Nutrition and Food Sciences Research Vol 9, No 3, Jul-Sep 2022, pages: 5-11

Original Article

Determinants of Hot Tea Consumption in People Aware of Its Complications: A Qualitative Analysis of Medical University Students' Experiences

Tahereh Dehdari*

Health Promotion Research Center, Iran University of Medical Sciences, Tehran, Iran

Received: March 2022 **Accepted:** July 2022

ABSTRACT

Background and Objectives: Hot beverage consumption (e.g., tea) may increase risks of several cancer types, especially esophageal cancer. Although people may be aware of the dangers of consuming hot beverages, they continue to drink these beverages. The aim of this qualitative study was to explore the experiences of Iranian medical university students regarding consumption of tea at high temperatures.

Materials and Methods: A qualitative study was carried out at Iran University of Medical Sciences, Tehran, Iran, 2017. Totally, 27 semi-structured in-depth interviews were carried out with college students. Participants were asked on their experiences on hot tea consumption. Data were analysed using conventional content analysis method. After the first interview, continuous analysis of data began and continued up to data saturation.

Results: Three major categories, including decisional balance (with two sub-categories of pros and cons for hot tea consumption), environmental effects (with three sub-categories of culture, interpersonal influences and situational effects) and perceived barriers to drinking tea at normal temperatures (with two sub-categories of habitual and immediate competing demands and preferences) emerged as the experiences of the participants on consumption.

Conclusions: The current findings suggest to decrease drinking of hot tea and hence prevention of oesophageal cancer in Iran.

Keywords: Hot tea, Drinking behavior, Qualitative research, Oesophageal neoplasms, Iran

Introduction

Consumers prefer to drink beverages such as tea and coffee at high temperatures of 71.1–85 °C (1). Drinking liquids at high temperatures (up to 65 °C) has increased the risk of oesophasial cancer in several countries such as China, Japan and Iran (2–5). Black tea is the second mostly consumed beverage after the water worldwide (6). Iranian nation is one of the highest global consumers of tea, especially black tea (7). Results of a study in northern areas of Iran have shown that 98% of the participants drink black tea regularly, with a mean volume consumption of over one liter a day (8). Although drinking black tea includes several health benefits for human (9, 10), a large proportion of Iranian population have the habit of drinking their tea at temperature of 65°C or higher. Unfortunately, this harmful habit may account for a substantial proportion of oesophageal cancer in these people. Results of a study in Iran reported a significantly increased risk of oesophageal cancer due to drinking hot beverages [odds ratio = 2.07, 95% confidence interval (CI) = 1.28–3.35] or very hot beverages (odds ratio = 8.16, 95% CI = 3.93–16.9) (8). To the best of the author's knowledge, few researches have investigated the determinants of drinking. Yong *et al.* and Yu *et al.* reported that drinking hot tea was associated to the increased risk of esophageal cancer when combined with excessive alcohol or tobacco use (11, 12). Adhikari et al. detected that consumption temperature majorly affected perceived flavor attributes of coffee (13). Ragita *et al.* showed that individuals might experience various sensory attributes and emotions with decreasing temperature of coffee or tea, affecting their likings of those beverages (14).

Although common knowledge is reported as one of the predictors of beverage consumption habits (15), studies have shown gaps between knowledge of the people and their practices in cancer prevention (16). Multiple factors may affect people decisions to transfer their knowledge to behaviors (17). To understand why people, who are aware

***Address for correspondence:** Tahereh Dehdari, Associate professor, Health Promotion Research Center, Iran University of Medical Sciences, Tehran, Iran. E-mail address: t.dehdrai@iums.ac.ir

of the complications, still continue to consume, it is necessary to investigate their experiences on the factors that affect this behavior. Clarification of the experiences can help develop tailored interventions to decrease hot tea consumption. Hence, the purpose of the present study was to explore the medical students' experiences on consumption.

Materials and Methods

Design

Qualitative study was used to explore the experiences of Iranian medical university students on consumption.

Setting and study participants

In the present study, maximum variation sampling method (18) was used to recruit participants from Iran University of Medical Sciences, Tehran, Iran, March–May 2017. Therefore, a wide variety of college students were selected from various ages, sexes, education levels and marital statuses. The rationale for the selection of the participants was the fact that this community of young adults represented a good demographic diversity. Moreover, this group was aware of the harmful health outcomes of the consumption. Moreover, their accessibility to the research team at the time of study was another reason for their selection. Through the fliers on the campus walls, interested students were invited to register for the study via phone or email. The study was approved by Iran University of Medical Sciences (Ethical No. 29397). Decision on the time of interviews was made with the participants' consent. Participants were informed about the study objectives and a written consent was collected from each of the participants. Agreement to participate in the study and willingness to share experiences on drinking hot tea were the selection criteria of the study. None of the participants were excluded from the study because they enrolled in the study voluntarily.

