

Eating behaviour of adolescent schoolgirls in Malang, East Java: a qualitative study

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ABSTRACT

Introduction: Poor eating behaviour is known to lead to nutritional deficiency among adolescents. At the same time, poor eating behaviour characterised by dietary excesses could lead to overweight and obesity. The present study aimed to explore the eating behaviour of adolescent schoolgirls in Malang, East Java Province, Indonesia, and to determine the factors that influenced their eating behaviour. **Methods:** This was a qualitative study, guided by the Social Cognitive Theory (SCT), which focused on individual and environmental influences to better understand health-related behaviours, such as eating behaviour. Triangulation was applied to the study subjects (adolescent girls, their mothers, and school staff). The methods used included individual in-depth interviews and focus group discussions. Qualitative data analyses were performed using Atlas.ti 7. **Results:** Most participants showed poor eating behaviour that was characterised by skipping breakfast, frequent consumption of fast foods and the consumption of local food with low nutrient content. Their eating behaviour was influenced by individual factors including personal preferences, the price of the food, and by environmental factors, such as the family, school and neighbourhood. **Conclusion:** Our findings showed that adolescent girls in Malang appeared to be aware of healthy eating but they showed unsatisfactory eating practices. Interventions are suggested to improve the poor eating behaviour of the adolescents toward avoiding malnutrition consequences.

Keywords: Eating behaviour, adolescent schoolgirls, Malang, Indonesia

INTRODUCTION

As adolescence is a critical stage of physical and psychological growth and development, healthy dietary behaviour during this period is important. A previous study has reported that adolescents are prone to poor eating, with a tendency to a high consumption

of energy-dense foods, sugar-sweetened beverages, and a low intake of fruits and vegetables (Rathi, Riddell & Worsley, 2017). Adolescents, particularly girls, are prone to nutritional deficiencies owing to poor intake of nutrients that are needed to support the growth spurt and the body's demand for iron during

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menstruation (Mesias *et al.*, 2013). On the other hand, dietary excesses during adolescence may lead to overweight and obesity (Sahoo *et al.*, 2015). Poor eating habits formed during adolescence may persist into adulthood (Craigie *et al.*, 2011). Therefore, establishing a healthy eating behavior during adolescence has both short- and long-term health benefits.

In Indonesia, a study found that low socioeconomic status (SES) is associated with iron deficiency among adolescent girls (Sumarlan, Windiastuti & Gunardi, 2018). In East Java, the prevalence of chronic energy deficiency in women of reproductive age (15–49 years) was higher than the national rate, while the prevalence of stunting among adolescents was comparable to the national rate (MOH Indonesia, 2013).

Several qualitative studies have reported that adolescent food choice behaviour was influenced by the SES (Maulida *et al.*, 2016), food preferences, familial factors (home food environment, parental style), food accessibility and availability (Fitzgerald *et al.*, 2010). However, there are currently few qualitative studies on the eating behaviour of Indonesian adolescents and its associated factors.

The aim of the study was to explore the eating behaviour of adolescent girls (aged 15–18 years) from low SES backgrounds in Malang, East Java Province, Indonesia and to identify the factors that drove their eating behaviour. The study used a qualitative research approach and was guided by the Social Cognitive Theory (SCT) (Bandura, 1998). The SCT is a widely used theory applied in interventions to promote healthy eating among adolescents (Fitzgerald *et al.*, 2010; Hall, Chai & Albrecht, 2016). This theory focuses on the interactions among individuals, and their social and physical environment to explain health-related behaviour such as eating practices.

MATERIALS AND METHODS

The primary subjects were adolescent schoolgirls while the secondary subjects were mothers and school staff as informants to validate the opinions of the girls. The study was conducted in three public high schools in Malang. Malang is the second largest city in the East Java Province. According to the National Socioeconomic Survey (Central Bureau of Statistic Indonesia, 2013), it has the highest proportion (16%) of adolescent girls aged 15–18 years within the total number of women aged 15–49 years.

The triangulation technique was used in validating the interpretation of the data collected from different sources. In this study, the triangulation sources used were different subjects (girls, mothers, and school staff), as well as different methods (individual interviews and focus group discussions [FDGs]). The FGD approach provides a relaxed atmosphere as the subjects are in the company of their peers (Daley, 2013). Therefore the FGDs were done at their schools at the beginning of the data collection stage to gain a preliminary understanding of the general situation of the eating behaviour of the adolescents and their lifestyles. Following this first stage of understanding, individual interviews of the girls and their mothers were done separately at home, in order to obtain more insightful responses. The interviews with the school staff were conducted at the schools.

