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Factors Influencing Adolescents' Use of Social Media for Nutrition Intervention

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Abstract

Adolescents are the largest population using social media in daily life, and their use is influenced by a wide range of factors. Hence, it is applied in nutrition intervention, which improved their health. However, some intervention lacks participation and engagement. This study identifies factors influencing adolescents' social media use for nutrition interventions. An in-depth interview was conducted virtually for 30 to 60 minutes focusing on nutrition-related matters with 15 adolescents. Almost all of them were interested to participate in nutrition interventions on social media. User characteristics, environmental factors, and social media features were identified as the factors impacting them.

Keywords: Adolescents; Social media; Nutrition; Intervention

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1.0 Introduction

Adolescents now primarily use social media (SM) as a means of communication, and it has taken on a significant role in their life. Malaysian adolescents utilize SM to discuss political topics, share social lives, click "Like" to express interest, support for remarks and/or organizations and share feedback (Yusop & Sumari, 2013). Their behavior pattern in using SM is primarily caused by various aspects, including their backgrounds, peer pressure, courses taken, and technology access (Goodyear et al., 2021). Because of that, SM has been used widely in health-related field including nutrition intervention. Through improvements in healthy dietary alterations, physical activity (PA) level and positive changes to body composition or weight, SM interventions can affect favorable changes. Although they may have some benefits for public health interventions, studies typically indicate low participation rates and no appreciable differences in key outcomes between groups. Therefore, this study aims to define the distinctiveness of SM, while determining the personal and environmental influence that affects them in using SM for nutrition intervention including high energy-dense (HED) foods and sugar-sweetened beverages (SSBs). The objectives are: 1) To identify SM features, personal and environmental factors that affect adolescents; and 2) To determine whether adolescents would be interested in following nutrition intervention. This study will provide important information regarding adolescents' opinions on using SM for nutrition intervention and data on how they perceive the information and design elements in the current SM nutrition intervention. It could offer crucial information to Malaysian public health

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experts, politicians, organizations and healthcare professionals (HCP) for the development of an effective intervention that takes adolescents' perceptions into account.

2.0 Literature Review

Recent years have seen a huge increase in SM users; as of October 2022, there were 4.74 billion of them globally, or 59.3% of the world's population, up from 190 million new users a year earlier (Simon, 2022). SM allows users to engage with others and forge social bonds while exchanging information and knowledge about needs and activities in real life through its interactive platform. The usage of SM has spread across a variety of industries, including healthcare, business, marketing, politics, and education. Although Facebook is the most dominant, its use is decreasing while Twitter, Instagram, and YouTube are rising in Malaysia (MCMC 2020). This is because the most frequent and prolific SM users are adolescents, who utilize it to meet a variety of demands over extended periods on several platforms (Beyens et al., 2020). The change in adolescents' SM usage is just one illustration of how the technological environment for them has evolved. More so than ever before, they are more visible online nowadays.

Adolescents were more exposed to foods and beverages that contain excess amount of total fat, saturated fat, trans fat, sodium and free sugars on SM compared to children (Potvin Kent et al., 2019). The common dietary pattern of adolescents is high in energy-dense foods such as free sugars and saturated fatty acids while low in fiber which is associated with higher risks of overweight and obesity (Sharps et al., 2019). Therefore, various nutrition intervention has been done to address this issue. For instance, the use of WeChat in China increases adolescents' consumption of nutritious foods and PA levels (Wang et al., 2021). The rationale for non-significant outcomes of certain interventions is that the participation and general usage of SM, researchers' use of SM, or other elements of the treatments may have had an impact on the effectiveness (Klassen et al., 2018). Although numerous studies have demonstrated the functions, advantages and consequences of adolescents' use of SM, the factors that influence them, especially nutrition intervention have not been thoroughly studied up to this point.

