Peer Counselors as Catalysts for Change: A *Narrative Review* on Success in Improving Adolescent Nutrition

Uji Utami[1], Eti Poncorini Pamungkasari[2*], and Annang Giri Moelyo[3]

[1] Doctoral Program in Public Health, Faculty of Medicine, Universitas Sebelas Maret, Indonesia
[1] STIKes Mitra Husada Karanganyar, Indonesia
[2,3] Faculty of Medicine, Universitas Sebelas Maret, Indonesia
etiponco@staff.uns.ac.id

Abstract. Adolescents are prevalent to face important nutritional issues including undernutrition, overnutrition and micronutrient deficiencies. Peer counselor significantly influences the adolescents' dietary habit and lifestyle. Peer counseling approach is proven to be effective strategy for promoting knowledge, attitude and behavior towards balanced nutrition principles. This study aimed to review the effectiveness and key success factors of peer counseling programs in improving adolescents' nutritional status. A narrative review was conducted using three electronic databases (PubMed, ScienceDirect, and SpringerLink). Following PRISMA-guided screening, **seven articles** published in the last ten years met the inclusion criteria and were analyzed. The findings show that peer counseling is effective to enhance adolescents' nutritional status. The success of peer counselor program is mainly influenced by a structured curriculum/model, comprehensive counselor training, continuous monitoring and also sustained commitment of peer counselor during the intervention. The results denote peer counselor is the effective and culturally adaptive approach to overcome adolescent nutritional issues

Keywords: Peer Counselor, Adolescent, Nutritional Status, Narrative Review

1 Introduction

Adolescents in Indonesia (ages 10 – 19 years) are confronted with a triple burden of nutritional issues: undernutrition, overnutrition, and insufficient micronutrient intake. Approximately one-quarter of young people aged 13-18 years experienced stunting or are short, 9 percent are thin or have a low BMI, while 16 percent are overweight or obese. In addition, about a quarter of female adolescents suffer from anemia.. In 2018, a qualitative-quantitative UNICEF study on nutrition and physical activity showed that physical activity at school is low, with only 25 percent of them consuming sources of iron and other essential micronutrients, such as animal and plant-based foods (UNICEF, 2021).

Nutritional problems in adolescents are caused by various factors such as genetics, diet, physical activity, and socio-cultural factors. One of the causes of changes in eating

H. Saptaningtyas et al. (eds.), *Proceedings of the 4th International Conference on Multidisciplinary Studies 2025 (ICOMSI 2025)*, Advances in Social Science, Education and Humanities Research 1012,
https://doi.org/10.2991/978-2-38476-571-3_20

habits is the role of the social environment, namely peer influence. Peer influence plays a significant role in making unhealthy food choices and can lead to eating disorders. (Fatmawati et al, 2020).

Adolescents have a close relationship with their peers in daily life. The role of peers can be used to increase nutritional knowledge in adolescents. Peer nutrition counseling is the delivery/provision of messages to increase peer self-confidence in adolescents so that they know, understand, and correctly implement the recommended nutritional guidelines for adolescents experiencing nutritional problems (Wahyuningsih, 2020).

The objective of this narrative review study is to determine the effectiveness of peer counselors in improving the nutritional status of adolescents. This narrative review study is expected to provide information about the stages, strategies, and models of peer counselors available in several countries so that they can be applied to be developed and help overcome adolescent nutritional issues.

2 Methodology

The method used in this research is a narrative review. The articles used were research articles taken from 3 databases: Pubmed, ScienceDirect, and SpringerLink. The search was carried out using the keywords *adolescent OR youth OR teens AND "peer education" OR "peer-led" OR "peer-group" AND "nutritional status"*. The search was limited to articles published in English within the last 10 years.

