

Determinants of Eating Behaviours: A Study of College Students in Malaysia

Mohd Nur Ruzainy Alwi *
Universiti Tenaga Nasional
Email: ruzainy@uniten.edu.my

Wan Noordiana Wan Hanafi
Universiti Tenaga Nasional
Email: diana.hanafi@uniten.edu.my

Inaliah Mohd Ali
Universiti Tenaga Nasional
Email: Inaliah@uniten.edu.my

Siti Sarah Baharuddin
Universiti Tenaga Nasional
Email: sarah.baharuddin79@gmail.com

** Corresponding Author*

Abstract

Purpose: This study aims to explore the eating behaviours of college students through a representative sample of students in both public and private college in Malaysia.

Design/methodology/approach: The study using qualitative methods where semi-structured interview was conducted among college students. Thematic analysis was used to analyse the textual data where open codes were generated and then coded into the text of all the transcripts through repeated readings. Data collection stopped once data reach saturation where no new codes or themes can be added.

Findings: Through analysis, it is found that individual, societal and environmental factors determined students eating behaviours. Individual factors are directed towards individual physiological predispositions and emotional condition. Social factor involved the influence of family, friends and society including online communities. Meanwhile, environmental factors combined the availability and affordability of foods provided by students' surrounding.

Research limitations/implications: Gaining positive rapport in interview within allocated time is one of the limitations found in this study. Without proper rapport, it is difficult for interviewer to get honest answers from the participants. In addition, participants struggle to explain behaviours as it involves routine decision-making process. Future research can employ different methods that enable researcher to look further on participants' behaviour and their underlying reasons.

Practical implications: Based on the results, future intervention for healthy eating behaviours among students can consider individual, social and environmental factors.

Originality/value: To the best of our knowledge, there is lack of explorative study on determinants of eating behaviours among Malaysia students.

Paper type: Research paper

Keywords: Eating behaviour, Eating habits, College students, Determinants, Semi-structured interview

Introduction

New research has demonstrated the importance of shaping good eating behaviours in young adults for the sake of future generation (Stephenson, Heslehurst, Hall, et al., 2018). The influence of parents' diet on their child is not limited to their knowledge and behaviours but also their healthy body. Past study shows that early life nutritional experiences contribute to persistent metabolic and physiological changes that lead to different susceptibility to various chronic diseases (Franzago, Santurbano, Vitacolonna & Stuppia, 2020). This indicates the influence of dietary intakes on human genes and the way it is able to influence future generation through DNA modifications (Maugeri & Barchitta, 2020). These findings further emphasised on the need of early intervention towards healthy eating behaviours at the young age.

Hence, in recent years, much attention has been targeted to young adults as part of early intervention for healthy future generations (Barker et al., 2018). Young adults especially at the age of early 20s experience transitions from schools to college life where newfound independence had led many of them towards unhealthy eating behaviours. These behaviours are prominent among those that lived away from their family while those who still lived with their parents engage in much healthier dietary intake. As they adjust to new environment and new resources, lack of parental guidance as well as knowledge in meal preparation had caused negative changes in their eating behaviours (Reuter, Bridget, Forster & Brister, 2019).

One of the main impacts of eating behaviours is on students' grades in which previous study shows that healthy eating behaviours are favourable predictors of academic success (Burrows, Whatnall, Patterson & Hutchesson, 2017; Reuter et al., 2019). As the evidence between eating behaviours and grades become prominent, it is essential to understand factors that determine eating behaviours among students. In order to control the effect of an independent variable (students' grade), this study focused on students with high academic performance. In addition, there appears a gap in the study of eating behaviours focusing on high achiever students in the context Malaysia in comparison to study produced internationally. Thus, this study intends to explore determinants of eating behaviour among college students through a representative sample of students in both public and private college in Malaysia.