The FGD and interview questions to the girls were similar because the two methods were used to different girls as a way to triangulate communal perception. However, we started the interview by asking about the daily routine and daily eating practices of the participants. The FGD started with a discussion of similar and/or different eating habits among the participants. Examples of the questions posed to the girls are stated in Table 1.

Table 1. Sample questions for adolescent girls

No.	Sample questions
1.	Tell me about your daily eating routine during weekdays and weekends?
2.	What kinds of food do you like to eat? Why do you like them?
3.	What does a healthy eating mean to you?
4.	Tell us about the places in your neighbourhood where you can get food.
5.	What do you think about the food available in your school?

Participants

Our study focused on adolescent girls aged 15-18 years, from low-income families who were enrolled in a public high school or public vocational school in Malang. The girls who were selected were mostly of low SES and attended public schools which charged school fees that were reasonably affordable to them. In addition, the SES level was determined based on demographic information gained during the screening process and their monthly household income range IDR 700,000–2,000,000 IDR (US\$47.51–135.75) which was categorized as C and D classes based on Nielsen's classification in 2010 (Table 2). The girls were excluded from selection if they had difficulty in communicating, mental illness and/or learning disability.

The mothers of the adolescent girls (aged 15-18 years) that fulfilled the inclusion criteria above were selected for triangulation. The school staff members who were selected were employed at one of the selected schools and were willing to participate on the day of data collection.

Purposive sampling was used to recruit mother and girl (daughter) pairs for the interviews. Participants were selected from two of the most highly populated sub-districts in Malang, namely Kedungkandang (43,666 households) and Sukun (45,666 households) (Central Bureau of Statistic Indonesia, 2013). The screening process involved visiting the homes of the girls and asking them and their mothers about the household income and expenditure.

Participants for the FGD were selected from the three public schools that were willing to participate in the study. At each school, the staff selected 10-20 female students who received school fee subsidy. The researcher then invited the selected students to complete a demographic information form to screen the parental income so as to ensure it met the requirements for low socioeconomic level. Out of the 45 adolescent girls from three schools, 25 were eligible. A total of 19 girls were included in the FGDs as the rest were

Table 2. The Nielsen's classification of the Indonesian socioeconomic segments[†]

Segment	Monthly household expenditure (Indonesian Rupiah / month) [‡]	Proportion (%)
A	≥ 3,000,000	13
B	2,000,000 – 3,000,000	27
C1	1,500,000 – 2,000,000	28
C2	1,000,000 – 1,500,000	21
D	700,000 – 1,000,000	8
E	≤ 700,000	3

[†]Nielsen (2010)

[‡]The expenses included daily food, electricity, water and monthly rent and excluded paid yearly rent, installment payment, furniture and irregular expenses.

absent or because the discussion times conflicted with their examinations.

Each FGD involved 6-7 students per school. The staff members at the schools were recruited for the FGD by convenience sampling. Two of the three staff who were selected had worked in the school for 15-20 years. One was a teacher and the others were student counsellors.

No specific criteria were applied when selecting the schools except that they had to be public schools located in the study area and were willing to participate in the study.

Procedure

The study was approved by the Ethical Committee of Atmajaya Catholic University (approval number: 771/III/LPPM-PM.10.05/08/2014). The estimated point of saturation was observed after interviewing nine adolescent girls, their mothers, and conducting three group discussions with 19 adolescent girls.

Data collection took place between September to October 2014. All the participants gave written consent prior to each FGD and interview. The researcher facilitated the FGDs and interviews with a note-taker, and the discussions were also audio-recorded with the consent of the participants. The questions in the FGD and in the interview guidelines were similar. The objective of the FGDs, which were conducted at the beginning of the data collection, was to become familiar with the daily activities and food practices of the girls. Topics such as the eating behaviour of the girls were addressed in-depth during the interviews. The FGD sessions lasted for about 40-50 min, while in-depth interviews lasted for about 50-70 min. Mothers and girls were interviewed separately, after which all the participants were interviewed together.

Data were analysed using the inductive thematic analysis approach, moving from specific to more general

conclusions. Recordings of the FGDs and interviews were transcribed verbatim and the field notes were documented. Each individual transcript was repeatedly reread and re-examined to ensure reliability. The key concepts were identified by coding the data and then by categorising the codes. Coding and categorising were carried out using qualitative data analysis software Atlas.ti version 7. When all the data were categorised, similar categories were grouped into themes.