Data collection

Semi-structured interviews with the participants were carried out on campus. All the interviews were recorded via audiotapes and transcribed verbatim. On average, each interview lasted approximately 15–20 min. Interviews started with general questions on age, educational level, marital status and drinking history. Then, participants were followed by an axial question of "In your opinion, what factors affect drinking hot tea? Explain please". To achieve deep understandings of the participants' experiences, they were asked three guiding questions of "In your opinion, what are the most important social, personal and environmental factors, which may influence drinking hot tea by you and people like you? Explain each of these three factors separately please". Participants answered the following question after completing their explanations: "Is there anything else about the most important issue or factors that may affect your drinking that you have not mentioned? Explain please". Sampling continued until data saturation. The concept of data saturation was defined as 'information redundancy' or the point; at which, no new themes or codes 'emerge' from the data (19).

Data analysis

Analysis was carried out using inductive approach. Researcher carefully reviewed the transcripts four times before an overall impression was achieved. Based on the meaning units identified in the transcripts, coding was carried out. Upon the initial identification of the codes, they were categorized based on similarities and differences. Process of reviewing the transcripts and developing codes and categories continued until major categories were formed. Through this process, data transformed from text to codes and categories (20).

Rigor

To eliminate researcher's bias and enhance validity, one external experienced researcher reviewed 13 independently-coded transcripts to identify initial categories. Then, the study researcher and the external researcher discussed on categories to reach consensuses. To achieve in-depth data, maximum sampling was used based on the age, and education level of the participants. The participants' long-term interaction with the researcher was achieved. Furthermore, member checking was carried out with five participants to ensure that the analysis reflected their experiences (21).

Results

In total, 27 university students were interviewed. Demographic characteristics of the participants are presented in Table 1. After data analysis, three major categories were identified, including (a) decisional balance, (b) environmental effects and (c) perceived barriers to drinking black tea at normal temperatures. Each of the categories was then divided into several other subcategories (Table 2).

Table 1. Demographic characteristics of the participants (n = 27)

Variables	*n*	*%*	*Mean*	*SD*
Age			23.67	4.96
Sex				
Female	15	55.6		
Men	12	44.4		
Marital status				
Single	22	81.50		
Married	5	18.50		
Education level				
Undergraduate	10	37		
Postgraduate	9	33.4		
Medical degree	8	29.6		

Table 2. Categories, subcategories and codes of the current study

Categories	Subcategories	Codes
Decisional balance	Pros for drinking hot tea	1. Reduce headache 2. Regulate body temperature in cold 3. Increase alertness 4. Reduce mental fatigue 5. Reduce thirst 6. Help digestion 7. Improve taste of low-nutritional value snakes such as chocolate or cake 8. The better perfume, taste and color of hot tea 9. Enjoyable
	Cons for drinking hot tea	1. Increase the risk of oesophageal cancer 2. Increase the risk of gastric cancer 3. Increase intake of sugar cube 4. Increase the risk of mouth, lip, mucus and tongue burn hazard
Environmental effects	Culture	1. Drinking hot tea as an accepted culture tradition among Iranian people 2. More interested to drinking hot tea in some ethnicities
	Interpersonal effects	1. Drinking hot tea in the family and friends 2. Does not recognize the problem or disease associated with drinking hot tea in the family or friends
	Situational effects	1. Drinking tea alone 2. Drinking tea at a party 3. Drinking tea with afternoon snacks and evening meals such as cake or chocolate 4. Drinking tea in cold weather
Perceived barriers to drinking tea at normal temperatures	Habitual	1. Drinking hot tea as a learned habit from childhood 2. Resistance to reducing hot tea consumption due to habit
	Immediate competing demands and preferences	1. Rushing to performing other tasks 2. Worrying about attending classroom on time

Sub-categories of decisional balance

Decisional balance, with two subcategories of pros and the cons, was identified as an affecting variable consumption of the participants.