Literature Review

Eating behaviour is defined as "normal behaviour related to eating habits, selecting foods that you eat, culinary preparations and quality of ingestion" (Hernandez, Bamwasingye, & Horak, 2016). It is a conscious, collective and repetitive behaviours associated with one decision making process in food consummation (Medina, Urbano, Espinosa, & Lopez, 2020). Generally, the main driver of eating is hunger which predominantly homeostatic and hedonic hunger. Homeostatic hunger emerges due to energy deprivation while hedonic hunger emerges due to a general tendency of urges about food without any signals of biological energy deficits (Witt & Lowe, 2014). While homeostatic hunger corresponds to physiological need and hedonic tend to psychological need, it does not depict the type of food selected for consumption. As eating takes up big part in human life, food selection become a continuous decision-making process which involves layers of previous experiences and interrelated factors. Each experience becomes point of reference, cataloguing into human brains where new experiences provide exhilaration as well as broadening their selection of foods.

The selection of foods is influenced by various factors involving individual, societal and environmental conditions. The individual influential factors involved personal inclinations toward one's preferences, physiological responses and palatability (Bemanian et al., 2021). Contrarily, societal factors comprised of the effects of socialisation agents like family, friends and social media on the development of eating behaviours (de Rosis et al., 2019). Meanwhile, environmental factors constituted the resources and possibility of choices in this decision-

making process (Corallo et al., 2019). Since food selection plays a major part in eating behaviours, it is still relevant to narrate it in determinants of eating behaviours.

Methods

This qualitative study was conducted on 18 students from Universiti Tenaga Nasional and Polytechnic campus of Muadzam Shah, Pahang. They are contracted through snowball sampling and selected based on their cumulative grade point average, CGPA where the cutting point is 3.50 in their current CGPA. The semi-structured interviews were conducted in which all interviews were digitally recorded after permitted by the participants. Duration of the interviews was around 30 to 45 minutes for each participant. The interviews were transcribed and translated into English. Thematic analysis was used to analyse the textual data where open codes were generated and then coded into the text of all the transcripts through repeated readings. After all the initial coding of the interviews was performed, several codes are cluster under “themes”. Once the initial template was completed, iterative processes of template modification continued until data reach saturation where no new codes or themes can be added. It allows a rich and comprehensive interpretation of the data (Brooks, McCluskey, Turley & King, 2015).

Findings

Characteristics of participants

Characteristics of participants are presented in Table 1. The average age of all participants is 21 years old, ranges from 20 to 22 years old. Among them, 11 participants have normal BMI with scores between 18.5 and 24.9. Due to pandemic situation, some students live with their family, away from the campus and attend classes online.

Table 1: Characteristics of Participants

Informant Code	Gender	Age	CGPA	BMI	Living Conditions
S1	F	20	3.88	Underweight	With family
S2	F	20	3.8	Normal	With family
S3	F	20	4.0	Overweight	Boarding house
S4	F	21	3.8	Normal	With family
S5	M	21	3.83	Normal	Boarding house
S6	M	20	3.82	Overweight	Boarding house
S7	F	20	4.0	Underweight	Boarding house
S8	M	22	3.75	Overweight	With family
S9	M	22	3.5	Normal	With family
S10	M	21	3.8	Normal	With family
S11	M	21	3.7	Normal	With family
S12	F	20	3.5	Normal	Boarding house
S13	F	21	4.0	Normal	Boarding house
S14	M	22	3.82	Normal	With family
S15	M	21	3.9	Overweight	Boarding house
S16	F	22	3.75	Normal	Boarding house
S17	M	21	3.8	Normal	Boarding house
S18	F	22	3.83	Overweight	Boarding house

Based on the interview, the findings direct this study to conclude that the determinants of eating behaviour among the students can be categorised by three main factors namely; individual, social and environmental factor. The following sections describe further on those factors.

