

Peer empowerment and influencing factors in improving adolescents' healthy lifestyles in urban areas: a cross-sectional study

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Abstract

Adolescents' unhealthy lifestyles are greatly influenced by their peers. However, peers often struggle to positively impact healthy lifestyle choices. Therefore, empowering peer groups has become essential, although the factors that contribute to the effectiveness of peer empowerment programs are still unclear. This study aims to analyze the factors influencing peer empowerment in shaping healthy lifestyles among adolescents. This research employed a descriptive-analytic design with a cross-sectional approach. The sample comprised 205 adolescents residing in urban areas, selected using proportional stratified random sam-

pling. Data were collected through questionnaires and analyzed using multiple linear regression tests with $p < 0.05$. The findings indicate that peer empowerment in promoting healthy lifestyles among adolescents is influenced by attitude ($p = 0.000$; $t = 4.034$), perceived benefits ($p = 0.037$; $t = 2.098$), affect ($p = 0.000$; $t = 4.795$), and motivation ($p = 0.000$; $t = 7.298$). Health practitioners and relevant stakeholders should consider approaches that optimize adolescents' attitudes, perceived benefits, affect, and motivation in developing peer empowerment programs to promote healthy lifestyles among adolescents.

Introduction

Lifestyle plays a crucial role in determining individual health and illness.¹ Adolescents are particularly susceptible to adopting unhealthy lifestyles, including poor dietary habits, insufficient physical activity, increased sedentary behavior, and smoking.² Adolescence marks a pivotal stage in human development characterized by dynamic physical, emotional, and psychological transformations. Within this transitional period, individuals establish behavioral patterns that often endure into adulthood, underscoring the importance of fostering healthy lifestyle habits early on.³ Unhealthy lifestyle in adolescents has adverse health consequences, such as obesity, metabolic syndrome, cardiovascular diseases, decreased quality of life, and psychosocial disorders.⁴ In Indonesia, according to the Indonesian Pediatric Association (IDAI), cases of type 2 diabetes mellitus in adolescents will increase by 70% in 2023, which is attributed to lifestyle changes among adolescents. Over time, adolescents' dietary patterns and lifestyles undergo transitions that lead to potential risks of obesity and non-communicable diseases.⁵ Research shows that urban adolescents in Indonesia are found to consume fast food, energy drinks, and sweet and salty foods 1-3 times a week, which contributes to the obesity epidemic.⁶ Furthermore, adolescents spend significantly less time on physical activity compared to their screen time, which surpasses the recommended limits.⁷

Peers have a significant influence on adolescents' lifestyles.⁸ However, the role of peers in influencing adolescent health is still not optimal. For instance, adolescents in peer environments where smoking is prevalent are more likely to adopt smoking behaviors.⁹ Other research also indicates that peer influence is directly and significantly correlated with drug use among adolescents.¹⁰ Peers influence almost all aspects of adolescent life, from trivial matters such as music preferences, clothing, and food choices to more serious issues like illegal drug use or even risky sexual behavior.¹¹ Efforts to cultivate positive health behaviors during adolescence are vital for mitigating future health risks and enhancing long-term well-being. However, motivating adolescents to adopt and maintain healthy choices poses a formidable challenge.¹²

These phenomena demonstrate that peers have not yet devel-

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oped the capacity to change adolescents' healthy lifestyles. Empowerment has emerged as a key health promotion strategy that can help increase adolescent participation in improving health status.¹³ Addressing these concerns has emerged as a critical public health imperative, particularly in light of escalating rates of obesity, sedentary behavior, and related health challenges in adolescents.¹⁴ Developing peer empowerment programs to promote healthy lifestyles among adolescents has the potential to transform adolescent adaptation and behavior.¹⁵ Adolescent empowerment as peers is built on assets, critical awareness, agency, and voice participation.¹⁶ Comprehending the intricate determinants of health-related practices is essential for the development of effective public health initiatives.¹⁷ Factors influencing the optimization of peer empowerment in promoting healthy lifestyles among adolescents need to be identified as a foundation for peer empowerment intervention approaches. Unfortunately, research analyzing the factors contributing to peer empowerment in shaping healthy lifestyles among adolescents remains limited. The objective of this study is to analyze the determinant factors that can influence peer empowerment in shaping healthy lifestyles among adolescents.