a) Cons of drinking hot tea

While the participants indicated that they knew about the harmful health outcomes (the cons) of drinking hot tea such as increasing the risk of gastric and oesophageal cancers, intake of sugar cub and risk of mouth, lip, mucus and tongue burn hazard, they still continued to drink hot tea, *"When drinking hot tea, I think of oesophageal cancer, which is common in regions of the country. I know that it causes inflation of the digestive system in the long time. At times, such awareness makes me drink tea colder. Still, I continue drinking hot tea!" (female), "Hot tea badly burns digestive system, mouth and tongue and its mucus; however, it is enjoyable! You always prefer to drink it again" (female).*

b) Pros of drinking hot tea

From the participants' point of view, drinking hot tea was enjoyable. In addition, hot tea included good perfume, taste

and color; it decreased mental fatigue, headache and thirst; regulated body temperature in the cold; helped digestion; increased alertness and improved tastes of low-nutritional value snacks such as sweets (e.g., chocolates or cakes). *"My throat should become hot and I feel it burn. I have to see hot tea by my own eyes. Drinking hot tea is enjoyable!" (female), "Hot tea has a fresh smell. The taste and smell of it vary. It is further delicious. When it gets cold, it becomes thicker, old and tasteless!" (male), "Some drink hot tea just after the food; hence, it removes fats and facilitates the food digestion" (male), "… hot tea which can decrease the thirst…" (female), "Hot tea decreases fatigue… If it is not hot, I feel as if I have not drunk anything" (male), "Drinking hot tea makes me feel further alert…" (male), "Hot tea heals my headache more than that anything else does…" (female), "Having sweets or cakes without hot tea does not taste well. These taste well by tea" (male).*

Sub-categories of the environmental effects

Overall, hot tea consumption seemed to be regarded as a norm among the participants and was affected by culture, interpersonal effects and situational effects.

a) Culture

A surprising number of the participants reported that drinking hot tea was an accepted cultural tradition among Iranian people. Some also talked about the role of ethnicity in formation and persistence of the consumption habit, "*Traditionally, we have learnt that black tea should be drunk hot. In fact, drinking hot tea is a long-accepted tradition in Iran" (male), "We have been drinking hot tea from childhood (maybe from when we were two years old). It has been established as a part of our culture and traditions" (male), "Turks like to drink hot tea. They also drink tea a lot. Ethnicity is important" (male).*

b) Interpersonal effects

The interpersonal effects of family members and friends were frequently perceived by the participants as a significant factor in acquisition and persistence of drinking behaviour, *"All my family members are used to drink hot tea. My grandfather, husband and father drink black tea right after they pour it. It was their taste. I grew up to behave similar to them" (male), "My friends mostly drink black tea hot. If people around you ask you not to drink hot tea, maybe it tags you" (male).*

c) Situational effects

Several participants, males and females, seemed to strongly be affected by situational effects for drinking hot tea. Drinking black tea alone was one of the situational contexts, *"In the past, there were further social relationships. When pouring tea, they were talking to each other and tea got colder. Nowadays, the number of relationships has decreased. Everybody is alone. Drinking tea alone makes a rush for its consumption and as a result, black tea is drunk hot" (female), "It is important to drink tea where and by whom. Being with a friend and confabulate with him differs from being alone. When not alone, tea temperature decreases and there will be a gap to drink it" (male).*

Participating in parties was one of the situations; in which, participants were under pressure to consume hot tea. A number of participants indicated that host insistence to take quickly and embarrassed guests in rejecting the request might increase the likelihood of drinking hot tea, *"The host's insistence to drink hot tea faster, which in their view is fresher and tastier and also the guest's embarrassment to reject the compliment, increases the consumption of hot tea in the parties" (female), "There is no opportunity in parties. You should drink tea soon; thus, other catering would be brought. The host repeatedly reminds you that the tea is getting cold. Therefore, you have to drink hot tea" (male).*

In addition, drinking black tea in cold weather was discussed by a number of participants. They indicated that cold weather as one of the situational effects increased their desire to consume a cup of hot tea. The participants suggested that drinking hot tea increased their metabolism and warm them up, *"I often drink hot tea in winter and cold weather; hence, it makes me warm…" (female).*

Having sweet snacks such as cakes or chocolates with black tea, especially in the afternoon and evening meals, was reported as another situation which could increase the desire to consume hot tea among the participants. The variable was introduced as a strong motivation for the consumption of hot tea, *"Eating chocolate, cake, etc. when the black tea is not hot does not taste! Eating snacks such as cakes, biscuits and chocolates only tastes well when the black tea is hot. Mostly, it is delicious at evening meals" (female).*