RESULTS

The two themes that emerged in relation to the eating habits of the girls were the skipping of breakfast and the consumption of fast foods. The factors that influenced the eating habits of the girls are presented below according to individual and environmental influences. Examples of quotes are shown below to illustrate each theme.

Adolescent girls' eating behaviour

Theme 1: Breakfast skipping

During the weekdays, the majority of the adolescent girls from low socioeconomic background in Malang skipped breakfast.

"The food was not ready in the morning; anyway, I don't have time to eat food" (Girl-FGD 1)

"I'm not used to eating breakfast since I was a child; my stomach feels queasy if I have breakfast" (Girl-FGD 3)

"I must hurry to go to school, so I have no time for breakfast, but then I'll bring a lunch box" (Girl-FGD 2)

Although the mothers and school staff were aware of this behaviour, they did not mention during the FGD whether they encouraged the girls to have breakfast.

"She wasn't used to having breakfast, but usually she brings a lunch box to school" (Mother 2)

"Most of them don't have breakfast; when they get sick or have a headache, they come to us asking for medicine and when we ask whether they had breakfast most of them reply that they had not" (School staff 2)

Theme 2: Fast food and locally available food consumption

The majority of the girls in this study reported that they liked to consume fast foods and local foods, because of the taste and its availability in many places in the neighbourhood, such from street food vendors and in the school canteen.

"I like bakso (meatball soup; meatball consisting usually a small quantity of meat and a lot of flour, or without any meat completely made with flour); it's tasty, cheap and available everywhere" (Girl 4-Interview)

"I like cilok (fried-small bakso served with peanut spicy sauce), it's tasty" (Girl 2-Interview)

"I like eating burgers, it's tasty" (Girl 6-Interview)

"Where do you buy it?" (Interviewer)
"From the street vendors, it's cheaper than from the fast food restaurants" (Girl 6-Interview)

The school staff confirmed this behaviour.

"I have observed that high school girls love to eat something that tastes savory. If you observe them at the canteen, they like to eat bakso and noodles with a lot of spicy sauce" (School staff 2)

Factors influencing the eating behaviour of adolescent girls

The eating behaviour of girls' is influenced by individual and environmental factors.

Theme 1: Individual influences

(i) Knowledge and awareness

The girls discussed healthy eating and mentioned that it meant eating specific foods such as vegetables, fruits and foods containing nutrients. Healthy eating was also defined by the girls as consuming food that was prepared at home, as they believed that the cleanliness was superior and the ingredients were known. One girl in a FGD defined eating on time as part of healthy eating.

"I don't know exactly, but I think healthy eating is eating vegetables and fruit" (Girl 3-Interview)

"Consuming food containing carbohydrate, protein, vitamins" (Girl-FGD 2)

"Having meals on time and not skipping meals" (Girl-FGD 1)

"Eating home-made food is healthy because we know how it was cooked; we are also sure of the cleanliness of the processing of the food" (Girl-FGD 2)

The majority of girls reported that they were aware of the general benefits of healthy eating such as providing support for body growth and immunity.

"Healthy eating makes us strong and as a result it is not easy to get sick" (Girl-FGD 1)

"Healthy eating will support our body growth" (Girl 1-Interview)

Mothers perceived healthy eating as the consumption of food prepared at home

and which were healthy foods such as vegetables, tofu and tempeh.

(ii) Food preferences

The adolescent girls stated that the taste of food was the most important factor that influenced their decisions on the choice of foods. Overall, the girls were enthusiastic when talking about savory, sweet or spicy foods. On the other hand, vegetables were associated with unpleasant and negative taste experiences.

“Taste of the food is important. I like savory food because it’s tasty” (Girl-FGD 2)

“I like eating snacks because it tastes good” (Girl-FGD 3)

“Vegetables? I don’t eat it very much because it’s tasteless” (Girl 4-Interview)

“I don’t like cabbage because it’s bitter” (Girl 2-Interview)

Mothers and school staff also reported that taste preferences influenced the girls when making food choices. Mothers understood that healthy foods such as vegetables were good for their children and which were often available at home. But they often compromised with their children and did not put pressure on them to eat vegetables.

