



Social Media Nutrition Education Exposure and Knowledge Among Adolescents at SMA IPIEMS

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Article History

Received, July 4th, 2026

Revised, July 9th, 2026

Reviewed, August 27th, 2026

Posted, August 31st, 2026

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ABSTRACT

Background: Social media has become an important source of health and nutrition information for adolescents.

Objective: This study examined the relationship between exposure to nutrition education content on social media and nutrition knowledge among students at IPIEMS Senior High School, Surabaya.

Methods: A quantitative observational study with a cross-sectional design was conducted among 95 students selected using accidental sampling. Exposure to nutrition education content and nutrition knowledge were measured using structured questionnaires. Data were analyzed using the Gamma test at a 5% significance level.

Results: Most respondents had low exposure to nutrition education content (42.1%), while moderate nutrition knowledge was the most common category (46.3%). A significant association was found between exposure to nutrition education content on social media and adolescents' nutrition knowledge ($p = 0.042$). Students with higher exposure tended to have better nutrition knowledge.

Conclusions: These findings suggest that social media can be an effective medium for nutrition education when supported by accurate and credible information.

Keyword: Social Media, Nutrition Education, Information Exposure, Nutritional Knowledge, Adolescents

Cite this Article

Laksono, L. F. R., & Soeyono, R. D. (2026). Social Media Nutrition Education Exposure and Knowledge Among Adolescents at SMA IPIEMS. *Jurnal Ilmu Gizi: Journal of Nutrition Science*, 12(2): 173-68. DOI: <https://doi.org/10.33992/jig.v15i3>



INTRODUCTION

Rapid advances in digital technology have fundamentally transformed the way people access, exchange, and consume information. Among all age groups, adolescents are considered digital natives because they have grown up in an environment where digital technologies are integrated into their daily lives. Their familiarity with internet-based platforms enables them to access information quickly, independently, and from a wide range of online sources (1). As internet use continues to expand, social media has evolved beyond its traditional role as a communication and entertainment platform into one of the most accessible channels for sharing information, including health- and nutrition-related content (2).

Indonesia has experienced a substantial increase in social media use in recent years. Approximately 191.4 million Indonesians actively use social media, while around 92% of adolescents aged 13–17 years access the internet every day (3). This widespread use has positioned social media as an influential platform for delivering educational information to adolescents. Previous studies have reported that Instagram is used by 95.8% of adolescents, followed by WhatsApp (95.8%) and TikTok (87.1%). The popularity of these visual and audiovisual platforms provides valuable opportunities to communicate health and nutrition messages in a more engaging and understandable manner (4).

In the field of public health, social media has increasingly been utilized as a medium for nutrition education by providing information on balanced nutrition, healthy food choices, nutrient requirements, and healthy lifestyle practices. The concise, visually appealing, and interactive nature of social media content may facilitate adolescents' understanding of nutrition-related information (5). However, the ease of accessing information through social media is accompanied by an increased risk of exposure to misinformation and content from unreliable sources. Consequently, inaccurate nutrition information may lead to misconceptions that negatively influence adolescents' understanding of nutrition and healthy eating practices.

Nutrition knowledge is an important determinant of healthy eating behavior. Adolescents with adequate nutrition knowledge are more likely to understand the relationship between dietary intake, nutrients, and health, enabling them to make healthier food choices. Improving nutrition knowledge during adolescence is particularly important because this life stage represents a critical period for establishing lifelong dietary behaviors and preventing nutrition-related health problems in adulthood (6). Nevertheless, nutrition knowledge is influenced by multiple factors, including educational background, socioeconomic conditions, cultural and social environments, and access to reliable health information (7).

Exposure to nutrition education content on social media extends beyond merely encountering information. It also reflects the frequency, duration, and level of attention individuals devote to nutrition-related content. Greater exposure to accurate and evidence-based nutrition information is expected to improve nutrition knowledge, whereas frequent exposure to misleading information may increase the risk of misunderstanding nutrition concepts. Therefore, evaluating the effectiveness of social media as a nutrition education platform is particularly

important among adolescents, who represent one of the most active groups of social media users (7)

Furthermore, the implementation of the *Merdeka Curriculum* encourages students to develop critical thinking skills, digital literacy, and the ability to utilize diverse learning resources, including social media. This educational approach further highlights the importance of understanding how exposure to nutrition education content through social media relates to adolescents' nutrition knowledge.

