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Does Exposure to Health-related Information and Peer Effects Affect the Nutritional Status of Adolescents in Urban and Rural Areas?

Erna Kusuma Wati, Endo Dardjito, Atikah Proverawati, Izka Sofiyya Wahyurin*, Widya Ayu Kurnia Putri, Katri Andini, Prameshti Widya Hapsari

Department of Nutrition Science, Faculty of Health Sciences, Jenderal Soedirman University, Purwokerto, Indonesia

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***Correspondence:** Izka Sofiyya Wahyurin, Jenderal Soedirman University, Indonesia. E-mail: izka.sofiyya.wahyurin@unsoed.ac.id
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Abstract

BACKGROUND: The influence of health information exposure particularly from peer influences on the health and nutrition of adolescents and its effect on the nutritional status of female adolescents.

AIM: The purpose of this research is to acknowledge the health information exposure and peer influences on female adolescents in urban and rural areas.

METHODS: This study used a cross-sectional study design. The sample was 96 female adolescents with 44 from State Junior High School 1 Purwokerto representative of the urban area and 52 female adolescents from State Junior High School 1 Patikraja as representative from rural area. Exposure data and health information sources were collected using a questionnaire, peer influences measurement using Peer Influence Scale (PIS) questionnaire, and nutrition status measurement using Body Mass Index per age. The Statistics Test used in this study was Chi-square and Fisher Exact with 5% accuracy.

RESULTS: No significant association was found between health information exposure and peer influences with nutrition status in female adolescents ($p = 0.29$; $0.77 > 0.05$) and there was also no significant difference in acceptance source and health nutrition information topic of female adolescents in urban and rural areas. However, there was a significant difference between peer influences in female adolescents in urban and rural areas ($p = 0.00 < 0.05$).

CONCLUSION: In both groups of female adolescents from urban and rural, there was comparable acceptance in their sources of information regarding health and nutrition. There was a significant difference in the effect of peer influences between female adolescents in urban and rural areas. However, peer influences does not have any effect on their nutrition status.

Introduction

The use of android phones and other resemblant components had opened the access to everyone to access health-related information through online [1]. Wide media accessibility as the main resource for information has given contribution in providing health-related information. Easy media accessibility becomes an opportunity for health and nutrition-related information to spread rapidly both in urban and rural areas. Printed media and electronic media have a big role in giving information about how to improve adolescents' health and well-being including information related to nutrition [2]. Reading articles from socials could help adolescents to understand the nutrition needs for their body [3].

As a result of media and health information sources that seem to be spreading well, adolescents become more aware of their health even though on the flipside, adolescents are still confused with the diverse, and overwhelming informations surrounding them with as of it is necessary to comprehend nutrition literacy to know the extent to which individuals can obtain, process, understand, and use nutritional and dietary information, as well as access the services needed to make good nutritional decisions [4], [5]. Nutrition literacy has an important role in shaping eating behavior since childhood and allows adolescents to choose healthy foods that can be maintained later in life [6], [7]. Low nutrition literacy rate in school-aged children is associated with malnutrition, food diversity retardment, and appears to be a barrier to assessing information such as food selection, understanding food labels, and when applying diet recommendation. Therefore, improving nutrition status is important to promote a healthy diet which eventually will help to reduce the risk factors of nutrition-related diseases in the long term [8].

Constant exposure to health-related information about positive information will shape a positive vision and behavior in real life as adolescents will have positive behavior of further information retrieval. Sufficient information exposure could affect one's knowledge and attitude and, thus, could affect their health behavior [9]. Another cause of the effect from social media exposure

on the health literacy associated with adolescent health was the media factor brought by peers in a group [10]. This was in accordance with a theory that peer group is a determinant factor in influencing one's health literacy [2]. Peer influence as well as older friends' influence are given through empathy and sympathy forms when an individual problem arises, this evokes them to be concerned and to share sufficient health information to each other [11].

Adolescence is a transition to independent life with high opportunity to make their own decisions regarding eating behavior compared to when they were minors. As of it they are likely to fix their poor eating behavior, habit, obesity, and other obesity-related diseases [12]. This study aims to find out the role of health information exposure and peer influences on the nutritional status of adolescents in urban and rural areas.