3.0 Methodology

3.1 Research Design and Sample

This is a qualitative study, where case study approach was implemented. In-depth interview was conducted to identify the opinion and view on factors influencing adolescents in using SM for nutrition intervention. Purposive sampling was used in choosing 15 adolescents aged 14 to 18 years old living in Kuala Lumpur, Selangor and Penang who can speak in Malay or English. Other than that, they are smartphone/ laptop/ computer or tablet user, have access to the Internet, have SM account and access to it and willing to participate. Meanwhile, the exclusion criteria were illiteracy. Two teenagers who met the same criteria were chosen as pilot subjects for the in-depth interview session. Sociodemographic, consent, screening form and semi-structured interview questions were developed.

3.2 Data Collection and Analysis

A link to the screening form was circulated on the internet which was then closed for responses once the sample size was met. Participants who fulfilled research criteria were contacted via WhatsApp and were given sociodemographic and consent form. In-depth interview was conducted for 30 to 60 minutes using Google Meet in English and Malay language.

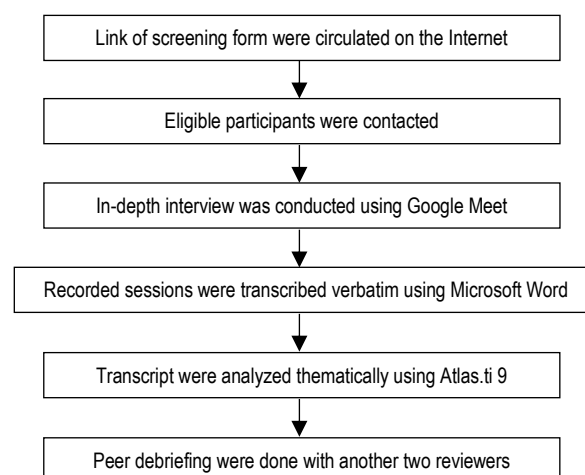


Fig. 1: Methodological chart

The sessions were recorded using an audio recorder and transcribed verbatim with Microsoft Word immediately. The recorded sessions were deleted once transcription process completed. Thematic analysis was implemented to explain participants' opinions on the factors involved where Model of Internet Intervention and Social Media Intervention Affordances were used for deductive approach.

The data was finalized when it reached saturation point. Primary author analyzed the interview transcript using Atlas.ti 9. It was then reviewed by another two reviewers independently to ensure the credibility of the data (peer debriefing).

4.0 Result

Table 1 shows sociodemographic data of the participants. The analyzed findings are divided into a few categories following the themes from theories chosen. They are user characteristics, environmental factors and SM features which are listed in Table 2. We found that almost all the adolescents interviewed were interested to participate in nutrition interventions including HED foods and SSBs using SM.

Table 1. Participants' Sociodemographic

ID	Age	Gender	Race	School Type	Family Monthly Income	Number of People in Household
001	14	Female	Malay	Day	Less than RM4850	7
002	15	Female	Malay	Day	Less than RM4850	6
003	15	Female	Malay	Day	RM4850 – RM10959	5
004	16	Male	Malay	Day	Less than RM4850	5
005	18	Male	Malay	Boarding	RM10959 and more	6
006	18	Male	Malay	Boarding	Less than RM4850	4
007	18	Female	Malay	Boarding	Less than RM4850	4
008	18	Female	Malay	Boarding	RM4850 – RM10959	8
009	18	Male	Malay	Boarding	RM4850 – RM10959	5
010	18	Female	Malay	Day	Less than RM4850	4
011	15	Female	Malay	Day	RM10959 and more	6
012	18	Male	Malay	Day	Less than RM4850	4
013	18	Male	Malay	Boarding	RM10959 and more	10
014	18	Male	Others	Day	Less than RM4850	5
015	17	Female	Malay	Day	RM4850 – RM10959	7

Table 2. Factors influencing adolescents in using social media for nutrition intervention

