

# Turkish Journal of Physiotherapy and Rehabilitation

*By* Reni

## SURVEY OF THE SCHOOL CANTEEN, OPPORTUNITIES FOR ANEMIA REDUCTION TO YOUNG WOMEN SCHOOL –BASED IN THE CITY OF BANDAR LAMPUNG

2  
Reni Zuraida<sup>1</sup>, Nur Indrawaty Lipoeto<sup>2</sup>, Masrul<sup>3</sup>, Judhiastuty Februhartanty<sup>3</sup>

<sup>1</sup>Faculty of Medicine, University of Lampung, <sup>2,3</sup>Faculty of Medicine University of Andalas, Padang,

<sup>4</sup>SEAMEO REFCO (Regional Centre for Food and Nutrition), Universitas Indonesia,  
Jakarta City, Indonesia

E-mail: zuraidareni@yahoo.com, reni.zuraida@fk.unila.ac.id

### ABSTRACT

**The Purpose** of this research is to know the profile of the foods that are sold in the school canteen, profiles food sources of iron sold in the canteen at high school in the city of Bandar Lampung.

**Research Methodology:** This research is descriptive research approach with cross sectional analysis conducted at 30 high schools in the city of Bandar Lampung, Lampung Province in 2018.

**Results:** Source of iron is most widely available is derived from vegetable proteins, namely tempe/tofu/oncom (18.2%), followed by the next new animal food in a row is a chicken, egg and fish as much as 16.1%, 13.3% and 8.4% of traders. The availability of vegetables and fruits a little (31.8%). Availability of tea and coffee drinks as a barrier of iron absorption is more than milk as a source of iron

**Conclusions:** The availability of food in the canteen in high school is not yet appropriate to the fulfillment of the message of balanced and nutritional adequacy of iron daily fulfillment of girls.

**Limitations:** This study is based on the availability of types of food in the school canteen. It can change according to teen food trends.

**Keywords:** Availability of Food, Iron Source, Adolescent, Canteen; School

### I. INTRODUCTION

Teenager is the population in the age range 10-19 years (WHO). According to According to basic medical research (Riskesdas) in 2013, the proportion of anemia in women not pregnant 15 years i.e. amounting to 22.7% the Ministry of health of the Republic of Indonesia (Kemenkes RI, 2013). But in a lot of research about the anemic young women in various regions of Indonesia such as in Tangerang (Fikawati et al., 2009), Semarang (Wibowo, Notoatmojo and Rohmani, 2013), Bengkulu (Syriac, Hafiani and Junita, 2015), Lombok (Masthalina, Laraeni and Dahlia, 2015), Sidoarjo (Cholifah and Hadikasari, 2015), Jambi (Kalsum and Halim, 2016), Palu (Lewa, 2016) showed higher prevalence compared to national data and prevalence above 30%, so according to the World Health Organization (WHO) this problem public health in the category of medium to heavy (WHO, 2011b). In the province of Lampung own prevalence of anemia women  $\geq 15$  years old was 25.9% (Health Office, 2012), higher than the national prevalence i.e. 22.7% (Ministry of health Indonesia (Kemenkes) in 2010).

Conditions of anemia in young women have implications for health to young women (rematri) against current and future. For young women who are experiencing anemia (Rematri) affect concentration and memory of school, school attendance, physical growth and menarche, the onset of the immune status of infection and morbidity, physical capacity and performance (the WHO, 2011). If the condition persists in pregnancy then implies the results of pregnancy and maternal health (BA and ZA, 2015; Haider et al., 2013). Implications in Indonesia can be seen from the high maternal mortality (AKI), infant mortality (AKB), Low Birth Weight, stunting on toddler in Indonesia compared with neighboring countries in Southeast Asia (UNDP, 2015; UNICEF, 2012). World Health Organization (WHO) estimates 50% of sufferers of anemia due to iron deficiency due to the behavior of

eating food sources inadequate iron in food (WHO, 2016a). Iron deficiency anemia is a major cause of death and disability to teenagers in 2015 (WHO, 2017).

To meet the nutritional needs as recommended by the iron intake, especially teenagers, need to be supported with the provision of the good food in the school environment (canteen). The purpose of this research is to know the profile of the foods that are sold in the canteen of the school, profiles food sources of iron sold in the canteen in High School in the city of Bandar Lampung and is there a type of food that can inhibit and enhance the absorption of substances iron.

