



Peer Interaction and Social Media Exposure Associated with Adolescents' Junk Food Attitudes for Diabetes Prevention

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ABSTRACT

The current lifestyle of adolescents, characterized by a high consumption of junk food, has become a concern due to its contribution to the increasing risk of non-communicable diseases (NCDs), such as diabetes mellitus. This phenomenon is influenced by various factors, including peer interaction and social media exposure, which drive behaviors and positive attitudes among adolescents toward unhealthy foods like junk food. This study aims to determine the relationship of peer interaction and social media exposure and adolescents' attitudes in consuming junk food for diabetes prevention.

This research is an analytic, unmatched study using a cross-sectional design. The sample was selected using probability sampling with a simple random sampling without replacement method. A total of 206 respondents were included based on inclusion and exclusion criteria at SMA Kartika XIX-2 Bandung. Data were collected through questionnaires and analyzed using the chi-square statistical test to examine the relationships among variables.

The results showed a significant relationship between peer interaction and social media exposure and adolescents' attitudes toward junk food consumption, with a p-value <0.05. Higher levels of peer interaction and social media exposure were associated with more positive attitudes toward junk food consumption among adolescents. These findings indicate the important role of the social environment, including peer interaction and social media, in shaping adolescents' attitudes toward junk food. Therefore, prevention efforts through education and interventions are necessary from adolescence to promote healthy eating patterns and reduce the risk of diabetes mellitus, which can affect health in later life.

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INTRODUCTION

Diabetes mellitus (DM) is a global problem with an incidence rate that continues to increase to date and is the 3rd highest cause of death in Indonesia due to Non-Communicable Diseases (NCDs) after heart disease and cancer.[1] [2] Based on the 2018 Basic Health Research (Riskesdas), the prevalence of diabetes mellitus in Indonesia increased in those aged ≥ 15 years in 2013 from 6.9% to 8.5% in 2018, which shows that diabetes mellitus is not only suffered by young adults, late adults, and the elderly, but is also susceptible to occur in adolescents, one of the causes of which is an unhealthy lifestyle and diet.[3]

Adolescents in Indonesia, especially in West Java, have the highest adolescent population and are also very vulnerable to non-communicable diseases such as DM.[4] Global School-based Student Health Survey (GSHS) data shows that most teenagers have unhealthy eating patterns and are at risk of NCDs by frequently consuming fast food (53%), consuming less vegetables and fruit (78.4%), consuming soft drinks (28%), lacking physical activity (67.9%), smoking (22.5%) and consuming alcohol (4.4%).[5] In addition, the high consumption of junk food among teenagers is one of the main factors that increases the risk of DM, where the highest level of junk food consumption is among students (teenagers) at 83.3% who tend to be influenced by the environment such as peers and the ease of technology with the existence of social media which provides convenience and also encourages junk food consumption behavior among teenagers.[6]

Junk food contains high levels of fat, carbohydrates, sugar and salt, and is low in fiber and nutrients, which can cause teenagers who frequently consume it to experience significant negative impacts on their health and disrupt healthy growth and development during adolescence.[7] In addition, its content is not good for the body, especially if consumed excessively, it has a 2.13 times greater risk of causing diabetes mellitus in adolescents.[8] [9] [3]

A study shows that 65.9% and 78.83% of teenagers are influenced by peers in consuming junk food, which shows that peers have proven to play an important role in inviting and influencing teenagers in the culture of eating and consuming junk food, and shows that in social life, teenagers do not choose the food they will consume themselves, but there is interference from people or the surrounding environment such as peers.[10] [11] This is because many teenagers choose and consume junk food based on the invitation or influence of friends, even though they don't like the food.[12] As a result of social pressure to be accepted and recognized in a group, as a way of socializing and as a way of getting along to strengthen relationships, to look cool, follow trends and the desire to match the behavior of their friends, so that teenagers tend to chase and follow what their friends eat.[13]

In addition, intensive social media exposure to food advertisements and content, as well as promotions by influencers, further strengthens interest and increases

adolescents' desire and positive perception of junk food.[13] This is influenced by the duration and frequency of social media use, where the longer the intensity of social media use, the greater the potential for exposure to more information about food that stimulates the brain to taste it.[14]

