

## DESCRIPTION OF HEMOGLOBIN LEVEL OF TEEN WHO CONSUMED IRON SUPPLEMENT

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### Abstract

Survey of Dinas Kesehatan Kota Blitar in 2002 found that the prevalence of anemic teen with was 20.5%. This situation aligned the problems that often occur in adolescents are obesity and anemia. An effort to decrease the prevalence of anemic teen conducted a pilot award projects of iron supplementation (Fe) since 2010, but had never an evaluation. Pilot project conducted in all female students in the junior school Blitar, which public junior school of 4<sup>th</sup> Blitar has implemented since 2010. The purpose was to describe the hemoglobin level of teen who consumed iron supplementation (Fe). Design used descriptive, research instruments was Hb test using Sahli's method. The population sizes of teen at Public Junior School 4<sup>th</sup> of Blitar were 438 teens and sample sizes were 65 teens selected used proportional stratified random sampling based classed. The sample criteria was taking iron supplement (Fe) more than 6 months routinely one tablet a week at school and not menstruating when measured hemoglobin. Data collected in June 2014. Results: Teens who consumed iron supplement tablet for less than 1 year as many as 22 teens, 1-2 years as many as 24 teens, and more than 2 years as many as 19 teens. The level of hemoglobin of teen who consumed iron supplementation (Fe) were low category (less than 12 g/dL) as much as 14% (9 teens), normal category (12.01 – 15.0 g/dL) as much as 77% (50 teens), and high category (more than 15.01 g/dL) as much as 9% (6 teens).

**Keywords:** hemoglobin, teen, iron supplement

### Background

Adolescence needs of nutritional will be increases the amount and quality. Anemia is one of the adolescent nutritional problems. Women, especially teen is susceptible to anemic than men because women is menstruating (Davey, 2005: 304). Teens also want to look slim. Indonesian society including young women tend to consume more vegetable protein than animal protein, thus allowing

the occurrence of iron deficiency (Aryani, 2010).

Prevalence of anemic teen at Kota Blitar in 2010 is 20.5%. The basic principle in prevention of iron deficiency anemia by increasing the content and bioavailability of iron in the food, good effort that is by giving the iron supplementation (Fe) (Gibney et al, 2009: 283). Dinas Kesehatan Kota Blitar make

provision iron supplement (Fe) to all female student at juniors school. Public junior school of 4<sup>th</sup> has gave it's since 2010, but has never been evaluated.

**Methods**

This study used descriptive. The population was all teens (female students) in public junior school of 4<sup>th</sup> Kota Blitar, who received iron supplement (Fe) minimum 6 months. Sampling used proportional stratified random sampling based on teen classes. Sample sizes were 65 teens; 1<sup>st</sup> class were 22 teens, 2<sup>nd</sup> class were 24 teens, and 3<sup>rd</sup> class were 19 teens.

**Result**

This study results were:

1. Age

Average age teen was 14 years old and standard deviation was 0.86, minimum age was 12 years old and maximum age was 16 years old.

2. Source of protein consumed daily

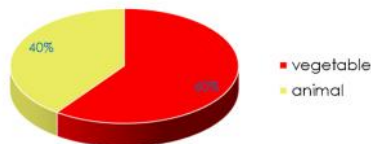


Figure 1 Source of protein consumed daily by teens

3. Drinking habitual of iron supplement (Fe)

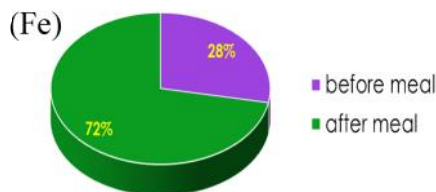


Figure 2 Drink habitual of iron supplement (Fe) by teens

The purpose of this study was to describe the hemoglobin level of teen who consumed iron supplementation (Fe).

The variable study was level hemoglobin of teen (female student) was taking Hb test by Sahli method. Results are grouped in three categories: high (>15 g %), normal (12-15 g %), and low (< 12 g %). Data was collected at 09-10 AM when studied at rest; date in May, 28<sup>th</sup> – June, 12<sup>th</sup> 2014; at school.