Individual Factors

Physiological

Physiological factors are things related to physical body that affects one way of life. In the interview, sensory properties emerged as the physiological factors that influence eating behaviour for participants. Most informants stated that their appetites are influenced by odour, sight and taste of foods. One participant stated this in the interview,

“Usually, I attracted to the smell of the food. If its smell good, I will feel like eating even when I am not hungry.” (S3)

The food smell does not only signal the near presence of food but also induce appetite for the cued foods based on previous experience with the smell. For other participants, their sight influenced their appetite and their dietary intake. Participant stated in the interview,

“For me, it is my sight. It’s because before I eat, I’ll look at the choices of meals, whether there is anything I like and its portions. For example, if I want to eat chicken cooked with soy sauce, I will see if it is look interesting, how big the chicken part is and how much they put the soy sauce. If everything looks good, then I will buy it.” (S14)

As stated by the participant, the sight of a food provides visual attraction and meal portion for participants to make a decision. Another number of participants are more influenced by taste of food as stated below,

“I’ll say the taste. At first, I just eat it but if I don’t like the taste, I will stop eating and never eat it in the future. At restaurant, I usually choose the same food that I ate before there which I like. I rarely choose others if I know that foods are delicious (in that restaurant)” (S5)

It shows how taste becomes part of the learned association which then be used for future dietary intake. Taste of food is a proximal sense that involves direct contact with taste stimuli on the tongue. It allows people to determine food quality and whether it is perceptible to their food acceptance level.

Psychological

Other than sensory processing that trigger physiological response to eating, emotion also induced appetite and influences dietary intake. In general, eating related to emotion caused by hedonic hunger where the urge to eat is without any biological energy deficits. Some of the emotion that usually related to eating is loneliness, dullness, happiness and sadness. As for loneliness and dullness, participants stated that they just eat what available around them.

“If I feel lonely or bored, I like to eat something simple like biscuits, crackers or anything that I have at home.” (S1)

“I’m not sure it is because of feeling lonely. But there is time when I don’t know what to do at home so I just ate biscuits.” (S2)

Other participants stated that they like to eat something sweet or something rarely accessible when they feel strong emotion like sadness or happiness.

“If I feel sad, I like to buy foods that I like such as wafer ice cream or anything sweet. I don’t know exactly why but eating it make me feel as usual again, not sad anymore.” (S11)

“Usually, I will buy foods that I really want too when I’m happy even though it’s a bit expensive. I also find foods that I don’t usually eat or one that difficult to find.” (S7)

These answers show how this negative emotion inspire participants to make extra efforts to find food that give them enough satisfaction either as a reward or mood stabiliser. Individuals sensitive to reward have learned that palatable food can have a mood-lifting effect that they strive for when they are in a negative mood state. However, the opposite reaction is recorded in which some participants do not associate eating with emotional experience.

“No. I don’t think I eat when I feel lonely, frustrated or anything. I just eat when I’m hungry or when I’m hanging out with family and friends.” (S15)

As stated above, emotional eating is not strongly experienced by others participants which might be due to individual cognitive function and its sensitivity in reward system.

Social Factors

Interpersonal Relationship

Interpersonal relationship refers to interaction in one’s circle which includes family, friends, colleagues and others. Some participants described how their family influences their eating behaviour. Since childhood, people had experienced various associative learning related to food from their family. It develops their habitual nature that persist until adulthood, as stated below,

“I start eating fast food when I was at boarding school. At home, my parents especially my father doesn’t like fast food or junk food. For example, for breakfast, we have to drink milk every morning.” (S10)

Similarly, one of the respondents mentioned that:

“My parents practice healthy diet. In a meal, we take small portion of rice and fish or meat but large portion of vegetables. Even when I live somewhere else, I will buy foods like that.” (S12)

In other cases, friends influence them by introducing various foods. It becomes another form of socialisation process where they hang out with friends and talk about foods in trend as mentioned below,

“I think my friends influence me a lot. They are the one that introduce me various kinds of food, what is in trends on social media etc. I like to tag along and try it with them.” (S7)

In the same stance, another respondent stated:

“Well, before the pandemic, my friends and I like to go travel and try viral foods and then posted it in our Instagram and twitter. I like to share my view on the food with others and I will tell them if they should try it or not.” (S16)

Socialisation process revolving around foods has become part of various cultures all over the world. It becomes part of process where people learn about food, its role and function in their cultural realm.