Theme	Subtheme	Category		
User characteristics	Belief and Attitude	Motivation	Self-motivated Motivation from surrounding	
		Interest	Self-interest Interest due to surrounding	
		Readiness to change	Starting to get ready for change Changed their diet and habits	
		Intention	Intended to be healthy	
		Treatment expectations	Expecting the outcomes	
		Cognitive Factors	Cognitive style	Visual
	Information processing		Easy to understand	
	Goal setting & pursuit		Set goal and pursue	
	Decision making		Lazy Distracted	
	Judgement		Determine whether they capable of following it Determine whether the posts are interesting Determine whether the posts can be trusted Determine the suitability of the information	
	Self-efficacy		Consistency	
	Demographic	Knowledge	Knowledge for own self	
Age		Optimum body condition		
Gender		Diet according to gender		
Weight & Height		Abnormal weight		
Finance		Expensive food price Cheap food price Medical expenses		
Health Condition	Family history of illness	Family		
	Abnormal weight	Own body		
	General health	Maintaining health		
Physiological factors	Motor function	Craving Stress Appetite		
		Skills	Psychological mindedness	Reflection on own self
			Physical skills	Sport skills Driving skills
Environmental Factors	Relationship	Family	Eat home-cooked foods No awareness from parents	

		Family member's habit
	Friends	Encouragement from surrounding
		Discouragement from surrounding
Community	Educator	Awareness from teacher or lecturer
	School	Program
		Food availability
	College	Food availability
		Higher-ups' role
	Workplace	Food availability
	Facilities	Gym
Societal	Policy	School program
	Media	Mass media
		Social media
Professional	School student	Time
		Eating habit
	College student	Time
		Eating habit
	Employee	Time
	Healthcare professional	Advices
	Influencer	Popularity
Social media features		
Appearance	Colour	Colourful and bright
		Soft and pastel
		Colour balance
	Graphic (Picture / Text / Caption)	Balance graphics
		Interesting graphics
		Pictures with text
		More picture
		No picture
		Less picture
	Page / Screen Layout / Design	Interesting
Simple		
Modern		
	Organization of content	Pictures organized and not cluttered
Assessment	Personalization	Personalized target group
		Personalized topic
Cognitive and Behaviour	Knowledge	Improves user's knowledge
	Creativity	Creative use of graphics and video editing
	Reallocation	Focusing on certain aspects of the presentation
Burdens and Content	Covering issue of content	Strict content
		Limited time
	Content quality	- Accurate
		- Clear
		- Simple
		- Detail
Delivery	Poster	-
	Slide	-
	Video	-
	Vignettes / Testimonials / Stories	-
Emotional	Express emotion	Like / vote / favourite
	Triggers emotion	Stories or photographs
Functional	Method of transmitted or saved	The content can be "like", "share", "save", "retweet", "reply".
		Search using keyword
Identity and Message	Profile or content source	Professional or credible profile
		Random people but specific profile based on their experience and content delivered
	Style of the content	Specific content
Social and Participation	Testing	Quizzes
		Questions
	Reinforcements	Rewards
	Interactions	Live
		Comments
Groups	Sharing message and motivate group member	

4.1 User Characteristics

Six themes related to the characteristics of the user were identified namely belief and attitude, cognitive factors, demographic, health conditions, physiological factors and skills with their respective subthemes. For belief and attitude, they were affected by themselves and their surroundings in terms of motivation and interest. Readiness to change was proved when the participants started to get ready for a change and some already changed their diet and habits. As for intention, one participant's intention is "Being overweight is not good,

it's easy to get sick and then you're always not confident, always tired. So, I want to make myself better, health in general" [012]. Lastly, treatment expectations are participants expecting a good outcome from SM. For cognitive factors, the participants favor visual cognitive style with an example: "Using YouTube, you can watch videos if you want to learn better" [003]. Participants reported that in terms of information processing, they will only follow the information that is easy to understand. As for judgment, they evaluate and decide what needs to be done for each SM post whether they are interesting, can be trusted, capable and suitable to be followed. A participant also questioned her consistency for self-efficacy. In terms of knowledge, they felt that the information on SM was able to increase their knowledge.

For demographics, in terms of age, one of them stated that they need to have an optimum body condition since they are still young. As for gender, they thought that men and women have different diet preferences. Next is weight and height where their concern is to have a normal Body Mass Index (BMI). Most of them were affected by the food prices while only one participant had an opinion on hospital costs for finances. The theme of health conditions includes subthemes family history of illness, abnormal weight and general health. Their concern is "Like my family, some have diabetes and high blood pressure. So that kind of risk is there. That's why I think I should take care of my diet from now on" [007]. Next theme is physiological factors which were mainly affected by cravings, stress and appetite. The last theme is the skill of the participants such as psychological mindedness which is the ability to examine and reflect on oneself, and also physical skills that include sports and driving skills.