Sub-categories of the perceived barriers to drinking tea at normal temperatures

Apparently, such individual barriers inhibiting the consumption of non-hot tea such as a habit, immediate competing demands and preferences were effective triggers to avoid the consumption of hot tea.

a) Habit

Further participants indicated that drinking hot tea was a learnt habit from childhood, which provided resistance to breaking the habit, *"Drinking hot tea is a learnt habit…" (male), "Some are accustomed to drink hot tea. They usually resist whatever you tell them about its harms. They cannot accept to let the black tea temperature decrease a bit and then drink it" (female*).

b) Immediate competing demands and preferences

Immediate competing demands and preferences, including rush, distraction and addiction, were identified as important barriers which affected non-hot tea consumption in this group. Some participants addressed that they drank hot tea when they were in hurry to do other tasks. In other

words, doing those tasks was more important to them than waiting for decreasing the black tea temperature, *"I try not to drink hot tea, but if I am in hurry for my other tasks, I drink it hot. I cannot wait for its temperature decrease. Doing some other tasks such as handling my children or doing homework is further important for me" (female).*

A number of participants stated the role of distraction in their increasing hot tea consumption. They stated that when trying to attend classes on time, they did not have time to wait for their hot tea to cool down, "*Sometimes I try to let black tea temperature decrease; but if I have a class, I am forced to drink the black tea quickly; thus, I will not be late for my classes" (male).*

Discussion

Results showed several factors, which affected the consumption of hot tea among the medical students (as informed people about its harms). Decisional balance was one of the affecting factors consumption. The concept of decisional balance concerned pros (advantages) and cons (disadvantages) associated with adopting a specific behavior (22). Although participants of the present study were aware of the disadvantages of consumption, a majority of them stated that the pros of consumption outweighed its cons. Several participants experienced advantages, which were not due to the hot tea, rather it could be attributed to the presence of caffeine in the black tea. Participants had misconceptions about the beneficial effects of hot tea. For example, a number of participants reported that drinking hot tea might increase alertness or decrease mental fatigue. These experiences were associated to caffeine intake at moderate doses in the black tea (23–-27). Similarly, Mirzaei *et al.* (27) showed that Iranian female students had false beliefs about the benefits of drinking hot tea. They reported that the students' pleasant experiences such as decreasing fatigue, anxiety and relaxation were linked to the high temperature of tea and not caffeine in the tea. Therefore, developing theory-based interventions (28) to modify incorrect beliefs and attitudes is suggested

Environmental effects with three sub-categories emerged as factors that affected consumption by the participants. One of the sub-categories was culture. The participants stated that the consumption of hot tea was a common unhealthy cultural tradition in Iran. Findings were similar to those by Islami *et al.* (8). Literature demonstrated important roles of culture and tradition in determining the individual's food patterns (29, 30). Since countries include specific food patterns, which are part of their national cultures, understanding local cultures and traditions is necessary in development of detailed efforts for changing individuals' unhealthy nutrition habits. Interpersonal effects were then recognized as another environmental factor that could act as a facilitator to encourage drinking hot tea and its continuation by the participants. Participants stated that they had learnt to drink hot tea from their family members, especially their parents, from an early age. Moreover, they stated that friends were facilitators in continuing consumption during adolescence and adulthood. This finding was similar to that by Chang *et al.*, who showed that interpersonal effects might account for robust numbers of unique variance in eating habit disturbances by the females (31). In addition, participants indicated that lack of serious problems or diseases such as cancers associated to drinking hot tea in the family or friends might lead to continuing the consumption of hot tea later. Third environmental factor that affected consumption included the situational effect. Situational effects included items about the pleasurable settings and atmospheres for the consumption. According to the participants, particular situations such as being in parties, in cold weather, alone and/or drinking black tea with afternoon sweet snacks and evening meals (e.g., cakes and chocolates) were most likely to increase the consumption of hot tea. This finding was similar to that by Le Bigot Macaux and Dehdari *et al.* (32, 33), who reported that students liked to consume breakfast, afternoon snacks and evening meals in front of TV at homes.