Social Media

Another socialising agent in eating behaviour is social media. Social media has become an essential part in people's life and its content becomes influential especially in introducing varieties of foods and related knowledge. Some participants illustrate the way social media influences them like below,

"Yes, I did watch mukbang either from Korea, Japan or Malaysia. I like to watch what they eat especially since they have different types of food compared to us Malaysian. I also like to watch cooking show because I like to cook. Besides, I cooked when I live at the boarding house. I just don't cook at home because my mom doesn't like I mess up her kitchen." (S5)

"I don't watch any cooking show, but I did watch a lifestyle page, about how to dress up, make up etc. I like their tips for women. I also follow few influencers that focus on healthy body and sometimes use their tips on how to achieve that, like drinking lots of mineral water and take supplements." (S18)

Knowledge sharing provided by social media enables participants to broaden their choices and open their mind towards healthier eating behaviours.

Environmental Factors

The interview is conducted during COVID-19 pandemic and movement control order set by the government. All universities are engaged in online classes which make most of students living with their family at hometown with others live in the boarding houses with strict standard operating procedures. Through this different living arrangement, we are able to see with much distinct the influence of environment on eating behaviours of students.

It is found that availability, and affordability provided by environmental factors had facilitates decision making process related to eating behaviours. In statement below by participants, it shows that participants choose what available and accessible for them either at their campus or at home.

"I'm not a picky eater. I eat whatever my mom cooks at home and eat anything in the menu of our cafeteria. If I go out with my friends, I will just eat whatever I think is good." (S6)

"We don't have ample choice here at the cafeteria but usually I just buy my food here since it close by. (At home) whatever my mom or my sisters' cooks." (S17)

In addition, one respondent relates with the living environment on the accessibility to get food as the reason of their eating behaviour:

"I live in urban area (family house) so we have a lot of choices when it comes to food. Besides, we also have Food Panda here. All I have to do is order it." (S9)

In addition, as students, affordability also plays an important role as stated below especially for participants that live in boarding house.

"Well, price first before preferences. I have certain budget for food." (S6)

In the similar response;

"If all foods in the menu are affordable, I will choose based on my preferences. If not, I will choose what I afford to buy. That is why I usually eat at campus cafeteria. All foods here are cheap and within my budget." (S13)

As they need to live independently with competing financial obligations like tuition, housing and educational expenses, some students run a tight budget on their food expenses. Hence, affordability further restricts their choices for healthy eating behaviours.

Summary of Results

Hence, based on the results, Individual, Social and Environment factors play a role in determining the eating behaviour among the respondents. Table 2 presents a summary of the results of data analysis containing three themes and six sub-themes. Three themes that emerged in this study were factors that influence eating behaviours namely individual, social and environmental factors. Each of the factors is further divided into sub-themes.

Table 2: Summary of Results – Determinants of Eating Behaviour

Theme	Sub-theme
Individual factors	<ul style="list-style-type: none"> • Physiological • Psychological
Social factors	<ul style="list-style-type: none"> • Interpersonal relationship • Social media
Environmental factors	<ul style="list-style-type: none"> • Accessibility • Affordability

Discussion and Conclusion

This study aims to explore the determinants of eating behaviours among students with great academic performance. Through analysis, it is found that individual, societal and environmental factors determined students eating behaviours. Individual factors are directed towards individual physiological predispositions through our sensory properties as well as temperament through emotional condition. Social factor involved the influence of family, friends and society including online communities. Meanwhile, environmental factors combined the availability and affordability of foods provided by students' surrounding.

Individual Factor

Much of multisensory flavour experience is determined by flavour expectations that are built on the basis of associative learning resulting from previous food experiences (Spence & Youssef, 2021). This learned associations can be observed through cephalic phase responses form which is part of the rapid conditioned physiological response to food-related stimuli, such as salivation, gastric acid secretion and the release of some gastrointestinal hormones (Morquecho-Campos et al., 2020). These responses are triggered upon the sight, smell, taste, sound and touch to optimise nutrient processing throughout the gastrointestinal tract (Feldman & Richardson, 1986).