A preliminary survey involving 18 students at SMA IPIEMS Surabaya revealed that social media, particularly TikTok, was used primarily for entertainment rather than educational purposes. Only 5.6% of respondents reported accessing nutrition education content, while most participants evaluated the credibility of information based on content popularity rather than the educational background or professional expertise of the content creator. In addition, respondents demonstrated limited understanding of fundamental concepts of balanced nutrition. These findings suggest that frequent social media use does not necessarily translate into optimal utilization of social media as a reliable source of nutrition information.

Based on these considerations, this study aimed to investigate the association between exposure to nutrition education content on social media and nutrition knowledge among students at SMA IPIEMS Surabaya. In addition, this study described the level of exposure to nutrition education content on social media and the nutrition knowledge of the participating students.

METODE

A quantitative analytical study employing a cross-sectional design was conducted among students at SMA IPIEMS Surabaya. The study population consisted of all students enrolled at the school, and a total of 95 participants were recruited using an accidental sampling technique. Eligible participants were students aged 15–18 years who actively used social media, agreed to participate in the study, and completed the questionnaire in its entirety. Prior to data collection, permission to conduct the study was obtained from the school administration. Written informed consent was obtained from all participants before they completed the questionnaire.

Data were collected using a structured questionnaire administered through Google Forms, which gathered information on respondents' characteristics, nutrition knowledge, and exposure to nutrition education content on social media. The independent variable, daily exposure duration, was assessed based on the average time spent accessing such content per day. Because there is no established or universally accepted cut-off point for classifying social media nutrition education exposure, the levels were categorized empirically based on the sample's data distribution and central tendency (8). Descriptive analysis revealed a strong clustering of responses precisely at 5 minutes/day. Therefore, to preserve this natural structure of the data and maintain adequate statistical power, this value was designated as the reference point for the 'moderate' category, yielding three distinct groups: low (<5 minutes/day), moderate (exactly 5 minutes/day), and high (>5 minutes/day). The dependent variable was nutrition knowledge, which was assessed using a structured questionnaire adapted from (9). The instrument had previously been validated and tested for reliability by the original author before being adopted

in this study. Respondents' nutrition knowledge scores were calculated based on the percentage of correct responses and classified into three categories: poor (<60%), moderate (60–80%), and good (>80%).

RESULT

Respondent Characteristics

The demographic and social media-related characteristics of the respondents are presented in Table 1. This table summarizes participants' demographic profiles, social media use, and the nutrition-related information they accessed through social media.

Table 1

Respondent Characteristics		
Characteristic	Amount	%
Sex		
Male	44	46,3%
Female	51	53,7%
Age		
15 years	7	7,4%
16 years	44	46,3%
17 years	37	38,9%
18 years	7	7,4%
Social Media Platforms Used		
<i>Instagram</i>	91	95,8%
<i>TikTok</i>	88	92,6%
<i>Youtube</i>	79	83,2%
<i>Twitter</i>	15	15,8%
<i>Facebook</i>	12	12,6%
<i>Theards</i>	1	1,1%
Types of Information Accessed		
General Knowledge	72	75,8%
Culinary	63	66,3%
Health	61	64,2%
Tecnology	55	57,9%
Sport	50	52,6%
Beauty	47	49,5%
Fashion	43	45,3%
Religious Knowledge	28	29,5%
Nutrition	27	28,4%
Educational Content Account		
Dr. Tirta	16	16,8%
Dr. Gia	8	8,4%
Anak Tekpang & Gizi	6	6,3%

Characteristic	Amount	%
<i>Dennis Food Technologist</i>	6	6,3%
PojokGizi	6	6,3%
Magiz Mahasiswa gizi	6	6,3%
Kementerian kesehatan RI	3	3,2%
Podcast Raditya Dika (narasumber tenaga kesehatan)	3	3,2%
Dr. Richard Lee	1	1,1%
Dr. Mike	1	1,1%
Dr. Animasi	1	1,1%
Vincent Lianny	1	1,1%
Natasya Limano	1	1,1%
Lambung Gembira	1	1,1%
SPPG MBG	1	1,1%
Types of Nutrition Information Accessed		
Balanced Nutrition	45	47,4%
Healthy Eating Patterns	38	40%
Benefits of Fruit and Vegetable Consumpton	32	33,7%
Nutrient Content Patterns	28	29,5%
Vitamins anda Their Health Benefits	15	15,8%
Stomach Health	10	10,5%
Daily Social Media Use		
High (>5 hours/day)	34	35,8%
Medium (3 - 4 hours/day)	36	37,9%
Rendah (1 - 2 hours/day)	25	26,3%