Materials and Methods

This study used cross-sectional study to acknowledge the importance of exposure, health information sources, and peer influences of female adolescents' nutrition status in a urban and rural that were conducted from March to August 2021 in State Junior High School 1 Patikraja versus State Junior High School 1 Purwokerto, Banyumas Regency. The sample in this study was 96 female adolescents as respondents with 44 respondents from State Junior High School 1 Purwokerto as representative of the urban group and 52 respondents from State Junior High School 1 Patikraja representing the rural group. The criteria for inclusion of respondents in this study were female adolescents from State Junior High School 1 Purwokerto and State Junior High School 1 Patikraja aged 12–4 years old and willing to sign the informed consent.

Exposure data and sources of health information were collected using questionnaires associated with information collected from a variety of sources, therefore could augment knowledge with the categories namely, "Never Ever" and "Already Ever" obtaining exposure to health information and sources. Peer influences are defined as the influence of peers in eating behavior and weight management, data were collected using peer influence scale (PIS) questionnaires. PIS has 12 items with a scale range from 1 (never) to 5 (very often) and categorized, namely, "has effect" with score range of 39–60, and "has no effect" with a score range of 12–38 [13]. Nutrition status was measured by body mass index (BMI) and were divided into the categories, namely, underweight (IMT < 18.5 kg/m^2), normal nutrition status (IMT = 18.5–25 kg/m^2), overweight (IMT > 25–27.0 Kg/m^2), and obesity (IMT > 27.0 kg/m^2).

The analysis of the data used in this study was descriptive analysis continued with different test analysis using Chi-square equal fishery exact. This study has received ethical approval from the Health Research Ethics Commission (KEPK) Faculty of Health Sciences, Jenderal Soedirman University No. 363/EC/KEPK/IV/2021.

Results

Table 1 reveals the summary of the respondents' characteristics. It indicated that the median age for rural group is 13.48 years old while for urban is 13.40 years old. Most of the respondents from the rural group are from Grade VIII specifically 25 students (56,8%) and the urban group is from Grade VII specifically 25 students (53,8%). In the rural group, the highest education level of the respondents' fathers and mothers attained was low level education with 23 respondents (45.5%) and 26 respondents (59.1%), respectively. Meanwhile, most parents in the rural group were able to attain secondary education, 44 of the fathers (86.3%) and 41 of the mothers (78.8%). Most of the father's occupations in the rural group are as laborers as many as 19 (43.2%) and in the urban group as self-employed as many as 25 (48.1%). In both groups, the mother of the respondents had an unemployed status, 35 (79.5%) in the rural group and 31 (59.6%) in the urban group.

Table 1: Respondents' characteristics

Variable	Rural (n = 44)	Urban (n = 52)
Age (years old)	13.48 ± 0.88	13.40 ± 0.63
Nutrition status		
Underweight	3 (6.8%)	5 (9.6%)
Normal	33 (75%)	31 (59.6%)
Overweight	5 (11.4%)	15 (28.8%)
Obesity	3 (6.8%)	1 (1.9%)
Total	44 (100%)	52 (100%)
Grade		
VII	19 (43.2%)	28 (53.8%)
VIII	25 (56.8%)	24 (46.2%)
Total	44 (100%)	52 (100%)
Fathers' highest attained educational level		
Low	23 (45.5%)	5 (9.8%)
Middle	20 (52.3%)	44 (86.3%)
High	1 (2.3%)	2 (3.9%)
Total	44 (100%)	51 (100%)
Mothers' highest attained educational level		
Low	26 (59.1%)	8 (15.4%)
Middle	17 (36.8%)	41 (78.8%)
High	1 (2.3%)	3 (5.8%)
Total	44 (100%)	52 (100%)
Fathers' occupation		
Farmer	7 (15.9%)	0 (0%)
Laborer	19 (43.2%)	5 (9.6%)
Civil servant	1 (2.3%)	8 (15.4%)
Private employee	6 (13.6%)	13 (25%)
Entrepreneur	10 (22.7%)	25 (48.1%)
Migrant worker	0 (0%)	1 (1.9%)
Unemployed	1 (2.3%)	0 (0%)
Total	44 (100%)	52 (100%)
Mothers' occupational status		
Unemployed	35 (79.5%)	31 (59.6%)
Employed	9 (20.5%)	21 (40.4%)
Total	44 (100%)	52 (100%)