The inclusion criteria for the article search were: 1) Original research articles with quantitative or mixed-methods designs, 2) Published in English and available in full-text format, 3) Conducted among adolescents aged 10–19 years, 4) Implemented **peer counseling, peer education, or peer-led interventions** related to nutrition or healthy lifestyle behaviors., 5) Reported outcomes related to **nutritional status**, including dietary behaviors, nutritional knowledge, physical activity, or anthropometric indicators. Articles were excluded if they : 1) were reviews, editorials, books, conference abstracts, or protocols, 2) Involved populations outside the adolescent age range or special groups such as pregnant or married adolescents, 3) Did not focus on peer-based interventions, 4) Reported outcomes unrelated to nutrition or nutritional status, 5) Were not available in full-text or not published in English

The study selection followed four PRISMA-guided stages: **identification, screening, eligibility, and inclusion**. After removing duplicate records, titles and abstracts were screened for relevance. Full-text articles were then assessed against the inclusion and exclusion criteria. A total of **seven articles** met all eligibility criteria and were included in the final review.

Data from the included studies were systematically extracted using a standardized table capturing study setting, design, population, intervention characteristics, duration, outcome measures, and key findings**.** Data analysis was conducted using **narrative synthesis**, focusing on identifying recurring patterns, intervention models, underlying behavioral theories, and factors associated with successful outcomes. The findings were

grouped into thematic categories, including intervention models, training of peer counselors, counselor commitment, target population characteristics, and monitoring mechanisms.

The literature retrieval process is illustrated in the diagram below:

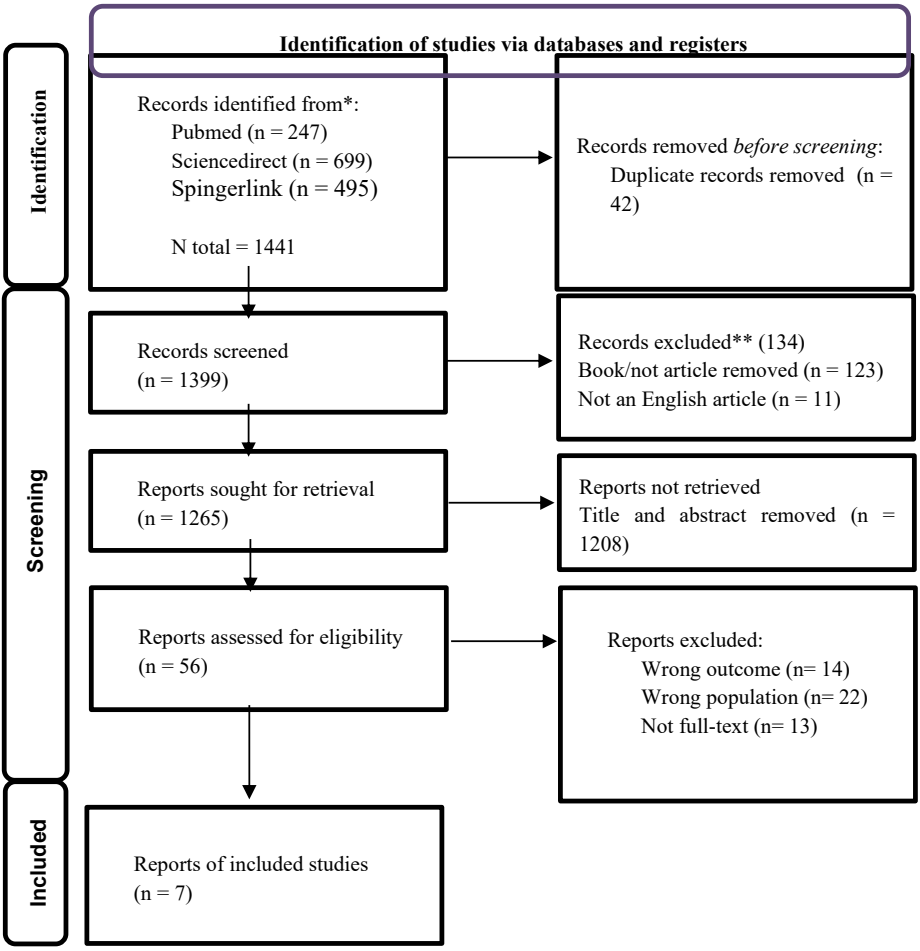

Fig. 1. PRISMA Flow Diagram

3 Result and Discussion

3.1 Synthesis of the Existing Research

Table 1. Articles Synthesize Table

Author	Setting	Study Design	Population	Intervention	Duration	Primary Outcome	Secondary Outcome	Instrument
Sato et al., 2016	30 recreational sites located in downtown Baltimore	RCT	The study population consisted of 30 recreational sites, with a pilot study utilizing 14 randomly selected sites. To qualify as a youth peer leader, candidates were required to complete an application and interview process, followed by 12 sessions of a training program. A total of 16 peer leaders were selected and compensated for completing the training program and implementing the intervention at the target recreational sites, where they engaged a total of 971 adolescents visiting the recreation centers.	The intervention group received nutrition education at the recreation centers, delivered by the peer leaders.	7 months	Knowledge, Healthy food consumption behavior	Physical activity, Vegetables consumption	Questionnaire
Sharif Ishak et al., 2020,	2 schools in Hulu Langat district, Selangor, Malaysia	Quasi-experimental	The sample was drawn by calculating the students' average BMI, resulting in 34 participants for the intervention group and 42 participants for the control group.	The intervention group was administered a health education program, referred to as 'Epal,' which utilized a peer-	20 weeks	Knowledge, attitudes, and healthy eating practices	BMI, Waist Circumference, and Body Fat Percentage	Knowledge, Attitudes, and Practices (KAP) of food consumption styles were measured using the EPaL Questionnaire (KAP-

Author	Setting	Study Design	Population	Intervention	Duration	Primary Outcome	Secondary Outcome	Instrument
				delivered module.				ELQ), which was developed by the research team prior to data collection
Foley et al., 2017	23 high schools in Sydney, Australia	Quasi-experimental (pre-post control)	23 high schools in Sydney, Australia, Total of the recruitment of 415 grade 10 (aged 15–16 years) who voluntarily served as peer leaders to deliver the SALSA program to grade 8 students (aged 13–14 years)	The SALSA, a school-based education program led by peer educators, was designed to motivate secondary school students to improve their healthy diet habits, increase their physical activity, and promote healthy sedentary behaviors.	12 months	Energy balance	Physical activity, dietary intake, healthy sedentary behavior	SALSA Questionnaire MVPA for assessing physical activity
Huitink et al., 2021	4 high schools in Netherlandocated near a supermarket (3 schools served as intervention sites and 1 school as a comparison site)	Quasi Experimental	432 respondents, consisting of 351 students in the intervention group (drawn from 3 schools) and 81 students in the comparison group (drawn from 1 school)	The intervention group received health education treatment and peer-led mentorship delivered through the trained Healthy Supermarket Coach (HSC) program.	4 months	Knowledge of nutrition and adolescents' attitudes toward dietary habit	Adolescents' dietary behavior	Questionnaires on healthy nutrition knowledge and adolescents' dietary attitudes
Tarro, Aceves-martins & Papell-	Primary and secondary schools in Spain	RCT	The intervention group consisted of 8 primary schools (375 students) and 4 secondary schools	The intervention group received health education treatment and	10 months	Physical activity and fruit intake behaviors	Mobile phone use, vegetable, soft drink	Questionnaire on physical activities (AVVAL) and