A total of 95 students participated in this study. Female respondents (n = 51, 53.7%) slightly outnumbered male respondents (n = 44, 46.3%). The largest age group was 16 years (n = 44, 46.3%), followed by 17 years (n = 37, 38.9%), while respondents aged 15 years and 18 years each accounted for 7 participants (7.4%). Instagram was the most frequently used social media platform (n = 91, 95.8%), followed by TikTok (n = 88, 92.6%) and YouTube (n = 79, 83.2%). General knowledge (n = 72, 75.8%), culinary (n = 63, 66.3%), and health-related information (n = 61, 64.2%) were the most commonly accessed types of content, whereas nutrition-related information was accessed by 27 respondents (28.4%). Regarding nutrition education accounts, Dr. Tirta was the most frequently followed (n = 16, 16.8%), followed by Dr. Gia (n = 8, 8.4%) and several other nutrition educators (n = 6, 6.3%). The most frequently obtained nutrition information included balanced nutrition (n = 45, 47.4%), healthy eating patterns (n = 38, 40.0%), the benefits of fruits and vegetables (n = 32, 33.7%), nutrient content of foods (n = 28, 29.5%), and vitamins and their health benefits (n = 15, 15.8%). Most respondents reported using social media for 3–4 hours/day (n = 36, 37.9%), followed by more than 5 hours/day (n = 34, 35.8%) and 1–2 hours/day (n = 25, 26.3%).

Exposure to Nutrition Education Content on Social Media

The distribution of respondents according to their level of exposure to nutrition education content on social media is presented in Table 2.

Tabel 2
Exposure to Nutrition Education Content

Exposure to Nutrition Education Content		
	N	%
High (>5 minute)	38	40%
Medium (5-17 minute)	17	17,9%
Low (<5 minute)	40	42,1%

Low exposure to nutrition education content was reported by 40 respondents (42.1%), representing the largest exposure category. High exposure was observed among 38 respondents (40.0%), indicating that a considerable proportion of participants frequently accessed nutrition education content. In contrast, only 17 respondents (17.9%) were classified as having moderate exposure. Overall, the proportions of respondents with low and high exposure were relatively comparable, whereas moderate exposure was the least common category.

Nutrition Knowledge

The distribution of respondents according to their level of nutrition knowledge is presented in Table 3.

Table 3

Nutrition Knowledge		
	Frequency	(%)
Good (>80%)	9	9,5%
Moderate (60-80%)	44	46,3%
Poor (<60%)	42	44,2%

A moderate level of nutrition knowledge was observed in 44 respondents (46.3%), making it the largest category. Poor nutrition knowledge was identified in 42 respondents (44.2%), while only 9 respondents (9.5%) demonstrated good nutrition knowledge.

Association Between Exposure to Nutrition Education Content on Social Media and Nutrition Knowledge

The association between exposure to nutrition education content on social media and nutrition knowledge is presented in Table 4, whereas the Gamma and Somers' *d* coefficients are presented in Table 5.

Table 4
Association Between Exposure to Nutrition Education Content on Social Media and Nutrition Knowledge

Exposure to Nutrition Education Content		Nutrition Knowledge						Amount		p-Value
		Poor (<60%)		Moderate (60 – 80%)		Good (>80%)				
		N	%	N	%	N	%	N	%	
Low (<5 minute)		22	55%	16	40%	2	5,0%	40	42,1%	0,042
Medium (5 minute)	(5	6	35,3%	11	64,7%	0	0,0%	17	17,9%	
High (>5 minute)	(>5	14	36,8%	17	44,7%	7	18,4%	38	40%	
Amount		42	44,2%	44	46,3%	9	9,5%	95	100%	

The distribution of nutrition knowledge varied across the levels of exposure to nutrition education content on social media. More than half of respondents with poor nutrition knowledge (52.4%) were in the low-exposure group, while 33.3% and 14.3% were classified into the high- and moderate-exposure groups, respectively. Among respondents with moderate nutrition knowledge, the proportions were relatively comparable across exposure levels, with 38.6% in the high-exposure group, 36.4% in the low-exposure group, and 25.0% in the moderate-exposure group. In contrast, respondents with good nutrition knowledge were predominantly found in the high-exposure group (77.8%), whereas 22.2% belonged to the low-exposure group and none were categorized as having moderate exposure. Overall, these findings suggest a tendency for higher exposure to nutrition education content on social media to be associated with better nutrition knowledge.