Table 2 presents the respondents' acceptance of health-related information and its sources. More than half of the respondents have already been exposed to health and nutrition information in the rural group with 32 respondents (72.7%) and urban group with 45 respondents

Table 2: Acceptance of health-related information and its sources

Variable	Rural	Urban	p-value
Receive health and nutrition-related information			
Yes	32 (2.7%)	45 (86.5%)	0.91
No	12 (23.7%)	7 (13.5%)	
	44 (100%)	52 (100%)	
Health and nutrition-related information sources			
Consultation from doctor or health worker (nutritionist/nurse)	1 (3.1%)	7 (15.6%)	0.13
Outreach from doctor or health worker (nutritionist/nurse)	3 (9.4%)	3 (6.7%)	
Teachers	0 (0%)	2 (4.4%)	
Family members	10 (31.3%)	11 (24.4%)	
Social media	18 (56.3%)	21 (46.7%)	
Printed media	0 (0%)	1 (2.2%)	
Total	32 (100%)	45 (100%)	

(86.5%). In both groups of female adolescents from urban and rural areas, there was comparable acceptance in their sources of information regarding health and nutrition with p = 0.91 (p > 0.05). Health and nutrition information sources were mostly collected from social media with 18 respondents (56.3%) from the rural group and 21 respondents (46.7%) from the urban group. However, there was no significant difference in health and nutrition information for both groups p = 0.13 (p > 0.05).

The respondents' acceptance of health and nutrition information topics was mostly topics related to "Unhealthy Foods," reaching up to 35 respondents (79.5%) in the rural group and 58 respondents (98.1%) in the urban group. In both groups, there was no significant difference in information acceptance related to the topic "Unhealthy Foods" with p = 0.05. The topics for health and nutrition information that were not exposed to the respondents were topics related to "Anemia," with 32 respondents 32 (72.7%) from rural group and 34 respondents (66.7%) from urban group. Peer influences for the rural group were found rather higher with 25 respondents (56.8%) as well as the urban group with 51 respondents (98.1). In both groups, there was a difference with p = 0.0 (p = 0.05). This information is presented in Table 3.

Table 3: Health and nutrition information topics

Variable	Rural	Urban	p-value
Menstrual health			
Yes	31 (70.5%)	44 (84.6%)	0.90
No	13 (29.5%)	8 (15.4%)	
Total	44 (100%)	52 (100%)	
Anemia			
Yes	12 (27.3%)	17 (33.3%)	0.66
No	32 (72.7%)	34 (66.7%)	
Total	44 (100%)	52 (100%)	
Unhealthy foods			
Yes	35 (79.5%)	51 (98.1%)	0.05
No	9 (20.5%)	1 (1.9%)	
Total	44 (100%)	52 (100%)	
Diet			
Yes	20 (45.5%)	35 (68.8%)	0.37
No	24 (54.4%)	16 (31.4%)	
Total	44 (100%)	52 (100%)	
Modern foods			
Yes	28 (63.6%)	44 (84.6%)	0.32
No	16 (36.4%)	8 (15.4%)	
Total	44 (100%)	52 (100%)	
Modern beverages			
Yes	18 (40.9%)	20 (58.8%)	0.17
No	26 (59.1%)	14 (41.2%)	
Total	44 (100%)	52 (100%)	
Peer influence			
Low	19 (43.2%)	1 (1.9%)	0.00
High	25 (56.8%)	51 (98.1%)	
Total	44 (100%)	52 (100%)	

Table 4 shows the acceptance of health and nutrition information associated with nutrition status. It indicated that the respondents who have received health and nutrition information mostly have normal nutrition status with 50 respondents present (78.1%). From those, four groups showed no significant difference with p = 0.29 (p > 0.05). Respondents who were highly exposed to peer influences mostly have normal nutrition status with 49 respondents (76.6%). This group did not show a significant difference with p = 0.77 (p > 0.05).