While sensory signalling the presence of food and triggering physiological response, emotional states inspire human to find foods. Emotions may lead to both decreased and increased food intake and heightened preference for palatable energy-dense foods. High intensity or high arousal emotions (e.g., fear, tension) tend to suppress eating as they are related to physiological and behavioural responses that reduce appetite and interfere with eating. In contrast, negative emotions with more moderate levels of arousal or intensity may decrease or increase food intake depending on the characteristics of an individual and environment (Bemanian et al., 2021).

Social Factor

Through thousands of individual consumption episodes, starting from childhood, a set of food preferences and dietary behaviours develop which some become habitual until adulthood. Hence, family plays an important in shaping one healthy eating behaviours and lifestyle. For instance, research shows that children of knowledgeable parents also have greater access to healthy foods at home where they consume more fruits and vegetables and eat less fat and fast food (Tarabashkina et al., 2016). These behaviours tend to become habitual until adulthood. In addition, eating can be considered as social behaviour like enjoying family dinners, going out to a restaurant with friends, or cooking for your loved-ones in which directly give impact on quality of life and well-being (Boesveldt & Parma, 2021).

Another aspect of social factors is social media where food contents and lifestyle tips shared through social media. Food content on YouTube is imagined to be educational and provides new knowledge related to food and culture of various countries (Ardrini et al., 2020). In addition, video content like mukbang (video of vloggers eating) induced appetite through sensory trigger. By looking at the mouth movements, sounds produced by food, and the types of food displayed by food vloggers, it indirectly made people feel that the food was very delicious and stimulates their desire to try what is being presented (Ardrini et al., 2020). Stimulus arising from watching food content can foster appetite and encourage eating (Tan, Kuek, Goh, Lee & Kwok, 2016).

Furthermore, food socialisation and association create self-identity as well as representation in one culture. For instance, Corallo et al. (2019) divide society into 4 different groups based on their eating behaviour. The individualist composed of people that base their food choices on personal interests meanwhile the foodie involved of people that base their food choices on sensory aspects related to food. The environmentalist is a people that base their food choices on environmental sustainability issues while the health enthusiast are people that based their food choices on the contemporary diet philosophies. For some students, this division can create a sense of belonging and conformation towards certain group norm based on their identity. They tend to befriend or being in the circle of friends and community that support this self-identity. Hence, their eating behaviours do not only affect by their preferences but also preferences of their group.

Environmental factors

Environment factors in this study indicated food resources provided by surrounding conditions for students either those living in boarding house or living with family. Their food choices especially those living in the campus are influenced by financial issues and choices offered in their environment. Staying away from family makes students as main decision maker for their eating behaviour. In this study, participants stated that this kind of decision often made by family members especially their parents when they are at family house. However, once they live in boarding house, their knowledge on food preparations and healthy food choices become essential towards healthy eating behaviours. As young adults with lack of experience on that matter, many students had shifted their attention towards food that is available and affordable to them in their environment rather than healthiness of their choices (Kabir et al., 2018). It shows that they are highly reacted to their surroundings.

The availability and affordability of foods as well as resources related to it is coined as food security. It is defined as the ability to acquire sufficient or appropriate food in a socially acceptable manner (Nazmi et al., 2018). The prevalence of food insecurity among college students has been investigated in recent years where it is found that the most common reasons for unhealthy eating behaviours is high price of food items and their availability (Ashton, Hutchesson, Rollo, Morgan & Collins, 2017; Menozzi, Sogari & Mora, 2015; Sogari et al.,

2018). These problems had found to be aggravated by the restriction movement order due to COVID-19 pandemic. Study shows that there is an increase in the rate of food insecurity in the campus during the pandemic compared to previously reported level (Owens, Brito-Silva, Kirkland and et al., 2020).

Theoretical, Practical and Social Implications

Previous study done among college students in Malaysia used quantitative methods with the objective to measure the impacts of certain factors on eating habits (see Lee, Sufahani & Mamat, 2019). To the best of our knowledge, there is lack of explorative study on determinants of eating behaviours among Malaysia students. Students were found to be influenced by individual, social and environmental factors. Their preferences on eating behaviours are based on their physiological predisposition and psychological need. In addition, their experience in social setting provides further knowledge and broadening their references needed for eating behaviour decision making process. Meanwhile, their environment can become enabler or barrier towards healthy eating behaviours by providing options and choices of food. Therefore, future intervention for healthy eating behaviours among students can consider individual, social and environmental factors.