A study of teenagers aged 13-18 years regarding eating behavior showed that 59.3% of teenagers found out information about junk food through social media, 38.8% of teenagers accessed culinary content on social media to look for menu references and places to eat, 64.4% of teenagers became interested and decided to order junk food after seeing and being exposed to junk food advertisements on social media, 63.9% were easily influenced by culinary content either through images or videos.[7] So, the existence of social media causes negative impacts that can increase the tendency of teenagers to consume unhealthy foods and contribute to increasing health problems such as Diabetes Mellitus and other diseases, as well as having an impact on the lifestyle of teenagers in health such as eating patterns.[7] [13] And with the modern lifestyle which is relaxed, instant, and the existence of advanced technology which makes everything automatic and easy, this is a factor in increasing the risk of diabetes mellitus in adolescents.[15] [16]

Junk food consumption in Indonesia is higher in urban areas because urban teenagers have easier access to it, there are many outlets, cafes and restaurants that provide junk food everywhere, following trends on social media, westernized lifestyles and hanging out habits which increase the frequency of junk food consumption.[17] [10] [18] [19]

A preliminary study at SMA Kartika XIX-2 Bandung City showed that most teenagers get information about junk food from social media and peers, and feel the need to follow the trend of consuming popular junk food. Until now, there has been no research that specifically examines the relationship between peer interaction and social media exposure to adolescent attitudes in consuming junk food at the school. Therefore, this study is important to be conducted to determine the factors that influence adolescent attitudes towards junk food consumption, so that appropriate and effective health interventions can be designed for the prevention of DM from an early age through education and promotion of healthy eating patterns among adolescents to ensure that future generations can grow up with a healthy and balanced diet and can achieve optimal health. This is because peers and social media are factors that can influence a person's eating habits because both of them can introduce and promote junk food directly or indirectly.[7] [20]

METHOD

This research is an analytical research with a cross sectional design to observe the relationship between peer interaction and social media exposure on adolescent attitudes in consuming junk food at SMA Kartika XIX-2 Bandung City which took place from January-May 2025. The population in the study were all adolescents at SMA

Kartika XIX-2 Bandung City with a sample of all adolescents at SMA Kartika XIX-2 Bandung City who met the inclusion criteria to be eligible for the study (aged 15-18 years, are students at the high school, often interact with peers either directly or through social media in terms of eating patterns or lifestyle, have social media and actively use it with a frequency of >1 hour a day and are willing to participate in the study) and exclusion criteria that are exceptions (adolescents with conditions that require them to undergo a strict diet or have medical conditions that require them to avoid junk food, have been diagnosed with diabetes mellitus, have sensory disabilities). Sampling was carried out using the probability sampling technique of the simple random sampling without replacement (SRSWOR) type with the number of samples after being calculated using the Slovin formula as many as 206 respondents.

Data collection in the study was conducted using an instrument in the form of a closed questionnaire that had gone through a validity test with Karl Pearson ($r_{\text{count}} > r_{\text{table}}$ (0.339)) and a validity test with the Cronbach Alpha formula for the peer interaction instrument (reliability value 0.908), social media exposure instrument (reliability value 0.688) and adolescent attitude instrument in consuming junk food (reliability value 0.708). Thus, the instrument in this study consisted of three instruments, namely a peer interaction questionnaire to determine high interaction (score 23-36) and low interaction (score 9-22) in adolescents, a social media exposure questionnaire to determine high exposure (score 8-12) and low exposure (score 3-7) in adolescents, and a questionnaire of adolescent attitudes in consuming junk food with a total of 4 answers using a Likert scale to determine positive attitudes (score 48-76) and negative attitudes of adolescents (score 19-47).

The collected data were then analyzed in the form of univariate analysis to determine the frequency distribution and percentage of each variable studied and bivariate analysis was carried out using the chi-square statistical test to determine the significant relationship between each variable studied. This study also upholds the ethical principles of research, namely respect for human dignity (respect for persons), doing good (beneficence) and not harming (non-maleficence), and justice (justice) with informed consent, data confidentiality and voluntary participation of participants.