“It’s hard to tell my daughter to eat vegetables. She said vegetables are not tasty” (Mother 6)

“If I force her to eat vegetables, she won’t eat the food at all. So, I let her eat what she wants” (Mother 1)

“Mostly the students only consider the taste of the food without considering whether it is healthy or not” (School staff 1)

(iii) Price of the food

Most of the girls indicated that they often preferred foods that were cheaper and easy to buy even though they are not healthy.

“Unhealthy food, like bakso, is cheap, and the bakso seller is easy to find near the house” (Girl 4-Interview)

“I don’t have enough pocket money, so most of the time I only buy snacks at school” (Girl 6-Interview)

“The food sold by street vendors or school canteen is cheaper than that sold in the mall. This is because the facilities to make the food are not good and the ingredients are cheaper” (Girl-FGD 2)

School staff believed that the girls preferred tasty and cheap foods over healthy food.

“They will consider taste and price for food choice. The canteen in this school sells cheap meals like bakso. They’re likely to buy this kind of food instead of healthy food” (School staff 2)

Theme 2: Environmental influences

(i) School and neighbourhood

The availability and accessibility of fast foods and local foods in the school canteen and the neighbourhood, such as from street vendors or casual shops, was the most frequent reason expressed by the adolescent girls for deciding on their food choices.

“I often buy savory snacks and cold sweet drinks at the school canteen” (Girl 2-Interview)

“I like eating bakso but sometimes I didn’t eat bakso in a week, if the bakso seller in the canteen was away” (Girl 7-Interview)

"We want to eat fruits, but there's no fruit seller in the school canteen, not even a fresh juice seller" (Girl-FGD 1)

"I like eating burgers" (Girl 4-Interview). *"Where do you buy it?"* (Interviewer) *"From the street vendors near my home"* (Girl 4-Interview)

"She used to like vegetables, but now she doesn't. Maybe it is because she now often buys varieties of food that are sold by the street vendors" (Mother 9)

Some girls commented on the school rules about food restrictions in the canteen, which prohibit spicy foods and certain local fast foods. A school staff member confirmed that there were some rules about foods at school but that they were limited to spicy foods and foods with unpermitted colorants.

(ii) Family

All the girls reported that mothers often warned them not to eat unhealthy foods. Unfortunately, the rules were often prohibited only spicy foods.

"Mom told me not to eat spicy foods, but I still eat it at school. Sometimes I followed her rule, but sometimes I disobeyed it" (Girl 5-Interview)

"Mom told me not to eat too much spicy food and instant noodles" (Girl-FGD 3)

"Sometimes I eat spicy foods at school or when my mom is working" (Girl 4-Interview)

"I prohibit her eating food with chilli sauce; I told her that it's not good for her health" (Mother 8)

The mothers were aware that the girls often bought fast foods or poor-nutrient foods from the school canteen or street vendors, but there were none of them

said anything to discourage the girls from doing so. Instead, mothers tended to accept the food choices of their daughters.

"She used to like vegetables, but now she doesn't. Maybe because now she often buys varieties of food that are sold by the street vendors" (Mother 9)

"I don't think they are eating healthy food at school. They mostly eat bakso, I guess. But, at home, they eat food that is healthy because I prepare vegetables, fish, tofu and tempeh" (Mother 5)

DISCUSSION

The findings of this study appear to be aligned with some of the influences on healthy eating that are described in the SCT (Bandura, 1998). Using the SCT as a guide, the influences on the eating habits of adolescent girls were considered as (i) individual factors (such as knowledge and awareness, food preferences and food price) and (ii) environmental factors (family, school and neighbourhood).

Our study found that most adolescent girls had some knowledge about healthy eating and were aware of its benefits. However, their eating behavior did not reflect their awareness. They often skipped breakfast and showed a personal preference for unhealthy food, such as fast foods and local, nutrient-poor foods. It would appear that knowledge of healthy eating and its benefits are not related to healthier eating practices (Rathi, Riddell & Worsley, 2017).

The girls frequently reported that the taste of the food was an important factor affecting their choice of food. This may, in part, explain the fact that they give priority to short-term considerations of eating behaviour, such as pleasure, rather than long-term outcomes, such as prevention of disease. Other studies have shown that factors such as taste, texture and the appearance of food

were more important than knowledge of healthy eating among adolescents (Fitzgerald *et al.*, 2010).