Limitations and Suggestions for Future Research

This study is exploratory in nature and using qualitative methods for data collection. Even though it allows better understanding on the topic, it is open to several limitations. Firstly, in-depth interview done individually makes it difficult for interviewer to gain positive rapport and participants to share their feelings freely within allocated time. Participants often intimidated by the process as it closes to interrogation while personal questions that related to their conscious choices making it difficult for them to be truthful when answering questions. Study by Sun, Conrad and Kreuter (2019) found that optimal level of rapport is needed to produce high quality interview data. If the rapport build between interviewer and participants is too low, participants tend to give simple answers with lack of explanation. In contrary, if the rapport build is too high, participants tend to give answers that painted them in good light in order to gain better impression from interviewer.

Secondly, it is found that in this study, some participants struggle to explain their behaviours and underlying mechanism in their decision-making process. In routine decision-making process like the one involving eating behaviours, some part of the process is done subconsciously which makes participants unaware reasons behind their decisions. Further questioning on that matter able to help interviewer gain insights on participants' decision but it is possible that certain aspects remain hidden and consequently affecting accuracy of the data. Even though both limitations are an obvious weakness of using this method, it still allows for better understanding on eating behaviours among participants. Future research can employ different methods that enable researcher to look further on participants' behaviour and their underlying reasons.

Acknowledgment

The authors are grateful to Universiti Tenaga Nasional for funding this research through BOLD Grant.

References

- Ardrini, D.A.M., Dinar Lubis, D., & Utami, N.W.A (2020), "I want what they're eating": College students's experiences in watching food content on Youtube. *Public Health and Preventive Medicine Archive*, 8(1), 11-16.