RESULT AND DISCUSSION

Result

Table 1. Respondent characteristics

Characteristics	N	%
Grade		
X (10th grade)	65	31,6
XI (11th grade)	70	34
XII (12th grade)	71	34,5
Gender		
Male	86	41,7
Female	120	58,3

Age		
15 years	24	11,7
16 years	84	40,8
17 years	65	31,6
18 years	33	16
Parents' highest education		
Did not complete elementary school	1	0,5
Elementary school (SD)	6	2,9
Middle school (SMP)	18	8,7
High school (SMA)	112	54,4
Academy/University (PT)	69	33,5
Parents' Occupation		
Civil Servant (PNS)	35	17
Private Employee	60	29,1
Self-Employed	91	44,2
Other	20	9,7
Child status (child-)		
1-2	91	44,2
>2	115	55,8
Daily pocket money		
<20.000	117	56,8
>20.000	89	43,2
Parental Income		
Low (Rp. 500,000-2,500,000)	29	14,1
Medium (Rp. 2,500,000-3,500,000)	95	46,1
High (Rp. 3,500,000-5,000,000)	66	32
Very High (>Rp. 5,000,000)	16	7,8
Total	206	100

Based on table 1, it is known that the total number of respondents is 206 respondents. Most of the respondents are teenagers in grades 11 and 12, namely 70 and 71 respondents (34% and 34.5% respectively), the majority of respondents are women as many as 120 (58.3%) aged 16 years as many as 84 (40.8%) with the last education of parents is high school as many as 112 (54.4%) and parents' occupation is self-employed as many as 91 (44.2%). In addition, the majority of respondents are children with status >2 as many as 115 (55.8%), with the majority of pocket money per day is <20,000 as many as 117 (58.8%) and have parents with medium income as many as 95 (46.1%).

Table 2. Frequency distribution of peer interaction factors, social media exposure and adolescent attitudes towards consuming junk food

Variables	N	%
Peer interaction		
High interaction	95	46,1
Low interaction	111	53,9
Social media exposure		
High exposure	174	84,5
Low exposure	32	15,5
Teenagers' attitudes towards consuming junk food		
Positive attitudes	124	60,2
Negative attitudes	82	39,8
Total	206	100

Based on table 2 related to the frequency distribution and percentage of the variables studied, namely peer interaction, social media exposure and adolescent attitudes towards consuming junk food, it shows that the majority of adolescents at SMA Kartika XIX-2 Bandung City have low interactions with peers in order to obtain information or talk about junk food, namely 111 (53.9%) respondents. The majority of social media exposure that occurs in adolescents at SMA Kartika XIX-2 Bandung City in terms of seeking information about junk food shows a high exposure, namely 174 (84.5%). It also shows that the majority of adolescent attitudes towards consuming junk food at SMA Kartika XIX-2 Bandung City show a positive attitude, namely 124 (60.2%).

Table 3. Relationship between peer interactions and adolescent attitudes towards consuming junk food

<i>Peer Interaction</i>	Teenagers' attitudes towards consuming junk food				Total		p-value*	POR
	Positive attitude		Negative attitude		f	%		
	f	%	f	%				
High interaction	89	93,7	6	6,3	95	100	0,000	32,210
Low interaction	35	31,5	76	68,5	111	100		
Total	124	60,2	82	39,8	206	100		

Table 3 shows that adolescents who have high interaction with peers tend to have a positive attitude towards junk food consumption (93.7%). Conversely, adolescents who have low interaction with peers actually have a negative attitude towards junk food consumption (68.5%). The chi-square test shows a significant relationship (p-value 0.000) between peer interaction and adolescent attitudes towards consuming junk food. In addition, based on the Prevalence Odds Ratio (POR), it shows that adolescents with high peer interaction have a 32.2 times greater chance of having a positive attitude towards consuming junk food compared to adolescents with low peer interaction.

Table 4. Relationship between social media exposure and adolescent attitudes towards consuming junk food

Social media exposure	Teenagers' attitudes towards consuming junk food				Total		p-value*	POR
	Positive attitude		Negative attitude		f	%		
	f	%	f	%				
	High exposure	115	66,1	59	33,9	174		
Low exposure	9	28,1	23	71,9	32	100	0,000	4,981
Total	124	60,2	82	39,8	206	100		

Table 4 shows that adolescents with high social media exposure tend to have a positive attitude towards junk food consumption (66.1%). Conversely, adolescents with low social media exposure actually have a negative attitude towards junk food consumption (71.9%). The chi-square test shows a significant relationship (p-value 0.000) between social media exposure and adolescent attitudes towards consuming junk food. In addition, based on the Prevalence Odds Ratio (POR), it shows that adolescents with high social media exposure have a 4.9 times greater chance of having a positive attitude towards consuming junk food compared to adolescents with low social media exposure.

