 1 Issue 3 \(July-September 2017\) ISSN 2580-4936](#) [Health Notions, Volume 1 Issue 3 \(July-September 2017\) ISSN 2580-4936](#) 204 | [Publisher: Humanistic Network for Science and Technology](#). 205 | [Publisher: Humanistic Network for Science and Technology](#). 206 | [Publisher: Humanistic Network for Science and Technology](#) 207 | [Publisher: Humanistic Network for Science and Technology](#)