Table 5
Gamma dan Somers' *d* Test Result

	SKOR
<i>Gamma</i>	0,319
<i>Somers' d</i>	0,195

The Gamma analysis revealed a statistically significant positive association between exposure to nutrition education content on social media and nutrition knowledge ($\gamma = 0.319$, $p = 0.042$). Similarly, Somers' *d* confirmed a significant positive relationship between the two variables ($d = 0.195$, $p = 0.042$), indicating a weak association.

DISCUSSIONS

Respondent Characteristics

The findings showed that most respondents were 16 years old, with a relatively balanced distribution between male and female students. Instagram, TikTok, and YouTube were the most frequently used social media platforms, while culinary and health-related content were the types of information most commonly accessed. Although only a small proportion of respondents intentionally searched for nutrition-related content, many reported obtaining information on balanced nutrition, healthy eating patterns, nutrient content, and vitamins through healthcare professionals, nutrition educators, and official government accounts. These findings suggest that social media has become an accessible source of health information for adolescents, particularly through visual and audiovisual platforms that align with their media consumption preferences (10).

Respondents exhibited varying levels of exposure to nutrition education content, with the largest proportions classified into the low- and high-exposure categories. These differences may reflect variations in social media use, personal interest in health-related topics, and the types of accounts followed by adolescents. Individuals who are more frequently exposed to credible nutrition education content have greater opportunities to acquire reliable nutrition information. This finding is consistent with previous studies demonstrating that social media can serve as an effective platform for nutrition education because it delivers health information in an engaging, accessible, and adolescent-friendly format (11).

Exposure to Nutrition Education Content

The distribution of exposure levels indicated that low exposure to nutrition education content was the most common category among respondents, although the proportion of adolescents with high exposure was also substantial. This pattern suggests that nutrition education is not yet the primary reason adolescents use social media. Instead, social media is more commonly utilized for entertainment, communication, and keeping up with current trends. Nevertheless, the considerable proportion of respondents with high exposure indicates that social media remains a promising channel for delivering nutrition education, particularly when information is presented through attractive formats such as short-form videos, infographics, and content created by healthcare professionals or qualified health educators. These presentation formats may facilitate adolescents' understanding and acceptance of nutrition-related information (12).

Respondents reported accessing various nutrition topics, including balanced nutrition, healthy eating patterns, nutrients, fruit and vegetable consumption, and the health risks associated with junk food. These findings indicate that social media has the potential to expand adolescents' access to nutrition information. However, greater exposure does not necessarily guarantee better-quality information because not all online content is scientifically accurate or evidence-based. Therefore, digital health literacy and the ability to identify credible information sources are essential to ensure that exposure to nutrition education content contributes positively

to adolescents' nutrition knowledge. These findings are consistent with those of Fadhilah et al. (13), who emphasized that the effectiveness of social media as a health information source depends on both the quality of the information provided and users' ability to critically evaluate its credibility.

Nutrition Knowledge

Most respondents demonstrated a moderate level of nutrition knowledge, followed by those with poor knowledge, whereas only a small proportion achieved a good level of nutrition knowledge. These findings indicate that although many adolescents possess a basic understanding of balanced nutrition, healthy dietary practices, and the relationship between diet and health, their overall level of knowledge remains insufficient. Adequate nutrition knowledge plays an important role in enabling individuals to make appropriate food choices and adopt healthier dietary behaviors. Consequently, improving nutrition knowledge is expected to support healthier eating habits and better long-term health outcomes (14)

The relatively high proportion of respondents with poor nutrition knowledge further suggests that access to reliable nutrition information, interest in health-related topics, and the ability to understand nutrition messages remain limited among some adolescents (14). Similar findings have been reported by Chahyanto et al (15), and Fitria (7). who found that moderate nutrition knowledge was the predominant category among adolescents, followed by poor nutrition knowledge. These findings reinforce the importance of providing continuous nutrition education through media that are relevant to adolescents, particularly social media. Furthermore, strengthening literacy and critical thinking skills, as promoted through the Merdeka Curriculum, may help adolescents evaluate nutrition information more critically and apply accurate knowledge to support healthier lifestyles.