Discussion

This study highlights the characteristics of respondents who are mostly 11th and 12th graders aged 16 years and according to their age, they are in the middle adolescent stage (middle adolescence). According to Sarwono (2006) in a study conducted by Hamidah, S and Rizal, M. S. (2022) it shows that middle adolescents with an age range of 14-17 years are a stage where physical changes have generally begun to stabilize, especially in girls, but psychological and social changes are increasingly prominent so that adolescents begin to search for self-identity which causes frequent conflicts with parents, even the beginning of juvenile delinquency due to the desire to be more independent. In addition, relationships with peers are also very important, which is shown by adolescents who tend to spend time with peers and really need acceptance and popularity so they will try to adjust to their peer group in order to be accepted and become part of the group and begin to have an interest in romantic relationships.[21] [22]

The highest level of education and occupation of most adolescent parents is high school and self-employment. According to several studies, this does not directly influence attitudes or frequency of unhealthy food consumption, but still plays a role in family nutritional knowledge. Furthermore, working long hours can reduce parental supervision of children's eating patterns and habits. Parents who work as civil servants or self-employed can lead to increased consumption of unhealthy foods in children. The majority of respondents came from families with more than two children and had a daily allowance of less than 20,000 rupiah. Families with more than two children tend to experience difficulties in providing consistent attention and parenting patterns to each child, resulting in reduced parental supervision of children's food intake, increasing the risk of unhealthy eating patterns for children and adolescents. Conversely, families with one or two children can provide better opportunities for parents to pay attention and provide adequate nutrition education for their children, thereby improving their eating habits.[23] Parents' income influences the amount of pocket money which also influences the tendency of teenagers to buy unhealthy food, because larger pocket money increases teenagers' access and ease of access to junk food.[24] [25] [26] [27]

The analysis shows that most adolescents at SMA Kartika XIX-2 Bandung City have relatively low levels of peer interaction when it comes to obtaining information or discussing junk food. This indicates that peer interaction has not become a primary source for adolescents at this school in obtaining information or discussing junk food.[28] [29] However, the role of peers remains crucial because they can influence adolescents' behavior and attitudes, both positively and negatively. Peers act as agents of socialization, providing a space for exchanging information, discussing issues, and establishing shared norms, including regarding eating patterns and unhealthy food consumption.[30] [31] Low peer interaction can make teenagers more independent in choosing food, while high interaction tends to strengthen the tendency to consume junk food due to social pressure and the desire to be accepted in a group.[13] [32] [33] [34]

Social media exposure among adolescents at SMA Kartika XIX-2 Bandung City is very high, with the majority of respondents seeking and obtaining information about junk food from social media, which has now become the primary source of food references among adolescents. Social media plays a significant role in shaping positive perceptions and attitudes toward junk food through culinary content, influencer promotions, and easy access to food delivery services.[35] [12] Moreover, fast food and junk food companies actively target teenagers through social media by using influencers, interactive promotions, and advertisements tailored to user preferences, making it easier for teenagers to be influenced about unhealthy food through social media.[36] Teenagers who are frequently exposed to social media are more likely to be attracted to and decide to buy junk food after seeing food advertisements or content on social media. Another study showed that the more frequently teens use social media, the worse their eating behaviors, including a tendency to choose unhealthy foods.[37] [38] Thus, social media reinforces the trend of junk food consumption among teenagers, both through attractive food visualizations and the encouragement to follow viral trends.[17] [37] [39]

Based on the majority of adolescents' attitudes, they have a positive attitude toward junk food consumption. This positive attitude leads them to view junk food as delicious, practical, readily available, inexpensive, and part of social activities with friends. This leads them to consume it more frequently and repeatedly.[40] [41] This is in accordance with the Theory of Planned Behavior (TPB) which shows that a person's attitude towards a behavior greatly influences a person's intentions and tendencies towards it, so that if teenagers have a positive attitude towards junk food, they will tend to choose and consume junk food regularly.[40] [42] This attitude is influenced by interactions with peers and high social media exposure. Teenagers with high levels of peer interaction and social media exposure tend to be more accepting and prefer junk food. This demonstrates the important role of the environment and social media in shaping adolescents' attitudes toward unhealthy food consumption and reinforcing their perceptions of junk food.[42] [43] [40]