Materials and Methods

This study employed a descriptive-analytic design with a cross-sectional approach. The study population comprised adolescents in urban areas of Surabaya, Indonesia. The research was carried out in junior high schools across four sub-districts in Surabaya, Indonesia. The inclusion criteria for this study were adolescents aged 13-15 years in Surabaya who did not have special needs. The sample size was calculated using the Slovin formula, resulting in 205 respondents. The number of respondents in each sub-district was determined using proportional stratified random sampling. Independent variables in this study included personal and environmental characteristics factors (age, parental education, culture, attitudes, school characteristics), perceived benefits, perceived barriers, self-efficacy, affect, motivation, and commitment to peer behavior in improving lifestyle. The dependent variable was peer empowerment, comprising assets, critical awareness, agency, voice, and participation in adolescent healthy lifestyles. The variables used are based on the Health Promotion Model (HPM) theoretical framework approach, empowerment theory, and youth empowerment program. HPM emphasizes the flow of health promotion behavior formation.¹⁸ Empowerment theory and youth empowerment programs describe the process of empowering adolescents through optimizing their capacity to play an active role in their surrounding environment.¹⁹

The study was conducted after obtaining permission from the Surabaya City Education Office, the schools involved, and students whose parents had completed and approved informed consent for participation in the research. Data were collected using questionnaires consisting of demographics, family culture, attitudes, school characteristics, perceived benefits, perceived barriers, self-efficacy, affect, motivation, commitment, and adolescent empowerment (assets, critical awareness, agency, voice, and participation). The questionnaires used were validated and reliable, and all were in Indonesian. The reliability of the questionnaire varies: family culture ($\alpha=0.88$), attitude ($\alpha=0.76$), school characteristics ($\alpha=0.81$), perceived benefits ($\alpha=0.96$), perceived barriers ($\alpha=0.78$), self-efficacy ($\alpha=0.95$), affect ($\alpha=0.97$), motivation ($\alpha=0.92$), commitment ($\alpha=0.93$), assets ($\alpha=0.94$), critical awareness ($\alpha=0.86$), agency ($\alpha=0.84$), voice and participation ($\alpha=0.90$).

The time required for respondents to complete the questionnaire was approximately 20 minutes. This study was analyzed using a multiple linear regression test (ordinary linear regression) with the backward method with $p<0.05$ in order to identify the independent factors that had the biggest impact on the dependent variable.

This study obtained approval from the Health Research Ethics Committee of the Faculty of Nursing, Universitas Airlangga, Indonesia, No. 2939-KEPK. This research applies ethical principles.

Table 1. Characteristics of respondents (n=205).

Characteristics	Frequency	%	Mean	SD
Age			14.12	0.75
13 years old	47	22.9		
14 years old	86	42.0		
15 years old	72	35.1		
Parental education			3.14	0.67
Low Education	17	8.3		
High Education	188	91.7		
Dietary culture			13.59	3.75
Low	105	51.2		
High	100	48.8		
Attitude			20.08	5.89
Negative	76	37.1		
Positive	129	62.9		
School characteristics			23.99	3.37
Poor	38	18.5		
Good	167	81.5		
Perception of benefits			7.24	1.25
Low	73	35.6		
High	132	64.4		
Barrier			11.83	1.71
Low	95	46.3		
High	110	53.7		
Self-efficacy			177.61	44.44
Low	114	55.6		
High	91	44.4		
Affect			36.20	7.47
Negative	101	49.3		
Positive	104	50.7		
Motivation			61.60	8.46
Low	104	50.7		
High	101	49.3		
Commitment			36.32	4.35
Poor	112	54.6		
Good	93	45.4		
Assets			116.34	14.16
Low	99	48.3		
High	106	51.7		
Critical awareness			19.98	3.47
Low	82	40.0		
High	123	60.0		
Agency			13.70	5.67
Low	99	48.3		
High	106	51.7		
Voice participation			24.96	5.95
Low	100	48.8		
High	105	51.2		
Peer empowerment in a healthy lifestyle			174.98	23.11
Low	108	52.7		
High	97	47.3		

ples; before filling out the questionnaire, the researcher explains the aims and objectives of the research, respondent rights, and research procedures to the parents of the adolescents. Eligible adolescents accessed the questionnaires after obtaining consent from their parents.

Results

The majority of participants were 14 years old (42%). A significant proportion of adolescents demonstrated positive attitudes (62.9%), and most reported good school characteristics (81.5%). Additionally, a high percentage of teenagers perceived high benefits (64.4%) related to healthy lifestyles. The data shows that slightly over half of the respondents reported positive affect (50.7%), high assets (51.7%), high agency (51.7%), and high voice and participation (51.2%). Notably, critical awareness was predominantly in the high category (60%). However, the findings also reveal some challenges. Most adolescents reported high perceived barriers to maintaining a healthy lifestyle (53.7%). Furthermore, a slight majority demonstrated low motivation (50.7%) and poor commitment (54.6%) to healthy lifestyle behaviors. Consequently, the overall peer empowerment in promoting healthy lifestyles among adolescents was predominantly in the low category (52.7%) (Table 1).