## II. RESEARCH METHODOLOGY

This research is descriptive research approach with cross sectional analysis conducted at 30 high schools in the city of Bandar Lampung, Lampung Province at the beginning of the year 2018. Election of school based representation of schools in some aspects, namely: first, the High School and Vocational High School (SMK); Secondly, public and private schools; third, the school is located in the Center and suburbs. The survey was conducted at traders around the school can access the student both within the school and in the school environment. Data collection is done by the method of structured interviews and recording-keeping. Data collection includes the characteristics of the canteen and food items are sold. This research is approved by the Commission of ethics of the Faculty of medicine University of Lampung with No: 4489A/UN 26.8/DL/2017.

## III. RESULTS AND DISCUSSIONS

### 1. Characteristics of a Canteen

Most of the schools surveyed are private schools because the number of private schools is more than we predict. The total number of merchants surveyed were 143 merchants. Most of the traders are trading in the canteen in the school. Most traders are from 30 until 49 years old. Most of the education of traders is high school in general.

### 2. Types of food sold

a. the main food (n = 143 traders) A merchant can have one or more main meals are traded. That draws on this research, from 143 traders surveyed, 30.1% were either fried foods as the main menu, but only in the form of fried snacks/snacks, while the other 95% were fried foods. "Sepinggan" food is widely available is processed noodles (28%), fried rice (21%), Hor (19.6%), soto (18.2%) and meatballs (18.2%)

b. drink The drink is distinguished into two kinds, namely, bottled and refined drinks. There are 327 bottled brand variation and variation type 101 drinks processed for sale merchants when surveyed, where 1 merchant can sell 1 or many types of drinks. Not all traders selling processed beverages. Of all drinks packaging sold trader: 14% 31% is milk tea/coffee and 55% of bottled carbonated beverages, such as fruit juices, fruit juices, beverages- grained isotonik drink, nata de coco, bubble drink and others. From processed drinks: 18% of processed fruit drinks and processed milk beverages 27%, 49% type of processed tea/coffee drinks (Figure 1).

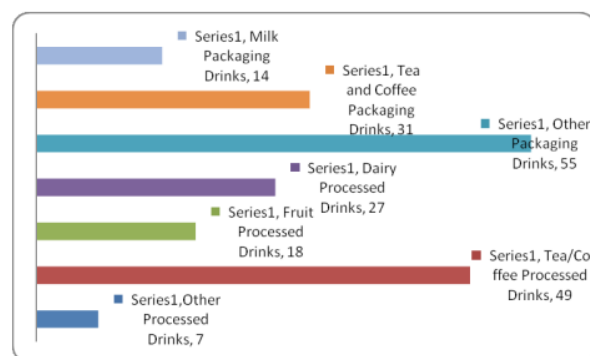


Figure 1. Availability of Beverages Based on Type

### C. Snack

Variation of processed snacks/snack more than snack/snack packaging. Most packaged snack consumed by students is the wafer, candy, cookies, nuts, chocolate caramel. While most processed snack consumed by students is somay/batagor, pempek, bakwan, bread, Cireng, risol, fried bananas

**d. Source of iron derived from animal Protein and Vegetable.**

Food sources of iron are the most widely available are from vegetable food namely tempe/Tofu/oncom (18.2%), followed by a newanimal food in a row is a chicken, egg and fish sold as much as 16.1%, 13.3% and 8.4% of merchants. Food sources high in iron that is chicken liver, thus for availability very slightly (1.4%). The availability of food as a sausage processed animal protein sources are high enough (7.7%) even though the iron content of substance only a fifth of the iron in one chicken eggs (Table 1).

Table 1. Iron Substances from Animal and Vegetable Proteins

No	Iron Source	n	%
1	Tempe/tofu/oncom	26	18.2
2	Chicken	23	16.1
3	Eggs	19	13.3
4	Fish	12	8.4
5	Shells	2	1.4
6	Ati Ampela	2	1.4
7	Squid	1	0.7
8	Octopus	1	0.7
9	Shrimp	1	0.7
10	Sausage	11	7.7
11	Nugget	5	3.5
12	Pergedel	2	1.4

**e. Source of iron derived from vegetables and fruit.**

Only 5.6% of traders that provides a menu of vegetable and 8.4% in the form of refined pecel/ketoprak/karedok. The fruit is sold in the form of refined drinks such as candied fruit, fruit juice and iced fruit (17.8%), not in the form of whole fruit (Table 2).