Author	Setting	Study Design	Population	Intervention	Duration	Primary Outcome	Secondary Outcome	Instrument
garcia, 2017			(94 students). The control group consisted of 8 primary schools (327 students) and 3 secondary schools (98 students)	peer-led mentorship, delivered by trained peer leaders through a 5-stage training program based on the EYTO-KIDS PROJECT			and fast food intake	food intake behavior (EnKin)
Santos et al., 2014	Primary school in Manitoba, Canada	RCT	647 sudents at Primary School in Manitoba, Canada (aged 6-12)	Healthy Buddies curriculum as the intervention	8 months	BMI and waist circumference	Physica activities, Self-esteem, body goal, knowledge about healthy life and healthy foods	Floorscale (Seca 869) and Stadiometer (Seca 2017)
Bell et al., 2017	Schools	RCT	Intervention group: 304 students, 310 students of control group	AHEAD technique was applied as intervention	10 weeks	Healthy dietary habits	Physical activity	self-report behavioural questionnaires

Based on Table 1, 7 articles were found that examined the role of peer educators in improving adolescent nutrition. The research settings took place in schools and communities (supermarkets and recreational centers) because, overseas, health education with peer assistance is mostly carried out in schools and communities.

Clinical interpretation in this narrative review demonstrates that peer counseling interventions are generally effective in improving adolescents' nutritional outcomes, particularly in enhancing nutritional knowledge and promoting healthier dietary behaviors. However, the magnitude and consistency of these effects vary considerably across studies, indicating that peer counseling is not universally effective but highly dependent on contextual and implementation factors.

The literature review results show that peer counselor interventions are proven to improve adolescents' nutritional status, although the level of success varies depending on several factors, including:

3.2 Intervention Model and Underlying Behavior Theory

School-based interventions with structured modules (e.g., EPaL, SALSA, and Healthy Buddies) are generally based on Social Cognitive Theory (SCT) or Social Learning

Theory, which emphasizes the importance of modeling, reinforcement, and self-efficacy, as shown in the research by Santos et al. (2014) and Saffari et al. (2025), these models have been shown to improve nutritional knowledge, positive attitudes, and several anthropometric indicators such as waist circumference. Research conducted by Tarro et al., 2019 concluded that peer-led social marketing models are more successful in influencing certain behaviors (e.g., reducing consumption of sugary drinks or fast food), because they involve adolescents in the co-creation process so that the message is more relevant and appealing. Huitink et al. (2020) and Samad et al. (2024) mention that interventions that integrate ecological or community-based approaches, such as nutrition education in supermarkets or recreation centers, show more tangible success in connecting knowledge with daily actions. This supports the ecological theory assumption that behavior is not only determined by individual factors, but also by the social and physical environment in which adolescents make decisions. Several intervention models found in this literature review study are consistent with the research of Lavelle et al. (2023) and Ekubagewargies et al. (2025), which state that in general, there are several prominent intervention models in the implementation of peer counseling, namely school-based peer-led education, cross-age peer mentoring, peer diffusion of innovations, peer-led social marketing, and real-world peer education.

3.3 Training

Training is proven to be a key success factor for peer counselors in improving adolescents' nutritional status. Studies show that structured training covers material on nutrition, body image, and healthy lifestyles (Sharif Ishak et al., 2020; Santos et al., 2014), as well as role-play and simulation methods to practice communication skills (Foley et al., 2017), thereby increasing the effectiveness of message delivery. Participatory and creative approaches through campaign co-creation, such as in the EYTO-Kids program, can increase motivation and ownership of the message (Tarro et al., 2019). In addition, the duration and intensity of the training influence the long-term impact of the intervention, tending to affect indicators of improved nutritional status such as anthropometry, while short training mainly increases knowledge (Santos et al., 2014; Sharif Ishak et al., 2020). Another important factor is continuous supervision and support from the school or community, which maintains the consistency of the counselors (Sato et al., 2016), as well as a focus on simple messages so that they are easily understood and transmitted (Bell et al., 2017). Training that links material to real situations, such as supermarkets, is also proven to facilitate the transfer of knowledge to daily practice (Huitink et al., 2020).