Table 4: Acceptance of health and nutrition information associated with nutrition status

Variable	Underweight	Normal	Overweight	Obesity	p-value
Receiving health and nutrition information					
Yes	7 (87.5%)	50 (78.1%)	18 (90%)	2 (50%)	0.29
No	1 (12.5%)	14 (21.9%)	2 (10%)	2 (50%)	
Total	8 (100%)	64 (100%)	19 (100%)	4 (100%)	
Peer influence					
Low	1 (12.5%)	15 (23.4%)	3 (15%)	1 (25%)	0.77
High	7 (87.5%)	49 (76.6%)	17 (85%)	3 (75%)	
Total	8 (100%)	64 (100%)	20 (100%)	4 (100%)	

Discussion

Information media has the property of channeling messages through the process of stimulating the thoughts, feelings, and will of a target to encourage the occurrence of a learning process in individual exposure to health and nutritional information is affected by the quality of information and quantity of content covering ease of access. Health-related content promotes a healthy lifestyle and ideal body shape in order for teenagers to have a healthy lifestyle. A large amount of nutrition-related information could give a good impact on nutrition intake and the introduction of new foods so that it can encourage them to change their eating habits [7]. Teenagers are more interested in finding health information according to their own needs. Frequent information exposure will affect the behavior of an individual to be fixed and accompanied by efforts in maintaining health against them through access to a health facility [14].

In both groups, namely, urban and rural groups, the sources of health- and nutrition-related information obtained were mostly from social media. Social media is becoming one of the sources of nutritional and health information for adolescents to form a Nutrition Literacy. Nutrition literacy is a skill required to understand health and nutrition-related information [15]. Adolescents with a good level of nutrition literacy will sufficiently have basic nutritional knowledge and be able to understand health- and nutrition-related information [16]. Looking at the characteristics of youth growth and development and technological prosperity both in urban and rural groups and the ease of access to information and health promotions are the factors that make social media popular with adolescents in obtaining health information [17].

Another study pointed that there was an association between healthy food consumption in female adolescents and obtaining information from sources such as teachers and family members [18]. However, in this study, the least source of health and nutrition information that the adolescents use was coming from teachers. Although early on, adolescents have the right to decide their own healthy eating choices, adolescents still need teachers to help them in obtaining autonomy. Teachers play a role in raising awareness of exercise, promoting healthy lifestyles, and being able to create attractive health- and nutrition-related content on social media frequently used by adolescents [17].

Peer influences in both groups were mostly high, which meant that peers could influence one's diet, body image, and exercise behavior as well as one's long-term habits through several processes of social influences [19], [20], [21], [22]. In a cohort study with a sample of female adolescents, it was found that there was a change in focus from family or parent to peer on their food selection [23].

In this study, there were peer influences differences in urban and rural groups. The age of adolescents is very vulnerable to be affected by the surrounding environment. Eating behavior was significantly related to the attitude of peer food selections [24]. Adolescents are becoming increasingly motivated to adjust to social groups and adopt behaviors from peers [25]. The influence of peers on eating behavior could affect both directly and throughout social media. Research conducted in adolescents aged 19–32 years old in the U.S., which showed the relationship between high volume and frequency of social media involvement and eating problems [26]. Some social media influenced eating habits both positively and negatively. The results of the study revealed that adolescents showed a common healthy diet with peers [27]. The systematic literature review study showed the influence of peers on child and adolescent eating behavior with increased consumption of energy-intensive and low-nourishment foods [28].

Peer influence has a significant positive effect on physical activity in adolescents, a study conducted in adolescents indicated that peer physical activity behavior could have a significant effect on one's physical activity behavior in the form of encouragement, support, and peers' presence during physical activity [23].

One of the factors affecting nutritional status is peer influences [29]. Individuals with similar weight status and weight-related behaviors were more likely to share social ties [30], [31], [32]. In particular, overweight students were more likely to make friends with each other [32], and adolescents who were not overweight were more likely to choose friends who were not overweight [30].

Another study in adolescents aged 11–18 years old showed a significant relationship between schoolmate eating behavior and weight [33]. The study focused on adolescent friendship networks concluded that peers have similar weight status and associated behaviors, and that friendship and behavioral networks are interdepend [20]. The body mass index (BMI) of peers predicts a change in BMI of adolescents [20].

Conclusion

In both groups of female adolescents from urban and rural areas, there was comparable acceptance in their sources of information regarding health and nutrition. There was a significant difference in the effect of peer influences between female adolescents in urban and rural areas. However, peer influences did not have any effect on their nutrition status. Furthermore, the school authorities have a big role in working up the peer influences in the process of giving exposure to influence health and nutrition in female adolescents.

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