Results of the Analysis of the Relationship between Exposure to Nutrition Education on Social Media and Adolescents' Nutritional Knowledge

The present study demonstrated a statistically significant positive association between exposure to nutrition education content on social media and adolescents' nutrition knowledge (Gamma = 0.319, $p = 0.042$). Furthermore, Somers' d analysis also indicated a statistically significant positive association ($d = 0.195$, $p = 0.042$). Although the relationship was statistically significant, its strength was weak, suggesting that greater exposure to nutrition education content on social media was associated with better nutrition knowledge, while other factors may also contribute to adolescents' nutritional understanding. The interactive, visual, and easily accessible nature of social media enables adolescents to repeatedly encounter information on balanced nutrition, healthy eating habits, nutrient requirements, and other health-related topics, thereby supporting the learning process (12)

The findings are consistent with those reported by Murdiningrum et al. (16), who concluded that social media can be utilized as an effective medium for nutrition education among adolescents. Likewise, Zaki et al. (17), demonstrated that sustained social media-based nutrition education interventions were associated with improvements in nutrition knowledge.

Nevertheless, the present study also found that not all respondents with high exposure possessed good nutrition knowledge. This finding indicates that nutrition knowledge is influenced not only by the frequency of exposure but also by the quality and credibility of the information accessed, digital literacy skills, individual motivation, and environmental influences. Similar observations were reported by Iksan(18), who noted that extensive social media use does not necessarily improve knowledge when the majority of time is devoted to entertainment rather than educational content. Therefore, optimizing social media as a platform for nutrition education requires the provision of accurate, evidence-based, engaging, and credible content that is capable of attracting adolescents while supporting meaningful learning experiences.

CONCLUSIONS

This study demonstrated a statistically significant positive association between exposure to nutrition education content on social media and nutrition knowledge among students at SMA IPIEMS Surabaya ($\gamma = 0.319$, $p = 0.042$). Although the association was weak, students with higher exposure to nutrition education content tended to have better nutrition knowledge than those with lower exposure. These findings indicate that social media has the potential to support nutrition education among adolescents when the information is accurate, evidence-based, engaging, and provided by credible sources. However, the weak strength of the association suggests that nutrition knowledge is influenced not only by exposure to nutrition education content but also by other factors beyond the scope of this study.

Schools are encouraged to collaborate with healthcare professionals and educational institutions to disseminate evidence-based nutrition education through social media platforms that are widely used by adolescents. Nutrition education initiatives should also promote digital health literacy to help adolescents critically evaluate the credibility of nutrition information encountered online. Furthermore, future research should involve larger and more diverse populations and examine additional factors that may influence adolescents' nutrition knowledge, such as digital health literacy, family support, socioeconomic characteristics, learning motivation, and the credibility of nutrition information accessed through social media.

CONFLICT OF INTEREST

The authors certify that there are no commercial or financial relationships associated with this research that could be considered a potential conflict of interest.

AUTOR CONTRIBUTIONS

LFRL was responsible for developing the study concept and design, collecting and analyzing the data, interpreting the results, and preparing the initial manuscript. RDS provided overall supervision throughout the study, evaluated the data analysis, offered constructive comments,

and assisted in revising the manuscript. Both authors reviewed and approved the final manuscript and agreed to be accountable for all aspects of the work.

ACKNOWLEDGMENTS

The authors gratefully acknowledge the support of Universitas Negeri Surabaya during the course of this research. Appreciation is also extended to SMA IPIEMS Surabaya for providing permission to conduct the study, as well as to the students, teachers, and all individuals whose cooperation and contributions facilitated the data collection process and the completion of this manuscript.

FUNDING

This study was conducted without financial support from public, commercial, or non-profit funding agencies

DECLARATION OF ARTIFICIAL INTELLIGENCE USE

The authors utilized ChatGPT (OpenAI, GPT-5) to improve the language quality and grammar of the manuscript. All revisions were thoroughly reviewed and validated by the authors, who assume full responsibility for the manuscript's accuracy, integrity, and scientific content.

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