3.4 Commitment of Peer Counselors

The commitment of peer counselors is an important aspect that determines the success of the program in improving adolescents' nutritional status. This commitment is reflected in the peer educators' intrinsic motivation, their consistency in conveying messages, and their willingness to be a role model for their peers. Several studies show that the success of the peer counseling program increases when counselors feel they gain personal benefits from their role. For example, in the SALSA program in Australia, senior students acting as peer leaders not only changed the nutritional behavior of junior students but also improved their own eating patterns. This shows that commitment is influenced by the existence of a double benefit perceived by the counselors (Foley et al., 2017). Likewise, in the Healthy Buddies program in Canada, peer mentors showed

increased self-efficacy and healthy behavior, which in turn strengthened their consistency in teaching material to younger students (Santos et al., 2014). The commitment of peer counselors is also influenced by the level of active involvement in the design of the intervention. The EYTO-Kids program in Spain involved adolescents in designing health campaigns based on social marketing, so they felt ownership of the message being conveyed. This involvement increases the sense of social responsibility while strengthening the intrinsic motivation to commit to the program (Tarro et al., 2019). Conversely, the AHEAD intervention in the UK found that the low commitment of some peer counselors was due to the overly complex intervention message, making it difficult for peer leaders to disseminate it consistently (Bell et al., 2017). Another factor that contributes to commitment is social and environmental support. The BHCK program in the United States affirms that peer counselors' commitment is better maintained when they receive support from the community and mentoring from adult facilitators (Sato et al., 2016). Likewise, school-based interventions such as EPaL and HSC show that the sustainability of the counselor's role is heavily influenced by the involvement of school institutions and teachers in facilitating activities (Sharif Ishak et al., 2020; Huitink et al., 2020).

3.5 Target

Studies show that interventions targeting early adolescents (12–14 years) tend to be more effective than older adolescents, because at this phase peer influence is at its peak. The Healthy Buddies program, which involved elementary school students as the target, showed a significant impact on reducing waist circumference and increasing nutritional knowledge, because the education received came from an older but still relevant role model (Santos et al., 2014). Likewise, SALSA targeted Grade 8 students as the intervention recipients, with Grade 10 students as counselors, which was proven to increase fruit and vegetable consumption and reduce sweetened drinks (Foley et al., 2017). In addition to age, the simplicity and specificity of the educational message target are also determinants. The AHEAD program failed to show significant results because the message target was too complex (nutrition and physical activity simultaneously), making it difficult to understand and consistently transmit (Bell et al., 2017). Conversely, the EPaL program, which targeted improved positive body image, nutritional knowledge, and physical activity in a structured manner, resulted in increased knowledge, although behavioral changes were still limited (Sharif Ishak et al., 2020). The context factor also influences target setting. The HSC program in the Netherlands specifically targeted adolescent shopping behavior in supermarkets, focusing on label reading skills and meal planning. This contextual target made it easier for participants to connect knowledge with real practice (Huitink et al., 2020). Likewise, BHCK targeted young adolescents in low-income communities, focusing on healthy food access and practical skills such as simple cooking, which increased participant engagement (Sato et al., 2016). Social marketing-based interventions such as EYTO-Kids show that success is greater when the target is specific behavior relevant to daily life, such as reducing fast food consumption or increasing physical activity, compared to overly general targets (Tarro et al., 2019).

3.6 Follow-Up and Monitoring

Continuous follow-up and monitoring are proven to be important factors in the success of peer counselors in improving adolescents' nutritional status. The Healthy Buddies study in Canada and BHCK in the United States showed that the supervision of teachers, facilitators, and the community maintained the consistency of message delivery and the motivation of peer leaders (Santos et al., 2014; Sato et al., 2016). School-based programs such as SALSA and EPaL also confirm that routine evaluation post-sessions helps strengthen the skills of peer counselors (Foley et al., 2017; Sharif Ishak et al.,

2020), while HSC emphasizes the importance of monitoring in real contexts such as supermarkets to ensure the transfer of knowledge to practice (Huitink et al., 2020). Conversely, the lack of monitoring in the AHEAD program contributed to the low effectiveness of diffusing complex messages (Bell et al., 2017). The EYTO-Kids intervention showed that monitoring of adolescent campaigns by researchers and teachers was able to maintain the relevance and commitment of peer leaders (Tarro et al., 2019). Thus, structured monitoring through supervision, routine evaluation, and institutional support are prerequisites for the success of peer counselors in producing changes in adolescents' nutritional behavior.