This study shows that there is a significant relationship between peer interaction and adolescent attitudes in consuming junk food where adolescents who have a high level of interaction with peers tend to have a positive attitude towards consuming junk food, while adolescents with low peer interaction actually have more negative attitudes towards consuming junk food. This shows that peer interaction plays a role as a contributing factor in forming positive attitudes of adolescents in consuming junk food in accordance with the attitude theory (Attitude Theory) and in accordance with the theory of Snehandu B.Kar (1983) which shows that a person's attitude can be influenced by one of them because of social support (social support) such as close friends or peers because a person's attitude and behavior if not supported by one of the surrounding such as family, close friends, teachers, communities or groups will not be formed.[44] [45]

The process of peer interaction can influence positive attitudes of adolescents towards junk food formed through the process of searching for identity and social acceptance at the adolescent stage where adolescents at this stage through routine interactions adopt junk food consumption behavior through imitation of their peers and because of social pressure and the desire to be accepted in their group so that they tend to adjust their attitudes and behavior to suit the norms and habits of the group in order to be accepted and not ostracized which defeats adolescents' awareness of healthy eating patterns.[13] [46] [47] [48] Thus, peers can influence adolescents' food choices not based on nutritional value, but rather because of the desire to be accepted and not lose social status in their circle of friends.[7] Thus, the results of this study emphasize the importance of social environmental influences, particularly peer interactions, in shaping adolescents' attitudes toward junk food consumption. Prevention and education efforts regarding healthy eating among adolescents need to incorporate approaches that consider the role of peers to ensure more effective and sustainable behavior change.[47] [48] [7]

In addition, this study also shows that there is a significant relationship between social media exposure and adolescent attitudes towards consuming junk food at SMA Kartika XIX-2 Bandung City, where adolescents who have high social media exposure tend to have positive attitudes towards consuming junk food. Conversely, adolescents with low social media exposure tend to have negative attitudes towards consuming junk food. This is in accordance with the WHO 2006 theory which shows that a person's attitudes and behavior can be formed due to resources such as technology and from technology the creation of social media can influence a person's attitudes and behavior, both positively and negatively.[44] Through various culinary content, influencer promotions and advertisements, it is shown that social media plays a role in developing social motivation and the desire of teenagers to consume a product and make positive and negative eating choices that can pose risks to their health, both positive and negative.[49]

In addition, according to the attitude theory, repeated exposure to social media can also form positive beliefs about junk food which strengthens positive attitudes and adolescents' liking for junk food.[7] [35] Because, teenagers are very influenced by the social norms they see on social media, so if popular content shows that consuming junk food is cool, fun, and part of the lifestyle of peers or influencers, then this subjective norm encourages teenagers to adopt a positive attitude towards junk food in order to be accepted in their social group.[50] In addition, appetizing food visualizations and viral food trends on social media are the main driving factors that influence teenagers' positive attitudes towards junk food consumption.[12] [31] [7] [37] Thus, the results of this study emphasize the importance of social media as an external factor that significantly influences adolescents' eating attitudes and behaviors. Efforts to prevent excessive junk food consumption among adolescents require careful management and education regarding the wise use of social media, as well as the promotion of healthy eating patterns that can compete with the flow of information and emerging trends on social media.[37] [7] [51] [17] [52]

CONCLUSION

This study found that most respondents were 16-year-old female students in grade XII, with relatively low daily pocket money, parents predominantly educated to high school level, working as entrepreneurs, and having moderate incomes. Although peer interaction related to junk food discussions was generally low, exposure to junk food information through social media was high, and most adolescents showed positive attitudes toward junk food consumption. Peer interaction was significantly associated with adolescents' attitudes, with those having high peer interaction being 32.2 times more likely to exhibit positive attitudes toward junk food consumption, while high social media exposure increased this likelihood by 4.9 times. These findings highlight the need for schools to collaborate with health professionals in strengthening nutrition education programs and promoting healthy eating behaviors, while future studies should investigate additional factors, such as parenting styles and environmental influences, that may shape adolescents' attitudes toward junk food consumption.

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