The main reason given by the girls for their preference for fast foods and local foods is that they were affordable and readily accessible. The girls mentioned several times that unhealthy foods, i.e. fast foods, nutrient-poor foods, and foods sold by street vendors, were cheaper than healthy foods. The girls in the present study came from low SES households and had limited pocket money for purchasing food. Therefore, cost was a determinant in choosing food. This is in line with other studies on students from low income families who chose foods based on convenience and affordability (Maulida *et al.*, 2016). A study among Chinese adolescents similarly reported that unhealthy foods were cheaper and popular among them (Chan *et al.*, 2016).

The SCT describes the importance of socio-environmental factors in influencing eating behaviours (Bandura, 1998). The lack of school rules and ease of availability of food were revealed as key factors that influenced the eating behaviours of the girls in this study. Mothers of the girls and school staff members expressed concerns about their easy access to fast foods and local nutrient-poor foods in the school canteens. Some schools had no rules to restrict unhealthy foods. The school staff members confirmed that the school rules were guided by food hygiene and safety rather than nutritional quality. Other qualitative studies have also reported that the availability of food at schools was a factor that influenced the food consumption habits of adolescents (Naidoo *et al.*, 2017; Verstraeten *et al.*, 2014). As school meals can contribute 30-40% of daily calorie intake of students (Osowski *et al.*, 2015; Nathan *et al.*, 2016), it is imperative for schools to promote healthy food consumption (Bevans *et al.*, 2012).

Parents, especially mothers, play an

important role in influencing the food behaviour consumption of their children (Pearson, Ball & Crawford, 2012). The mothers in this study recognised that their daughters practised unhealthy eating habits. However, both girls and their mothers did not mention any strict rules regarding eating practices, beyond warnings not to consume spicy foods. The mothers believed that it was difficult to expect their children to eat healthily if they (the parents) did not do so themselves.

Based on the SCT, socio-environmental factors, such as parental and societal support, can influence the food intake behavior seen among adolescents (Salvy *et al.*, 2011; Story, Neumark-Sztainer & French, 2002). Parental knowledge has been associated with healthy eating habits in children (Grosso *et al.*, 2012; Ansem *et al.*, 2014). Nevertheless, the role of mothers may be limited only to the provision of healthy food at home. Mothers in this study stated that the healthy food they usually prepared were simple dishes such as fish, vegetable, tofu and tempeh.

This study only examined adolescent girls from Malang and thus our findings may not apply to all adolescent girls in Java Province, much less throughout Indonesia.

CONCLUSION

A sample of adolescent girls from low SES in Malang, Indonesia showed some knowledge about healthy eating but did not show healthy eating practices, in skipping breakfast and consuming fast food and nutrient-poor foods. The factors influencing the adolescent girls' eating behaviours were driven by individual preferences as well as by the environmental factors. Future interventions should not only target adolescents, but also schools, the community and their family members as well. School breakfast and healthy school canteen programmes, nutrition

education for parents, price subsidy (to decrease the cost of healthier items) should be considered for future research.

Acknowledgement

This study was funded by GAIN (Global Alliance for Improved Nutrition). The authors are grateful to the GAIN team, Ravi Menon, Mart van Liere, Aang Sutrisna, and Agnes Mallipu for their help during the study and to the field team members, namely, Yusuf Habibie Intan, Dwi Yuwono Kristanto, Paramita Nur Anugerah, Lavrenca Annashopy, and Gusti Anjar for their participation in data collection and processing. Special gratitude is extended to the schools, teachers and other staff, pupils, adolescent girl and mothers involved in the study.

Authors' contributions

MS, undertook data collection and wrote the manuscript; IB, provided expertise on data interpretation and writing input; JF, provided expertise on the study design and data analysis. All authors approved the final draft of the manuscript.

Conflict of interest

The authors declare that there are no conflicts of interest.