4.2 Environmental Factors

Four themes were related to their environment such as relationships, community, social and professional with their corresponding subthemes. For relationships, most of them claimed that eating often home-cooked meals makes it simpler to eat healthily, and have adopted family members' habits. Meanwhile, friends are the biggest influencer in college and school: "Some of my classmates invite me go eat outside so maybe I have consumed a lot more than my diet supposed to be allocated for. But my other friend group help me to plan a better diet together" [014]. As for educators, teachers and lecturers also advised them to take care of their health. Theme community is the setting for social interactions. Participant 006 said, "At campus, I don't eat healthily, I just eat chicken. It's just that if you go at the store, there are less vegetables available". Other than that, health programs in schools also have a positive impact on students that make them want to be healthier. The facilities around them like the gym also make them feel that it is easier to live healthily if it is provided.

Next theme is societal where in terms of policy, school programs are implemented to help with obesity issues among students but it is not emphasized and paid full attention to. Almost all participants prefer to use SM: "I think it's better for social media because from my experience it's more interesting on social media than in the real world. That's for the younger generation because we use social media more than interacting face-to-face" [013]. The last theme is professional where time plays a major role for students in their daily routine following their packed class schedule. Apart from that, a participant stated that advice from HCP helped him to better understand nutrition. As adolescents, they see a lot of popular influencers on SM who might influence them. However, they have contrary opinions: "If it's from an influencer, it's more interesting because they are famous person, so we know them" [010] and "I don't trust influencers or celebrities, because they want to find popularity in my opinion" [013].

4.3 Social Media Features

Nine themes were described for the features. For appearance, the participants preferred colorful and bright posts one said "I prefer colorful, not just black and white. Later, people will get bored watching" [004]. Graphics should consist of pictures, text and captions with interesting and balanced amounts of pictures and text. The design and layout should be simple and attractive with organized content. Next, theme assessment refers to the capacity to assess user needs, customize the interface, and offer recommendations and materials that are specifically suited to them. The content on SM should be personalized to the topic and target group: "The target must be teenagers so the topic must involve the lifestyle of teenagers. For example, nowadays teenagers eat whatever they want so need to trigger them" [006]. Based on the theory, cognitive and behavioral include knowledge earned by the user, creative use of graphics and enhanced video editing by creators, and cognitive resources reallocation referring to the focus on certain aspects of the presentation such as listening and watching.

Burdens and content describe the issue and quality of the content. Participant 001 reported that "When people read it, they can quickly understand as it is not compact. It is simple but easy to understand" in terms of quality of the content. Meanwhile, the covering issues of the content include burdens particular to the program's content. Next theme, delivery is the ways of delivering the content where majority: "I prefer video. If it's in text form, I might feel lazy to read it" [002]. Theme emotional refers to the emotion that can be instilled by the creator and can be expressed by the users. The theme functional explains the ways of transmitting or saving the posts such as saving and sharing. Other than that, being able to search for specific content using keywords is another useful feature. Next theme, identity and message refer to the content source (profile) and style. Most participants prefer a professional and credible creator. However, some of them would prefer people with real experience. The last theme is social and participation which involves interaction among users: "If there are many people in the group, everyone can share their opinion. Maybe they got information from other places so they can share it in the group later" [001]. SM users can also participate in certain content through tests, reinforcements and interactions to improve the content's appeal and comprehension.