In the present study, participants reported that although they attempted not to drink hot tea, barriers were reported in achieving that goal. Habitual consumption was stated as the major in barrier for drinking non-hot tea in this group. This finding was similar to findings from previous studies, indicating that habits or routines could act as barriers or facilitators in adopting and maintaining various healthy diet-related behaviours (34–36). For example, De Vet *et al.* demonstrated that habit was positively associated to the intake of unhealthy snacks in adolescence. Moreover, they suggested that training of self-regulation strategies might help adolescents overcome unhealthy snack eating habits (31). Based on the important roles of habits in drinking behaviour among the participants, it is important to acknowledge habitual nature of the behaviours in dietary interventions for this group. Immediate competing demands and preferences were the second recognised barrier groups by the participants. Immediate competing demands and preferences concerned those behaviors, which were addressed as possible courses of action just before intended planned behaviors occurred (30). In the present study, participants reported that being in rush when doing other tasks and worrying about being on-time students were the most competing demands to drink non-hot tea. According to Dehdari *et al.*, competing demands and preferences were predictors of the regular eating of breakfasts in female students (33). Furthermore, the authors' findings showed that the tendency of further sleeping in the morning, preferring low-nutritional-value snacks to breakfast, awaking until midnight for watching

TV and consistent worries about on-time school attendance were the most competing demands to regular breakfast consumption by the participants (37). Hence, identifying competing demands for not drinking hot tea and developing methods to address these demands are essential.

This study included several limitations. First, samples of Iran University of Medical Sciences students who participated in the interviews might differ from other subgroups of population in various ways. Therefore, this might limit generalizability of the study results.

Conclusion

In conclusion, decisional balance, environmental effects and perceived barriers were identified as three factors affecting consumption by the participants.

Acknowledgement

This study was linked to project no. 29397 from Iran University of Medical Sciences, Tehran, Iran. The author thanks volunteers for their participation in the study.

Financial disclosure

The author declares no financial interests.

Funding/Support

This work was financially supported by the Iran University of Medical Sciences.

References

1. Brown F, Diller KR: Calculating the optimum temperature for serving hot beverages. Burns 2008; 34: 648- 654.

2. Tanga WR, Chenb ZJ, Lina K, Su M, Au WW. Development of esophageal cancer in Chaoshan region, China: Association with environmental, genetic and cultural factors. Int J Hyg Environ 2015; 218: 12–18.

3. Tang L, Xu F, Zhang T, Lei J, Binns CW, Lee AH. High temperature of food and beverage intake increases the risk of oesophageal cancer in Xinjiang, China. Asian Pac J Cancer Prev 2013; 14: 5085-5088.

4. Kinjo Y, Cui Y, Akiba S, Watanabe S, Yamaguchi N, Sobue T, et al. Mortality risks of oesophageal cancer associated with hot beverages, alcohol, tobacco and diet in Japan. J Epidemiol 1998; 8: 235-243.

5. Yuan JM, Sun C, Butler LM. Tea and cancer prevention: epidemiological studies. Pharmacol Res 2011; 64: 123-35.

6. Nie XC, Dong DS, Bai Y, Xia P. Meta-analysis of black tea consumption and breast cancer risk. Nutr Cancer 2014; 66: 1009-1014.

7. Salahinejad M, Aflaki F. Toxic and essential mineral elements content of black tea leaves and their tea infusions consumed in Iran. Biol Trace Elem Res 2010; 134: 109-117.

8. Islami F, Pourshams A, Nasrollahzadeh D, Kamangar F, Fahimi S, Shakeri R, et al. Tea drinking habits and oesophageal cancer in a high risk area in northern Iran: population based case-control study. BMJ. 2009; 338:929.

9. Gardner E, Ruxton, Leeds A. Black tea-helpful or harmful? A review of the evidence. Eur J Clin Nutr 2007; 61: 3-18.

10. Su LJ, Arab L. Tea consumption and the reduced risk of colon cancer –results from a national prospective cohort study. Public Health Nutr 2002; 5: 419–425.

11. Yu C, Tang H, Guo Y, Bian Z, Yang L, Chen Y, et al. Hot tea consumption and its interactions with alcohol and tobacco use on the risk for esophageal cancer: a population-based cohort study. Ann Intern Med 2018;168(7):489-497

12. **Y**ang X, Ni Y, Yuan Z, Chen H, Plymoth A, Jin L, et al. Very hot tea drinking increases esophageal squamous cell carcinoma risk in a high-risk area of China: a population-based case-control study. Clin Epidemiol 2018; 10:1307-1320.

13. Adhikari J, Chambers E, Koppel K. Impact of consumption temperature on sensory properties of hot brewed coffee. Food Res Int 2019; 115: 95-104.

14. Pramudya RC, Seo HS. Influences of product temperature on emotional responses to and sensory attributes of, coffee and green tea beverages. Front Psychol 2018; 8:1-16.

15. Irwin BR, Speechley M, Wilk P, Clark AF, Gilliland JA. Promoting healthy beverage consumption habits among elementary school children: results of the Healthy Kids Community Challenge 'Water Does Wonders' interventions in London, Ontario. Can J Public Health 2020; 111: 257–268.