- Ashton, L. M., Hutchesson, M.J., Rollo, M.E., Morgan, P.J., & Collins, C.E. (2017). Motivators and barriers to engaging in healthy eating and physical activity: A cross-sectional survey in young adult men. *American Journal of Men's Health, 11*(2), 330-343.
- Barker, M., Dombrowski, S.U., Colbourn, T., Fall, C.H., Kriznik, N.M., Lawrence, W.T., ... Stephenson, J. (2018). Intervention strategies to improve nutrition and health behaviours before conception. *The Lancet, 391*(10132), 1853-1864.
- Bemanian, M., Maeland, S., Blomhoff, R., Rabben, A.K., Arnesen, E.K., Skogen, J.C., Fadnes, L.T. (2021). Emotional eating in relation to worries and psychological distress amid the Covid-19 pandemic: a population-based survey on adults in Norway. *International Journal of Environmental Research and Public Health, 18* (30).
- Boesveldt, S. & Parma, V. (2021). The importance of the olfactory system in human well-being, through nutrition and social behaviour. *Cell and Tissue Research, 385*, 559-567.
- Brooks, J., McCluskey, S., Turley, E. & King, N. (2015). The utility of template analysis in qualitative psychology research. *Qualitative Research in Psychology, 12*(2), 202-222.
- Burrows, T.L., Whatnall, M.C., Patterson, A.J., & Hutchesson, M.J. (2017). Association between dietary intake and academic achievement in college students: a systematic review. *Healthcare, 15*(4), 60.
- Corallo, A., Latino, M.E., Menegoli, M., & Spennato, A. (2019). A survey to discover current food choice behaviours. *Sustainability, 11*(18), 5041.
- De Rosis, S., Pennucci, F., & Seghieri, C. (2019). Segmenting adolescents around social influences on their eating behaviour: findings from Italy. *Social Marketing Quarterly, 25*(4), 256-274.
- Franzago, M., Santurbano, D., Vitacolonna, E., & Stuppia, L. (2020). Genes and diet in the prevention of chronic diseases in future generations. *International Journal of Molecular Sciences, 21*(7), 2633.
- Feldman, M., & Richardson, C.T. (1986). Role of thought, sight, smell and taste of food in the cephalic phase of gastric acid secretion in humans. *Gastroenterology, 90*(2), 428-433.
- Hernandez, J., Bamwesigye, D.A.S.T.A.N., & Horak, M.I.R.O.S.L.A.V (2016). Eating behaviors of university students. *American Journal of Public Health, 100*(2), 216-222.
- Kabir, A., Miah, S. and Islam, A. (2018) Factors influencing eating behaviour and dietary intake among resident students in a public university in Bangladesh: A qualitative study. *PLoS ONE, 13*(6), 1–17. doi: 10.1371/journal.pone.0198801.
- Maugeri, A., & Barchitta, M. (2020). How dietary factors affect DNA methylation: lesson from epidemiological studies. *Medicina, 56*(8), 374.
- Medina, C. R., Urbano, M. B., Espinosa, A.J & Lopez, A.T. (2020). Eating habits associated with nutrition-related knowledge among University students enrolled in academic programs related to nutrition and culinary arts in Puerto Rico. *Nutrients, 12*(1408).
- Meghan R. Owens, Francilia Brito-Silva, Tracie Kirkland, Carolyn E. Moore, Kathleen E. Davis, Mindy A. Patterson, Derek C. Miketinas & Wesley J. Tucker, (2020). Prevalence and social determinants of food insecurity among college students during the Covid-19 pandemic. *Nutrients, 12*(2515).
- Menzio, D., Sogari, G., & Mora, C. (2015). Explaining vegetable consumption among young adults: An application of the theory of planned behaviour. *Nutrients, 7*(9), 7633-7650.
- Morquecho-Campos, P., de Graad, K., & Boesveldt, S. (2020). Smelling our appetite? The influence of food odors on congruent appetite, food preferences and intake. *Food Quality and Preference 85*(2020), 103959.
- Nazmi, A., Martinez, S., Byrd, A., Robinson, D., Bianco, S., Maguire, J., Crutchfield, R.M., Condrón, K., & Ritchie, L. (2018). A systematic review of food insecurity among US

- students in higher education. *Journal of Hunger & Environmental Nutrition*. DOI: 10.1080/19320248.2018.1484316.
- Reuter, P.R., Forster, B.L., & Brister, S.R. (2020). The influence of eating habits on the academic performance of university students. *Journal of American College Health*, 1-7.
- Sogari, G. et al. (2018) 'College students and eating habits: A study using an ecological model for healthy behavior', *Nutrients*, 10(12), 1–16. doi: 10.3390/nu10121823.
- Spence, C. & Youssef, J. (2021). Aging and the (chemical) senses: Implications for food behaviour amongst elderly consumers. *Foods*, 10 (168).
- Stephenson, J. , Heslehurst, N., Hall, J., Schoenaker, D., Hutchinson, J., Cade J. E., Poston, L., Barret, G., Crozier, S. R., Barker, M., Kumaran, K., Yajnik, C. S., Baird, J., & Mishra, G. D. (2018). Before the beginning: nutrition and lifestyle in the preconception period and its importance for future health. *Lancet (London, England)*. 391 (10132), 1830 – 1841.
- Sun, H., Conrad, F.G., Kreuter, F. (2019). The relationship between interviewer-respondent rapport and data quality. *Journal of Survey Statistics and Methodology* 0, 1-20.
- Tan, T., Kuek, A., Goh, S.E., Lee, E.L., & Kwok, V. (2016). Internet and smartphone application usage in eating disorders: A descriptive study in Singapore. *Asian Journal of Psychiatry*, 19, 50-55.
- Tarabashkina, L., Quester, P., & Crouch, R. (2016). Exploring the moderating effect of children's nutritional knowledge on the relationship between product evaluations and food choice. *Social Science & Medicine*, 149, 145-152.
- Witt, A.A., & Lowe, M.R. (2014). Hedonic hunger and binge eating among women with eating disorders. *International Journal of Eating Disorders*, 47(3), 273-280.