5.0 Discussion

The factors shared by adolescents play an important role. Beliefs and attitudes can encourage or discourage someone from utilizing SM that it was even included in a behavior model for the adoption of new technology. The adolescents were driven by their motivation to live healthily and inspired by others around them. When they believe their lifestyle is unhealthy, they intend and are willing to change it, even if they do so gradually. As a result, they anticipated that the nutrition advice would provide positive results. Cognitive style is a favored method of information processing where they prefer visual style, such as Instagram for photo posts, is mainly regarded as fitting the needs of young people in terms of SM and cyberpsychology (Huang, 2018). Additionally, they choose nutrition information that is easy to understand and process. They were quite selective about what they follow on SM where the posts need to be interesting and trustworthy depending on their living situation. Majority of them choose not to follow nutrition advice on SM despite how often they do so out of laziness and other commitments. A study indicated that adolescents are generally lazy to engage in PA and prepare food, such as chopping vegetables (Hayba, Shi & Allman-Farinelli, 2021). Next, as supported by the literature, SM is being used by adolescents as it can increase their knowledge of health when they are exposed to information online (Plaisime et al., 2020).

Females are more focused on diet and losing weight consistent with previous research that said females are often associated with diet suggested on SM and eating disorders as they were influenced by online images that are said to be beautiful for women (Wilksch et al., 2020). The topic of finance is the one they discuss most frequently because, for the majority of them, their B40 families, provide their pocket money. In addition, their interest in nutrition advice on SM is fueled by their own and their family members' health conditions. Because of that, various nutrition intervention has been conducted among adolescents through SM platforms which improved their nutrition-related behavior and clinical outcomes (Chau, Burgermaster & Mamykina, 2018). Physiological factors are related to motor function including craving, stress and appetite. These factors were found to cause individuals to overeat as they encourage erratic eating habits that might lead to obesity (Reents & Pedersen, 2021). Lastly, skills of the adolescents consist of psychological mindedness where the reflection of their unhealthy lifestyle makes them want to follow health posts, and physical skills including driving and sports skills, as they were unable to go out and acquire the groceries they required because they did not yet have a driver's license. They also highlighted the need to follow certain food recommendations while they were athletes.

It makes sense to look at the connection between adolescents' use of SM and health habits gave the importance of environmental influences on health behaviors. The participants depended a lot on family members especially their mother when they were staying at home in terms of meals prepared, groceries shopping and eating habits. The results of this study proved that adolescents often follow what their friends do consistently in other studies that friends influence each other's physical activities (Garcia et al., 2019). In meeting the policy goals, school is one of the institutions involved in the implementation but it is less emphasized to the students as health programs are sometimes canceled according to the participant. They favor SM as its intense use may be typical behavior of adolescents that affects their well-being (Boer et al., 2020). They often have time constraints to follow nutritional advice due to their tight schedule which is consistent with research that resulted in improper meal time and unbalanced meals (Bakar et al., 2019). Additionally, they often eat bread and noodles, which is not a healthy eating habit. Previous data also showed that the large majority of students usually ate foods with low nutritional value (Kabir, Miah & Islam, 2018). Lastly, adolescents may or may not be affected by influencers as one said that the information will be more interesting while another said that the influencers only aim to gain popularity. It is partly true because paid or non-paid influencers target younger audiences by promoting products or sharing information using their expanded social influence which often succeeds in reaching their target (Qutteina et al., 2019).

In terms of SM features, the participants listed many variables that perhaps catch their attention. Appearance that may stimulate initial and ongoing use and boost user engagement was described. The look of an infographic following the letter Z layout showing balanced between illustrations and letters, bright colors showing cheerfulness and font of the text is comfortable to read (Wahab et al., 2019). Next, assessment allows personalization and tailoring which are defining characteristics that set internet interventions apart from conventional self-help initiatives that they favor as they can directly relate and apply the information found. They often found creative videos and infographics in terms of graphics, music used and content introduction. SM also allows reallocation of cognitive resources which is a simpler communication method by focusing on one aspect of a presentation such as Facebook message tool (Moreno & D'Angelo, 2019). Next, burdens refer to complexity of use, insufficient application navigation and long intervention duration while content refers to information quality concentrated on the content itself (Ritterband et al., 2009). They will read the post or participate in the program if the information provided is not too complicated or lengthy while also accurate.