The results of the multivariate analysis indicate that the factors of attitude ($p=0.001$; $t=3.230$), obstacles ($p=0.034$; $t=2.136$), affect ($p=0.002$; $t=3.122$), and motivation ($p=0.000$; $t=6.402$) significantly influence asset factors for adopting a healthy lifestyle among adolescents. The critical awareness factor in adolescents for developing a healthy lifestyle is influenced by the obstacles they encounter ($p=0.003$; $t=2.987$), their affect ($p=0.000$; $t=5.934$), and their motivation ($p=0.000$; $t=5.585$). The factors affecting adolescents' agency in adopting a healthy lifestyle include parental education ($p=0.021$; $t=-2.323$), attitude ($p=0.025$; $t=2.264$), affect ($p=0.032$; $t=2.154$), and motivation ($p=0.018$; $t=2.386$). Factors

affecting adolescent participation in healthy lifestyle behaviors are affect ($p=0.000$; $t=5.109$) and motivation ($p=0.000$; $t=5.804$). In general, peer empowerment in adopting a healthy lifestyle is influenced by attitude ($p=0.000$; $t=4.034$), perceived benefits ($p=0.037$; $t=2.098$), affect ($p=0.000$; $t=4.795$), and the motivation possessed by adolescents ($p=0.000$; $t=7.298$) (Table 2).

The study findings show that the attitude factor towards assets has a positive influence ($B=0.462$), the perceived obstacle factor towards assets has a greater positive influence ($B=1.058$), the affect factor towards assets has a positive influence ($B=0.348$), and the motivation factor towards assets also has a positive influence ($B=0.654$). The perceived obstacle factor towards critical awareness has a greater positive influence ($B=0.354$), the affect factor towards critical awareness has a positive influence ($B=0.161$), and the motivation factor towards critical awareness has a positive influence ($B=0.138$). The parental education factor towards agency has a greater negative influence ($B=-1.331$), the attitude factor towards agency has a positive influence ($B=0.150$), the affect factor towards agency has a positive influence ($B=0.111$), and the motivation factor towards agency has a positive influence ($B=0.111$). The affect factor on adolescent voice participation has a positive influence ($B=0.250$), and the motivation factor on voice participation has a greater positive influence ($B=0.251$). Meanwhile, the attitude factor among teenagers towards peer behavior in a healthy lifestyle has a positive influence ($B=0.860$), the perceived benefit factor felt by teenagers towards peer behavior in a healthy lifestyle has a greater positive influence ($B=2.112$), the affect factor has a positive influence on peer behavior in a healthy lifestyle ($B=0.819$), and the motivation factor has a positive influence on peer behavior in a healthy lifestyle ($B=1.130$).

Discussion

This research examines the relationship between personal and environmental characteristics (age, parental education, culture,

Table 2. Results of the multivariate analysis test ($n=205$).

Variables	Regression Coefficient (B)	t	p-value	95% Confidence Interval	
				Lower	Upper
Peer empowerment in a healthy lifestyles					
Attitude	0.860	4.034	0.000	0.440	1.281
Perception of benefits	2.112	2.098	0.037	0.127	4.097
Affect	0.819	4.795	0.000	0.482	1.155
Motivation	1.130	7.298	0.000	0.825	1.435
Assets					
Attitude	0.462	3.230	0.001	0.180	0.745
Obstacle	1.058	2.136	0.034	0.081	2.035
Affect	0.348	3.122	0.002	0.128	0.568
Motivation	0.654	6.402	0.000	0.452	0.855
Critical awareness					
Obstacle	0.354	2.987	0.003	0.120	0.587
Affect	0.161	5.934	0.000	0.108	0.215
Motivation	0.138	5.585	0.000	0.089	0.186
Agency					
Parental education	-1.331	-2.323	0.021	-2.460	-0.201
Attitude	0.150	2.264	0.025	0.019	0.282
Affect	0.111	2.154	0.032	0.009	0.212
Motivation	0.111	2.386	0.018	0.019	0.202
Voice participation					
Affect	0.250	5.109	0.000	0.154	0.347
Motivation	0.251	5.804	0.000	0.166	0.337

attitudes, school characteristics), perceived benefits, perceived barriers, self-efficacy, affect, motivation, and commitment with components of peer empowerment in promoting healthy lifestyles among adolescents. The findings indicate that personal and environmental characteristics (attitudes), perceived benefits, affect, and motivation are associated with peer empowerment in promoting healthy lifestyles. Previous research has shown that adolescents with good perceptions of benefits and motivation to engage in healthy lifestyles yield significant results in their adopted healthy lifestyles.²⁰ Adolescent attitudes and behaviors are linked to peer behaviors, demonstrating that peer groups are considered to achieve social goals and enhance adolescents' social motivation.¹¹ This is consistent with the findings of this study, where positive attitudes and motivation towards healthy lifestyles form peer groups with healthy lifestyles. Adolescents in their development often seek to meet expectations influenced by their surrounding environment, so peer groups with positive affect in implementing healthy lifestyles have a positive impact on forming healthy behaviors.²¹ The components of the peer empowerment process in promoting healthy lifestyles include assets, critical awareness, agency, and voice participation.