4. Length of drinking iron supplement (Fe)

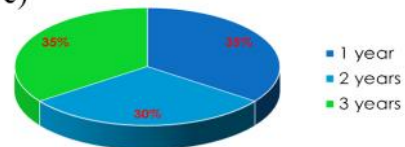


Figure 3 Length of drinking iron supplement (Fe) by teens

5. Hemoglobin level category

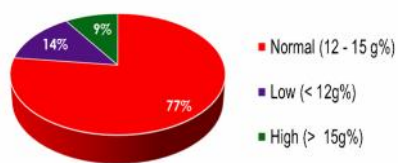


Figure 4 Hemoglobin level category of teens after consuming iron supplement (Fe)

6. Crosstab of hemoglobin level with classes of teen

Table 1 Cross tabulation of hemoglobin level with classes of teen				
Class of teen	Hb level category			Total
	High	Normal	Low	
1 <sup>st</sup> class	2 (3.1%)	20 (30.8%)	0 (0%)	22 (33.8%)
2 <sup>nd</sup> class	0 (0%)	21 (32.3%)	3 (4.6%)	24 (36.9%)
3 <sup>rd</sup> class	4 (6.2%)	9 (13.8%)	6 (9.2%)	19 (29.2%)
Total	6 (9.3%)	50 (76.9%)	9 (13.8%)	65 (100%)

Contingency coefficient  $p = 0.004$ ;  $C = 0.439$

### Discussion

The results of the interview showed that the source of protein consumed teen every day from animals (40%) and vegetable (60%). Source of animal protein comes from fish, chicken, beef, and eggs. Source of vegetable protein derived from spinach, kale, and beans. Different sources of protein consumed can affect hemoglobin levels of teen. Consumption of vegetable protein sources in accordance with the prevailing culture to look slim. Kartasapoetra (2003), two forms of iron are heme iron and non-heme. Heme iron is iron that binds the hemoglobin and myoglobin. Heme iron was found in animal products and most efficiently absorbed by the body. Anwar and Ali (2009: 79), variations in the iron content of the animal between 1.5 to 6.6 mg / 100 g and the absorbance of the body can reach 7-22%. Non-heme iron comes from vegetable oils was consumed the largest part of each day but poorly absorbed,

approximately only 2-10% (Tan, 2002: 17). Anwar and Ali (2009), vegetables such as spinach, kale, cinnamon, and bluntas is a source of iron containing between 2.5 to 5.6 mg / 100 g. According to Tan (2002), heme iron in animal can increase the absorption of non-heme iron if both are consumed together. According to researchers, efforts need to be nurses or health workers are providing health education about the importance of the combination of animal protein sources to increase the absorption of non-heme iron that is derived from vegetable. This situation is supported by the geographical conditions surrounding Kota Blitar also produce marine fish as a source of animal protein that contain heme iron.

Fact in Kota Blitar administration of iron supplement (Fe) was given once a week for junior school students, with no measurement of hemoglobin levels before administration. Length of consumed iron

supplement (Fe) did not affect hemoglobin levels of teen. The results of the study of Allen et al (2000), after 1 year of supervised iron supplementation, the children's hemoglobin concentrations were not significantly higher than unsupplemented children. In a study by Palupi et al (1997), a once-weekly iron supplementation was provided for 9 weeks

to 289 preschoolers in West Java. The prevalence of anemia decreased from 37% to 18% in the supplemented group, compared with a decrease from 36% to 27% in the control group. Thus, the evaluation of programs needs to be done early and regularly in order to describe the changes in hemoglobin levels after taking iron supplement (Fe).

### Conclusion

Teens who high category were 9.3%, normal category were 76.9%, and low category were 13.8%. Based on length of drink, teens of 1<sup>st</sup> class has high and normal hemoglobin level category when

compared with 2<sup>nd</sup> class and 3<sup>rd</sup> class in high, normal, and low hemoglobin category level. This situation affected length of drink.

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