Delivery media influence system use based on the user's interest, satisfaction, and pleasure with the program. Majority of them favor videos, in line with Saudi adolescents, who prefer visual approaches like videos (49.1%) and infographics (28.9%) (Tami, 2022). Next, content creators can generate emotion using stories and photos of their own experiences to demonstrate their effectiveness and users express their responses through likes, retweets, and favorites. SM makes it easy for users to transmit or save the content where thoughts and opinions can be instantly spread around the globe with a simple post, like, or retweet while images from other websites can be "pinned" by users (Stukus, 2019). Besides that, users can search for certain information or persons on SM by using a variety of internet tools, like hashtags (Moreno & Uhls, 2019). SM profiles acted as a source for someone's biography, providing details about the individual's life and activities (Throuvala et al., 2019). Hence, the participants stated that profiles that show professionalism and credibility for the topic posted are trustworthy. As for the message, they prefer specific content for a particular topic. Lastly, SM includes the involvement and engagement of the user. For example, the research with the most levels of participation and acceptability posted events, polls, and other interesting and interactive content to private Facebook groups where participants could receive health advice and information (Klassen et al., 2018).

6.0 Conclusion and Recommendation

Behavior is formed and controlled by either environmental stimuli or internal inclinations, has frequently been used to explain human behavior. Hence, this study identified the factors influencing adolescents as they have been using SM for nutrition-related matters as information from SM could be used to support and enhance public health and treatment outcomes, which consist of their characteristics, environmental and SM features. It can be concluded that adolescents are inclined to use SM for nutrition interventions. This study's emphasis on adolescents, whose opinions were gathered from themselves. Also, they span a variety of ages and demographics. Meanwhile, the limitation of this study is the small sample size and focused on certain states in Malaysia which may not represent the entire adolescent population. As for the implications, the findings can help future researchers or organizations in developing SM interventions related to nutrition by taking into account the factors that affect adolescents to ensure high participation and engagement. Future research is recommended to consider a target population with a larger sample size and a more diverse sociodemographic background to ensure representativeness of the adolescent population.

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Paper Contribution to Related Field of Study

This paper will help in developing a framework for digital or social media interventions for nutrition among adolescents especially HED foods and SSBs.

References

- Bakar, W. A. M. A., Ismail, S., Sidek, S., & Rahman, R. A. (2019). Prevalence and factors affecting food insecurity among university students in Pahang, Malaysia. *Malaysian Journal of Nutrition*, 25(1).
- Beyens, I., Pouwels, J. L., Van Driel, I. I., Keijsers, L., & Valkenburg, P. M. (2020). The effect of social media on well-being differs from adolescent to adolescent. *Scientific Reports*, 10(1), 10763.
- Boer, M., Van Den Eijnden, R. J., Boniel-Nissim, M., Wong, S. L., Inchley, J. C., Badura, P., ... & Stevens, G. W. (2020). Adolescents' intense and problematic social media use and their well-being in 29 countries. *Journal of adolescent health*, 66(6), S89-S99.
- Chau, M. M., Burgermaster, M., & Mamykina, L. (2018). The use of social media in nutrition interventions for adolescents and young adults—A systematic review. *International journal of medical informatics*, 120, 77-91.
- Garcia, J. M., Sirard, J. R., Whaley, D. E., Rice, D. J., Baker, K., & Weltman, A. (2019). The influence of friends and psychosocial factors on physical activity and screen time in Normal and overweight adolescents: a mixed-methods analysis. *American Journal of Health Promotion*, 33(1), 97-106.
- Goodyear, V. A., Wood, G., Skinner, B., & Thompson, J. L. (2021). The effect of social media interventions on physical activity and dietary behaviours in young people and adults: a systematic review. *International Journal of Behavioral Nutrition and Physical Activity*, 18(1), 1-18.
- Hayba, N., Shi, Y., & Allman-Farinelli, M. (2021). Enabling Better Nutrition for Adolescents from Middle Eastern Backgrounds: Semi-Structured Interviews with Parents. *Nutrients*, 13(11), 3918.
- Huang, Y. T., & Su, S. F. (2018). Motives for Instagram use and topics of interest among young adults. *Future internet*, 10(8), 77.
- Kabir, A., Miah, S., & Islam, A. (2018). Factors influencing eating behavior and dietary intake among resident students in a public university in Bangladesh: A qualitative study. *PloS one*, 13(6), e0198801.
- Klassen, K. M., Douglass, C. H., Brennan, L., Truby, H., & Lim, M. S. (2018). Social media use for nutrition outcomes in young adults: a mixed-methods systematic review. *International Journal of Behavioral Nutrition and Physical Activity*, 15(1), 1-18.
- MCMC. (2020). *Internet Users Survey 2020*. <https://www.mcmc.gov.my/skmmgovmy/media/General/pdf/IUS-2020-Report.pdf>
- Moreno, M. A., & D'Angelo, J. (2019). Social media intervention design: applying an affordances framework. *Journal of Medical Internet Research*, 21(3), e11014.
- Moreno, M. A., & Uhls, Y. T. (2019). Applying affordances approach and developmental lens to approach adolescent social media use. *Digital health*, 5, 205520761982.
- Plaisime, M., Robertson-James, C., Mejia, L., Núñez, A., Wolf, J., & Reels, S. (2020). Social media and teens: A needs assessment exploring the potential role of social media in promoting health. *Social Media+ Society*, 6(1), 2056305119886025.
- Potvin Kent, M., Pauzé, E., Roy, E. A., de Billy, N., & Czoli, C. (2019). Children and adolescents' exposure to food and beverage marketing in social media apps. *Pediatric obesity*, 14(6), e12508.
- Qutteina, Y., Hallez, L., Mennes, N., De Backer, C., & Smits, T. (2019). What do adolescents see on social media? A diary study of food marketing images on social media. *Frontiers in psychology*, 10, 2637.