Research findings show that personal and environmental characteristics (attitudes), perceived barriers, affect, and motivation influence assets. Assets are the skills, opportunities, and values that serve as resources for adolescents' resilience and strength in maintaining healthy lifestyles.²² Assets in their role encompass commitment, motivation, integrity and responsibility, planning, decision-making, self-esteem, empowerment, and social support.²³ This study's findings indicate that barriers have the most significant impact on assets, resulting in adolescents lacking strong resources for maintaining healthy lifestyles. Barriers are caused by individual factors, facilities, support, and the surrounding environment (school, peers, and family), preventing adolescents from adopting healthy lifestyles.²⁴ Assets that have a substantial influence on adolescents' resources for maintaining healthy lifestyles are family and peer support.²⁵ Additionally, adolescents' understanding of the healthy lifestyle concept can enhance their ability to maintain healthy lifestyles, where ease of access to information and support from the surrounding environment, especially peers, will yield more significant results.²⁶

The research results show that barriers, affect, and adolescent motivation influence adolescents' critical awareness of healthy lifestyles. Critical awareness refers to the active consideration and development of analysis regarding adolescents' beliefs and knowledge about maintaining healthy lifestyles.²⁷ Adolescence is a critical phase for individuals to establish healthy lifestyles, as health behaviors adopted during this period will play a crucial role in later vulnerabilities.²⁸ Previous research states that adolescents are aware of the importance of healthy lifestyles; however, most adolescents do not maintain healthy lifestyles due to perceived barriers.²⁹ Adolescents recognize the importance of adopting healthy lifestyles, but this does not correspond with the health behaviors they implement, which is associated with potentially insufficient knowledge to improve adolescents' lifestyles.³⁰ This relates to the aspects of assets, agency, and voice participation possessed by adolescents.

Individual and environmental characteristics (parental education and attitudes), affect, and motivation influence the agency aspect. The agency aspect refers to adolescents' ability to act and make free and informed choices to achieve the goal of implementing healthy lifestyles.³¹ With the power of knowledge they possess, adolescents acquire skills such as problem-solving, communication skills, building self-efficacy beliefs, and facilitating adoles-

cents to play a more active role in their surroundings or with other adolescents. The agency aspect cannot be well achieved when adolescents' asset and critical awareness aspects are not well-formed. Adolescents' environmental characteristics influence their lifestyle choices. The role of parents, associated with their educational background and knowledge of adolescent healthy lifestyles, has a significant impact on changes in adolescent behavior.³² Previous research states that parental education influences adolescent behavior, but higher parental education levels do not guarantee the formation of healthy behaviors in adolescents.³³ Similarly, the results of this study show that low parental education levels influence health behaviors. Previous research also explains that healthy lifestyles adopted by adolescents are related to the attention and awareness of parents and the surrounding environment regarding the importance of healthy lifestyles.³⁴ Collaboration among parents, peers, and health programs implemented in schools and communities can help significantly improve healthy lifestyles among adolescent.^{33,34}

The results of this study also show that affect and motivation influence adolescents' voice participation in maintaining healthy lifestyles. The voice participation aspect refers to adolescents' belief in forming, expressing, and voicing thoughts, views, and emotions that influence healthy lifestyle choices.^{16,35} Previous research states that the role of adolescents in actively engaging in health promotion about healthy lifestyles becomes a new innovation that can increase the interest of other adolescents in adopting healthy lifestyles.³⁶ Adolescents' involvement in adopting healthy lifestyles is influenced by encouragement from their surrounding environment, such as peers, parents, and teachers, including policies at the community, school, or home level.³⁷ Previous research states that adolescent healthy lifestyle behaviors are significantly related to adolescents' ability to engage in health literacy and education about the importance of healthy lifestyles for themselves or their environment.^{20,21} Overall, the aspects of assets, critical awareness, agency, and voice participation are part of the peer empowerment process in healthy lifestyles among adolescents.

The limitations of this study indicate that the findings do not represent the adolescent population in broader contexts, such as rural areas, as the sample remains confined to urban settings.

Conclusions

The supporting components of peer empowerment in promoting healthy lifestyles among adolescents, which include assets, critical awareness, agency, and voice participation, are not yet optimal. This study found that attitudes, perceived benefits, affect, and motivation influence the supporting components of peer empowerment in shaping adolescents' healthy lifestyles. This study recommends the need to develop peer empowerment programs to improve healthy lifestyles among adolescents, with a focused approach on the components of assets, critical awareness, agency, and voice participation. The development of peer empowerment programs needs to involve parents, teachers, and school policies that can support them.

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