The practical implications, these findings indicate that peer counseling programs need to be designed with clear and specific behavioral goals, supported by comprehensive training and ongoing supervision for peer counselors. In addition, integration with a supportive environment, such as school policies and community context, is important to ensure that increased knowledge can be translated into daily practice. With a focused and structured approach, peer counseling has the potential to be an effective, culturally adaptive, and relatively efficient strategy in efforts to improve adolescent nutrition, especially in resource-limited settings.

4 Conclusion

The results of the literature review show that peer counselor interventions are proven to be effective in improving adolescents' nutritional status, both in the aspects of knowledge, attitude, and healthy nutritional behavior. The determinants of intervention success include: (1) structured and intensive training to equip peer counselors; (2) peer counselor commitment; (3) setting the target; and (4) continuous follow-up and monitoring. Practically, these findings suggest that peer counseling programs should be designed with clear behavioral targets, comprehensive training, and ongoing supervision, and be integrated within supportive school and community environments to ensure effective translation into daily practice. Peer counseling thus represents a feasible and culturally adaptive strategy to address adolescent nutrition challenges. Future research should focus on longitudinal and experimental studies to evaluate long-term effects, explore implementation across diverse contexts, and examine standardized training and monitoring models to strengthen program effectiveness.

Acknowledgments. We extend our gratitude to STIKes Mitra Husada Karanganyar and Sebelas Maret University for their support, enabling the authors to complete this narrative review and we like to express their sincere gratitude to the Ministry of Higher Education, Science, and Technology of the Republic of Indonesia (Kemdiktisaintek) for the financial support provided through the **Doctoral Study Completion Scholarship 2025**, which enabled the completion of this study.