Table 2. Sources of iron from vegetables and fruit

Vegetable dan Fruit	n	%
Stir-Fry vegetables	8	5.6
Pecel/ketoprak/karedok	12	8,4
Fruit ( Drink)	17	17,8
Total	37	31.8

**IV. CONCLUSION**

The availability of food in the high School canteen is still not appropriate for fulfilling the message balanced nutrition and the fulfillment of daily iron requirement. First, the food sources of iron are available that most sale is derived from vegetable protein from tempe/Tofu/oncom. Original source of iron available animal protein is chicken, but the content of iron in chicken. While the availability of chicken livers as a food high in iron which very few cheap. Second, the availability of vegetables and fruits a little. Third, the availability of foods and beverages high in sweets, high salt and high fat high enough. Fourth, the availability of beverage of milk as a source of iron, but the availability of tea and coffee drinks as a barrier to more iron absorption.

**V. LIMITATION AND STUDY FORWARD**

This study is based on the availability of types of food in the school canteen. Types of food can change according to teen food trends.

**VI. ACKNOWLEDGEMENT**

Thank you to the Lampung Provincial Education Office dan the school office for giving permission to survey the canteen

## REFERENCES

1. BA, H. and ZA. B., 2015. Multiple-Micronutrient Supplementation for Women During Pregnancy (Review). Cochrane Database of Systematic Reviews, (11). doi: 10.1002/14651858.CD004905.pub4. www.cochranelibrary.com.
2. [BPOM] Badan Pengawas Obat dan Makanan. 2013. Pedoman pangan jajanan anak sekolah untuk pencapaian gizi seimbang (Pengawas dan/atau Penyuluh). Jakarta
3. Badan POM. 2008. Laporan Akhir Monitoring dan Verifikasi Profil Keamanan Pangan Jajanan Anak Sekolah (PJAS) Nasional Tahun 2008. Direktorat Surveilans Penyuluhan Keamanan Pangan, Deputi Bidang Pengawasan Keamanan Pangan dan Bahan Berbahaya. Jakarta.
4. Cholifah and Hadikasari, A. A., 2015. Hubungan Anemia, Status Gizi, Olahraga dan Pengetahuan dengan Kejadian Dismenore pada Remaja Putri. *Midwiferia*, 1(1).
5. [Depkes] Departemen Kesehatan RI. 2013. Angka kecukupan gizi yang dianjurkan bagi bangsa Indonesia. Departemen Kesehatan. Jakarta.
6. [Depkes] Departemen Kesehatan RI. 2014. Pedoman gizi seimbang. Departemen Kesehatan. Jakarta.
7. Dinkes Provinsi Lampung, 2012. Profil Kesehatan Provinsi Lampung 2012. Bandar Lampung.
8. Fikawati, S. et al., 2009. Pengaruh Suplementasi zat besi Satu dan Dua Kali Per Minggu Terhadap Kadar Hemoglobin Pada Siswi Yang Menderita Anemia. *Universa Medicina*, 24(4), pp. 167–174.
9. Fox MK, Bordon A, Nogales R, Wilson A. 2009. Availability and consumption of competitive food in US public school. *Journal of the Academy of nutrition and Dietetics*. 109(2):S57-S66. doi: http://dx.doi.org/10.2016/jjada.10.063.
10. Haider, B. A. et al., 2013. Anaemia, Prenatal Iron Use, and Risk of Adverse Pregnancy Outcomes: Systematic Review and Meta-Analysis. *BMJ*, 346(June), p. f3443.
11. Kalsum, U. and Halim, R., 2016a. Kebiasaan Sarapan Pagi Berhubungan dengan Kejadian Anemia pada Remaja di SMA Negeri 8 Muaro Jambi. *Jurnal Penelitian Universitas Jambi Seri Sains*, 18(1), pp. 09–19.
12. Lewa, A. F., 2016. Hubungan Asupan Protein, Zat Besi dan Vitamin C dengan Kejadian Anemia pada Remaja Putri di MAN Model Palu. *Jurnal Publikasi Kesehatan Masyarakat Indonesia*, 3(1), pp. 26–31.
13. Masthalina, H., Laraeni, Y. and Dahlia, Y. P., 2015. Pola Konsumsi (Faktor Inhibitor dan Enhancer Fe) terhadap Status Anemia Remaja Putri. *Jurnal Kesehatan Masyarakat*, 11(1), pp. 80–86.
14. Nelson M, Gibson K, Nicholas J. 2015. School lunch take up and attainment in primary and secondary school in England. *Frontiers in Public Health*. 3:230. DOI: 10.3389/fpubh.2015.00230