References

- Ansem WJCV, Schrijvers CTM, Rodenburg G & Mheen DVD (2014). Maternal educational level and children's healthy eating behaviour: role of the home food environment (cross-sectional results from the INPACT study). *Int J Behav Nutr Phys Act* 11:113.
- Bandura A (1998). Health promotion from the perspective of social cognitive theory. *Psychology & Health* 13:623–649.
- Bevans KB, Sanchez B, Teneralli R & Forrest CB (2012). Children's eating behavior: the importance of nutrition standards for foods in schools. *J Sch Health* 81(7):424–429.
- Chan K, Tse T, Tam D & Huang A (2016). Perception of healthy and unhealthy food among Chinese. *Young Consumers* 1(17):32–45.
- Central Bureau of Statistic Indonesia (2013). *National Socio-economic Survey in East Java*. Statistic Office of East Java Province, Surabaya.
- Craigie AM, Lake AA, Kelly SA, Adamson AJ & Mathers JC (2011). Tracking of obesity-related behaviours from childhood to adulthood: A systematic review. *Maturitas* 70(3):266–284.
- Daley AM (2013). Adolescent-friendly remedies for the challenges of focus group research. *West J Nurs Res* 35(8):1043–1059.
- Fitzgerald A, Heary C, Nixon E & Kelly C (2010). Factors influencing the food choices of Irish children and adolescents: a qualitative investigation. *Health Promot Int* 25(3):289–298.
- Grosso G, Mistretta A, Turconi G, Cena H, Roggi C & Galvano F (2012). Nutrition knowledge and other determinants of food intake and lifestyle habits in children and young adolescents living in a rural area of Sicily, South Italy. *Public Health Nutr* 16(10):1827–1836.
- Hall E, Chai W & Albrecht JA (2016). Relationships between nutrition-related knowledge, self-efficacy, and behavior for fifth grade students attending Title I and non-Title I schools. *Appetite* 96:245–253.
- Maulida R, Nanishi K, Green J, Shibamura A & Jimba M (2016). Food-choice motives of adolescents in Jakarta, Indonesia: the roles of gender and family income. *Public Health Nutr* 19(15):2760–2768.
- Mesias M, National S, Seiquer I, National S & National S (2013). Iron Nutrition in Adolescence. *Crit Rev Food Sci Nutr* 53(11):1226–1237.
- MOH Indonesia (2013). *Riset Kesehatan Dasar 2013 (Indonesia Basic Health Research 2013)*. National Institute of Health Research and Development, Ministry of Health of Indonesia, Jakarta.
- Naidoo N, Van Dam RM, Ng S, Tan CS, Chen S, Lim JY, Chan MF, Chew L & Rebello SA (2017). Determinants of eating at local and western fast-food venues in an urban Asian population: a mixed methods approach. *Int J Behav Nutr Phys Act* 14(1):69.
- Nathan N, Yoong SL, Sutherland R, Reilly K, Delaney T, Janssen L, Robertson K, Reynolds R, Chai LK, Lecathelinais C, Wiggers J & Wolfende L (2016). Effectiveness of a multicomponent intervention to enhance implementation of a healthy canteen policy in Australian primary schools: a randomised controlled trial. *Int J Behav Nutr and Phys Act* 13(1):106.
- Nielsen AC (2010). The Nielsen's classification of the Indonesian socioeconomic segments. From <https://vidinur.net/2010/11/04/ses-socio-economic-status-ndonesia/> [Retrieved July 9, 2019].
- Oowski CP, Lindroos AK, Arbieri HE & Becker W (2015). The contribution of school meals to energy and nutrient intake of Swedish children in relation to dietary guidelines. *Food Nutr Res* 59:10.
- Pearson N, Ball K & Crawford D (2012). Parental influences on adolescent fruit consumption: the role of adolescent self-efficacy. *Health Educ*

- Res* 27(1):14–23.
- Rathi N, Riddell L & Worsley A (2017). Food consumption patterns of adolescents aged 14 – 16 years in Kolkata, India. *Nutr J* 16(1):50.
- Sahoo K, Sahoo B, Choudhury AK, Sofi NY, Kumar R & Bhadoria AS (2015). Childhood obesity: causes and consequences. *J of Family Med and Prim Care* 4(2):187-92.
- Salvy SJ, Elmo A, Nitecki LA, Kluczynski MA & Roemmich JN (2011). Influence of parents and friends on children's and adolescents' food intake and food selection 1 – 3. *Am J Clin Nutr* 93(1):87–92.
- Story M, Neumark-Sztainer D & French S (2002). Individual and environmental influences on adolescent eating behaviors. *J Am Diet Assoc* 102(3 suppl):S40-51.
- Sumarlan ES, Windiastuti E & Gunardi H (2018). Iron status, prevalence and risk factors of iron deficiency anemia among 12- to 15-year-old adolescent girls from different socioeconomic status in Indonesia. *Makara J. Health Res* 22(1):46–52.
- Verstraeten R, Van Royen K, Ochoa-Avilés A, Penafiel D, Holdsworth M, Donoso S & Kolsteren P (2014). A conceptual framework for healthy eating behavior in Ecuadorian adolescents: a qualitative study. *PLoS One* 9(1):e87183.