References

1. Bell, S.L. et al. (2017) “Lessons from a peer-led obesity prevention programme in English schools,” (April 2014), 250–259. https://doi.org/10.1093/heapro/dau008.
2. Ekubagewargies, D. T., Chuka, A., Tesfaye, Y., & et al. (2025). Effectiveness of peer-led nutrition education interventions on dietary behaviors of adolescents: A systematic review. Frontiers in Public Health, 13, 12166173. https://pmc.ncbi.nlm.nih.gov/articles/PMC12166173/
3. Fatmawati, I. dan Wahyudi, C.T. (2020) The Correlation Between Peer Group Support and Overweight Among Adolescents In Junior High School Pamulang Sub-District Tangerang Selatan,” 13, 41–45.
4. Flores-Vázquez, D., Rodríguez-Martín, A., Pérez-Corral, I., & et al. (2024). Peer mentoring intervention to promote healthy eating and physical activity in adolescents: A pilot randomized controlled trial. International Journal of Environmental Research and Public Health, 21(2), 47244. https://pmc.ncbi.nlm.nih.gov/articles/PMC11047244/
5. Foley, B.C. et al. (2017) “Evaluation of a peer education program on student leaders’ energy balance-related behaviors,”1–8. https://doi.org/10.1186/s12889-017-4707-8.
6. Gardner, L. et al. (2021) “Adolescent Peer Influence on Eating Behaviors via Social Media : Scoping Review - PMC Adolescent Peer Influence on Eating Behaviors via Social Media : Scoping Review,” 23(6), 1–14. https://doi.org/10.2196/19697.
7. UNICEF (2021) “Strategi Komunikasi Perubahan Sosial Dan Perilaku Dan Meningkatkan gizi remaja di Indonesia.” UNICEF Indonesia
8. Huitink, M. et al. (2021) “The Healthy Supermarket Coach: Effects of a Nutrition Peer-Education Intervention in Dutch Supermarkets Involving Adolescents With a Lower Education Level.,” Health education & behavior : the official publication of the Society for Public Health Education, 48(2), 150–159. https://doi.org/10.1177/1090198120957953.
9. Id, S.R.B.V. et al. (2018) “Effectiveness of school-based physical activity and nutrition interventions with direct parental involvement on children ’ s BMI and energy balance-related behaviors – A systematic review,” 1–24.
10. Kesehatan, K. et al. (2020) “Gizi saat remaja tentukan kualitas keturunan,” 7–8.
11. Kohlstadt, I.C. et al. (2015) “Youth peers put the ‘ invent ’ into NutriBee ’ s online intervention,” Nutrition Journal, 1–8. https://doi.org/10.1186/s12937-015-0031-2.
12. Kusuma, T.U. dan Gizi, E. (2022) “Peran Edukasi Gizi Dalam Pencegahan Anemia Pada Remaja Di Indonesia : Literature Review The Role Of Nutrition Education In Anemia Prevention In Adolescent In Indonesia : Literature Review,” 4(1).
13. Lavelle, H. V., Knopp, J., Gunther, C., & Hopkins, L. C. (2023). Peer mentoring and peer-led interventions to improve health outcomes in adolescents: A systematic review. Nutrients, 15(12), 2658. https://doi.org/10.3390/nu15122658
14. Saffari, M., Sharifirad, G., & Chen, H. (2025). Applications of Social Cognitive Theory in adolescent health behavior interventions: Implications for nutrition outcomes. Obesity Science & Practice, 11(1), e70044. https://doi.org/10.1002/osp4.70044
15. Samad, N., Worsley, A., & Ridley, S. (2024). School-based interventions to promote healthy eating in adolescents: An umbrella review. International Journal of Behavioral Nutrition and Physical Activity, 21(1), 668. https://doi.org/10.1186/s12966-024-01668-6
16. Santos, R.G. et al. (2014) “Effectiveness of Peer-Based Healthy Living Lesson Plans on Anthropometric Measures and Physical Activity in Elementary School Students A Cluster Randomized Trial.” https://doi.org/10.1001/jamapediatrics.2013.3688.

17. Sharif Ishak et al. et al. (2020) "Effectiveness of a school-based intervention on knowledge, attitude and practice on healthy lifestyle and body composition in Malaysian adolescents," 1–12.
18. Sato, P.M. et al. (2016) "A youth mentor-led nutritional intervention in urban recreation centers : a promising strategy for childhood obesity prevention in low-income neighborhoods," 31(2), 195–206. https://doi.org/10.1093/her/cyw011.
19. Siddiqui, M. et al. (2020) "REVIEW ARTICLE A systematic review of the evidence on peer education programmes for promoting the sexual and reproductive health of young people in India." https://doi.org/10.1080/26410397.2020.1741494.
20. Tarro, L., Aceves-martins, M. dan Papell-garcia, I. (2017) "A Youth-Led , Social Marketing Intervention Run by Adolescents to Encourage Healthy Lifestyles among Younger School Peers (EYTO-Kids Project): A Protocol for Pilot Cluster Randomized Controlled Trial (Spain)." https://doi.org/10.3390/ijerph14080923.
21. Vuurberg, G. et al. (2019) "The effectiveness of interprofessional classroom-based education in medical curricula : A systematic review," Journal of Interprofessional Education & Practice, 15(May 2018), 157–167. https://doi.org/10.1016/j.xjep.2019.01.007.
22. Wahyuningsih, R. (2020) "Pemberdayaan teman sebaya dalam meningkatkan pengetahuan gizi remaja kelebihan berat badan," 5(September), 125–128.
23. Yip, C. et al. (2016) "Peer-led nutrition education programs for school-aged youth : a systematic review of the literature," 31(1), 1–9. https://doi.org/10.1093/her/cyv063.