15. Nuraida L, Kusumaningrum H, Palupi NS, Koswara S, Madaniyah S, Zulaikhah, Madjij AS, Ariani, Triwahyunto A. 2014. Menuju Kantin Sehat. Direktorat Jendral Kementerian Pendidikan dan Kebudayaan.
16. Ongan D, Inanc N, Cicek B. 2014. Comparing school lunch and canteen foods consumption of children in Kayseri, Turkey. *Pakistan Journal of Medical Sciences*. 30(3):549-553. doi:10.12669/pjms.303.4651.
17. [Risikesdas] Riset Kesehatan Dasar. 2013. Badan Penelitian dan Pengembangan Kesehatan. Jakarta: Kementerian Kesehatan RI.
18. [Risikesdas] Riset Kesehatan Dasar. 2010. Badan Penelitian dan Pengembangan Kesehatan. Jakarta: Kementerian Kesehatan RI.
19. [Persagi] Persatuan Ahli Gizi Indonesia. 2009. Tabel Komposisi Pangan Indonesia (TKPI). Jakarta: PT Elex Media Komputindo.
20. Sackeek JM, Morgan EH, Wilde P, Griffin T, Nahar E, Economos CD. 2012. Key Strategies for improving school nutrition: A case study of three school nutrition program innovators. *The Journal of Child Nutrition and Management*. 36(1).
21. Suryani, D., Hafiani, R. and Junita, R., 2015. Analisis Pola Makan dan Anemia Gizi Besi pada Remaja Putri Kota Bengkulu. *Jurnal Kesehatan Masyarakat Andalas*, 10(1), pp. 11–18.
22. Tanziha, I dan Prasajo G. 2012. Pemberian Makanan Tambahan Anak Sekolah dalam Upaya Perbaikan Gizi dan Kesehatan. *Kerjasama Nurani Dunia dan Departemen Gizi Masyarakat*. Fakultas Ekologi Manusia, IPB, Bogor.
23. UNDP. 2017. Laporan Pembangunan Manusia/Human Development Report 2016 (Ringkasan Indonesia). Available at: [http://www.id.undp.org/content/dam/indonesia/2017/doc/INS-HDR2016\\_indonesia\\_summary-final.pdf](http://www.id.undp.org/content/dam/indonesia/2017/doc/INS-HDR2016_indonesia_summary-final.pdf). WHO, 2011. The Global Prevalence of Anaemia in 2011, WHO Report, p. 48. doi: 10.1017/S1368980008002401.
24. UNICEF, 2012. Progress for Children. A report card on adolescents. Available at: [https://www.unicef.org/.../files/Progress\\_for\\_Children\\_-\\_No.\\_10\\_EN\\_04232012.pdf](https://www.unicef.org/.../files/Progress_for_Children_-_No._10_EN_04232012.pdf)
25. WHO, 2016. Guideline Daily Iron Supplementation in Adult Women and Adolescent Girls. Available at: [http://apps.who.int/iris/bitstream/10665/204712/1/9789241549523\\_eng.pdf?ua=1](http://apps.who.int/iris/bitstream/10665/204712/1/9789241549523_eng.pdf?ua=1).
26. WHO, 2016b. The Global Strategy for Women's, Children's and Adolescent's Health (2016-2030).
27. WHO. 2017. Global Accelerated Action for the Health of Adolescents (AA-HA!) Guidance to Support Country Implementation, p. 9. Available at: <http://apps.who.int/iris/bitstream/10665/255415/1/9789241512343-eng.pdf?ua=1>.
28. Wibowo, C. D. T., Notoatmojo, H. and Rohmani, A., 2013. Hubungan Antara Status Gizi dengan Anemia pada Remaja Putri di Sekolah Menengah Pertama Muhammadiyah 3 Semarang. *Jurnal Kedokteran Muhammadiyah*, 1(2), pp.3–7.

# Turkish Journal of Physiotherapy and Rehabilitation

ORIGINALITY REPORT

7%

SIMILARITY INDEX

PRIMARY SOURCES

1	<a href="http://turkjphysiotherrehabil.org">turkjphysiotherrehabil.org</a> Internet	54 words — 3%
2	<a href="http://www.id-press.eu">www.id-press.eu</a> Internet	21 words — 1%
3	<a href="http://worldwidescience.org">worldwidescience.org</a> Internet	18 words — 1%
4	Anthony Worsley, Wei Wang, Rani Sarmugam, Quynh Pham, Judhiastuty Februhartanty, Stacey Ridley. "Family Food Providers' Perceptions of the Causes of Obesity and Effectiveness of Weight Control Strategies in Five Countries in the Asia Pacific Region: A Cross-Sectional Survey", <i>Nutrients</i> , 2017 Crossref	13 words — 1%
5	<a href="http://journal.uin-alauddin.ac.id">journal.uin-alauddin.ac.id</a> Internet	11 words — 1%

EXCLUDE QUOTES ON

EXCLUDE MATCHES OFF

EXCLUDE BIBLIOGRAPHY ON