- Reents, J., & Pedersen, A. (2021). Differences in food craving in individuals with obesity with and without binge eating disorder. *Frontiers in psychology*, 12, 660880.
- Ritterband, L. M., Thorndike, F. P., Cox, D. J., Kovatchev, B. P., & Gonder-Frederick, L. A. (2009). A behavior change model for internet interventions. *Annals of Behavioral Medicine*, 38(1), 18-27.
- Sharps, M. A., Hetherington, M. M., Blundell-Birtill, P., Rolls, B. J., & Evans, C. E. (2019). The effectiveness of a social media intervention for reducing portion sizes in young adults and adolescents. *Digital Health*, 5, 2055207619878076.
- Simon, K. (2022 October 20). Digital 2022: October Global Statshot Report. *Data Reportal*. <https://datareportal.com/reports/digital-2022-october-global-statshot>
- Stukus, D. R., Patrick, M. D., Nuss, K. E., & Stukus, D. R. (2019). Social media: Changing the human experience. *Social media for medical professionals: Strategies for successfully engaging in an online world*, 1-21.
- Tami, S. H. (2022). Perceived Effects of Socio-Economics and Social Media Variables on Body Mass Index in Saudi Young Adults. *Cureus*, 14(10).
- Throuvala, M. A., Griffiths, M. D., Rennoldson, M., & Kuss, D. J. (2019). Motivational processes and dysfunctional mechanisms of social media use among adolescents: A qualitative focus group study. *Computers in Human Behavior*, 93, 164-175.
- Wahab, T., Desintha, S., Firdausa, M. W., & Adha, K. K. Information of Personality Disorder as a Negative Impact of Social Media Through Infographic for Teenagers. In *6th Bandung Creative Movement 2019* (pp. 388-392). Telkom University.
- Wang, M., Guo, Y., Zhang, Y., Xie, S., Yu, Z., Luo, J., ... & Yang, M. (2021). Promoting healthy lifestyle in Chinese college students: evaluation of a social media-based intervention applying the RE-AIM framework. *European journal of clinical nutrition*, 75(2), 335-344.
- Wilksch, S. M., O'Shea, A., Ho, P., Byrne, S., & Wade, T. D. (2020). The relationship between social media use and disordered eating in young adolescents. *International Journal of Eating Disorders*, 53(1), 96-106.
- Yusop, F. D., & Sumari, M. (2013). The use of social media technologies among Malaysian youth. *Procedia-social and behavioral sciences*, 103, 1204-1209.