16. Narayana G, Jyothi Suchitra M, Sunanda G, Dasaratha Ramaiah J, Pradeep Kumar B, Veerabhadrappa KV. Knowledge, attitude and practice toward cervical cancer among women attending Obstetrics and Gynecology Department: A cross-sectional, hospital-based survey in South India. Indian J Cancer 2017; 54(2):481-487.

17. Tara K, Glenn R, Jay R, Wendy RS, Lorelei L. Exploring the gap between knowledge and behavior: a qualitative study of clinician action following an educational intervention. Acad Med 2004; 79(5): 386-393.

18. Hsieh H-F, Shannon SE. Three approaches to qualitative content analysis. Qual Health Res 2005; 15(9): 1277-1288.

19. Braun V, Clarke V. To saturate or not to saturate? Questioning data saturation as a useful concept for thematic analysis and sample-size rationales. Qual Res Sport Exerc Health 2021; 13: 201-216

20. Elo S, Kyngäs H. The qualitative content analysis process. J Adv Nurs 2008; 62(1):107–115.

21. Cypress BS. Rigor or reliability and validity in qualitative research: perspectives, strategies, reconceptualization and recommendations. Dimens Crit Care Nurs 2017; 36: 253–263.

22. Velicer WF, DiClemente CC, Prochaska JO, Brandenburg N. Decisional balance measure for assessing and predicting smoking status. J Pers Soc Psychol 1985;48: 1279–1289.

23. Rogers PJ, Smith JE, Heatherley SV, Pleydell-Pearce CW. Time for tea: mood, blood pressure and cognitive performance effects of caffeine and theanine administered alone and together. Psychopharmacology 2008; 195:569–577.

24. Smith A. Effects of caffeine on human behaviour. Food Chem Toxicol 2002; 40: 1243–1255.

25. Haskell CF, Kennedy DO, Milne AL, Wesnes KA, Scholey AB. The effects of L-theanine, caffeine and their combination on cognition and mood. Biol Psychol 2008; 77: 113–122.

26. De Bruin EA, Rowson MJ, Van Buren L, Rycroft JA, Owen GN. Black tea improves attention and self-reported alertness. Appetite 2011; 56: 235–240.

27. Mirzaei F, Dehdari T, Saki Malehi A. Prevention of esophageal cancer: experience of an educational campaign for reducing hot tea consumption in Iran. Asian Pac J Cancer Prev 2016; 17: 305-310.

28. Solhi M, Shojaeizadeh D, Seraj B and Faghih Zadeh S. The application of the health belief model in oral health education. Iran J Public Health 2010; 39: 114-119.

29. Devi SM, Balachandar V, Lee SI, Kim IH. An outline of meat consumption in the Indian population- a pilot review. Korean J Food Sci An Resour 2014; 34: 507-515.

30. Nam KC, Jo C, Lee M. Meat products and consumption culture in the East. Meat Sci 2010; 86: 95–102.

31. Chang EC, Yu EA, Lin EY. An examination of ethnic variations in perfectionism and interpersonal influences as predictors of eating disturbances: a look at Asian and European American females. Asian Am J Psychol 2014; 5: 243-251.

32. Le Bigot Macaux A. Eat to live or live to eat? Do parents and children agree? Public Health Nutr 2001; 4: 141–146.

33. Dehdari T, Rahimi T, Aryaeian N, Gohari MR, Esfeh JM. Developing and testing a measurement tool for assessing predictors of breakfast consumption based on Pender's health promotion model. J Nutr Educ Behav 2014; 46: 250-258.

34. Racey M, Bransfield J, Capello K, Field D, Kulak V, Machmueller D, et al Barriers and facilitators to intake of dairy products in adolescent males and females with different levels of habitual intake. Glob Pediatr Health 2017;4: 1-12.

35. Mäkiniemi JP, Vainio A. Barriers to climate-friendly food choices among young adults in Finland. Appetite 2014;74: 12–19.

36. De Vet E, Stok FM, De Wit JB, De Ridder DT. The habitual nature of unhealthy snacking: How powerful are habits in adolescence? Appetite 2015; 95:182-187.

37. Dehdari T, Rahimi T, Aryaeian N, Gohari MR. Effect of nutrition education intervention based on Pender's Health Promotion Model in improving the frequency and nutrient intake of breakfast consumption among female Iranian students. Public Health Nutr 2014;17: 657-666.