The Impact of *Magic Lift-The-Flap Books* on Knowledge and Attitudes of Children Regarding Obesity Prevention at SD IT Iqra 2, Bengkulu City

Sevira Eka Azzahra[1], Lissa Ervina[1], Wisuda Andeka Marleni[1]

[1]Promosi Kesehatan, Politeknik Kesehatan Kemenkes Bengkulu

Email correspondence: lissa_ervina@poltekkesbengkulu.ac.id

Track Record Article

Revised: 09 March 2026
Accepted: 08 June 2026
Published: 22 June 2026

How to cite :
Azzahra, S. E., Ervina, L., & Marleni, W. A. (2026). The Impact of Magic Lift-The-Flap Books on Knowledge and Attitudes of Children Regarding Obesity Prevention at SD IT Iqra 2, Bengkulu City. *Contagion : Scientific Periodical of Public Health and Coastal Health*, 8(2), 223–235.

Abstract

The issue of imbalanced nutrition among elementary school children became a health problem that could impact children in the future, such as obesity. The effects could include health and psychosocial problems in children. One of the factors that caused this condition was the lack of knowledge and attitudes among children. As a result, the Magic Lift-The-Flap Book is an example of the kind of interactive media that might be utilized to enhance children's understanding and beliefs. This study examines the effect of the Magic Lift-The-Flap Book on children's knowledge and attitudes regarding obesity prevention at SD IT Iqra 2, Bengkulu City. A quantitative pre-experimental study with a single-group pre-test and post-test design was conducted. The sample consisted of 40 fifth-grade students aged 10–12 years who were randomly selected from a population of 129. Data were collected via questionnaires and analyzed using the Wilcoxon Signed Rank Test. The result of this study indicated that students' knowledge scores rose from a mean of 69.25 prior to the intervention to 88.00 following the use of the Magic Lift-The-Flap Book. Similarly, the average attitude score improved from 24.50 prior to the intervention to 36.58 after the intervention. These findings demonstrated that the Magic Lift-The-Flap Book exerted a statistically significant influence on children's knowledge and attitudes toward obesity prevention at SD IT Iqra 2, Bengkulu City, as indicated by a p-value of <0.001. Therefore, the Magic Lift-The-Flap Book was expected to function as an engaging educational medium to enhance elementary school children's knowledge and attitudes regarding obesity prevention

Keywords: Obesity, Magic Lift-The-Flap Book, Knowledge, Attitude

INTRODUCTION

Childhood is a critical stage characterized by rapid growth and developmental changes. Children are generally classified into three age groups: toddlers (1-5 years), early childhood (5-6 years), and school-aged children (6-10 years) (Aini, N. D *et al*., 2023). Elementary school children, in particular, begin to develop independence and establish normative boundaries, yet remain highly vulnerable to nutritional and health problems (Dungga, 2020). Imbalanced nutrition among this age group constitutes a major public health concern, as it can have long-term consequences, including the risk of obesity (Zulaekah & Oktaria, 2020).

Obesity is defined as an abnormal accumulation of body fat resulting from a prolonged imbalance between energy intake and energy expenditure (Vajravelu *et al*., 2023). This condition places children at considerable risk, including impaired physical functioning and an increased likelihood of developing chronic health problems later in life (Kemenkes RI, 2022). Beyond physical health consequences, obesity also exerts psychological and social effects, contributing to reduced academic achievement, diminished quality of life, and heightened

vulnerability to stigma and bullying, all of which can undermine self-esteem (Ali *et al*., 2024). Consequently, the prevention of obesity from an early age is essential, as lifestyle patterns established during childhood often persist and shape long-term health outcomes (Zahari *et al*., 2022).

Obesity has emerged as a global public health issue with profound implications for human health and well-being. Each year, it contributes to millions of deaths worldwide through associated health complications (Sumarni dan Bangkele, 2023). Current global estimates indicate that more than one billion people are living with obesity, including children and adolescents, underscoring its status as one of the most pressing public health challenges (NCD Risk Factor Collaboration [NCD-RisC], 2024). Furthermore, the prevalence of overweight among children and adolescents has continued to rise in recent years, affecting both sexes, with 19% of girls and 21% of boys classified as overweight in 2022 (WHO, 2024).

Statistics from the Bengkulu City Health Office (2024) reported that the prevalence of obesity among elementary school students reached 3.0%, with the highest proportion observed in the Sawah Lebar Community Health Center area, where 11% of children were classified as obese. At SD IT Iqra 2 Bengkulu, the prevalence was notably higher, reaching 30.9%. In response to the significant health risks posed by childhood obesity, the Indonesian government has introduced several strategic programs to reduce obesity rates. The Ministry of Health has set a target of lowering the national obesity rate by 3% by 2030. One key initiative is the Nusantara Movement to Reduce Obesity (GENTAS), which emphasizes raising public awareness and encouraging community participation in maintaining ideal body weight (Rahmawati *et al*., 2023). This effort is reinforced by Presidential Instruction No. 1 of 2017 on the Healthy Living Community Movement (Germas), which promotes healthy behaviors such as engaging in at least 30 minutes of daily physical activity, regularly consuming fruits and vegetables, and participating in health education programs (Cahyani *et al*., 2020). Early prevention is also supported through the Germas Safe Food Awareness Movement (Germas SAPA), which mobilizes health facilitators, cadres, teachers, school principals, and canteen staff to educate children on choosing healthy foods and snacks, particularly fruits (Kemenko PMK, 2023).

To strengthen children's knowledge and attitudes toward obesity prevention, interactive and engaging media are essential. One such media is the *Magic Lift-The-Flap Book*. A lift the flap book is a type of graphic learning tool designed with windows that can be opened and closed to reveal hidden information (Khusnaeni *et al*., 2022). This mechanism enables readers to actively interact with the material by uncovering flaps containing supplementary

explanations and visual content (Rezka *et al*., 2022). The interactive design stimulates curiosity and enhances engagement during the learning process (Rahmayani *et al*., 2023). Therefore, lift the flap books can serve as effective educational media to improve children's knowledge and attitudes toward health topics such as obesity (A'la & Fauziah, 2024). Research by Harvianto *et al*., (2022) demonstrated that lift the flap book interventions significantly increased knowledge and attitudes related to fat-soluble vitamins among children aged 10–12 years ($p = 0.0001$). An acceptance evaluation using questionnaires assessed seven dimensions of user response and concluded that the medium was easy to understand and well received by participants. The lift-the-flap book holds considerable potential as an interactive educational tool for school-aged children, supporting improvements in nutritional status and overall health.. Based on these considerations, this study examines "The Effect of *Magic Lift-The-Flap Book*s on Children's Knowledge and Attitudes Regarding Obesity Prevention at SD IT Iqra 2, Bengkulu City."

METHODS

This study employed a quantitative research design using a one-group pre-test and post-test approach to examine the effect of the *Magic Lift-The-Flap Book* on children's knowledge and attitudes toward obesity prevention. The study was conducted at SD IT Iqra 2, Bengkulu City, IndonesiaThe study was carried out on February 2025. The sample size was determined using Lemeshow formula. The study included a random sample of 40 fifth-grade students aged 10–12 years, selected through a simple random sampling technique.

Data were collected using a structured questionnaire consisting of a 10-item knowledge questionnaire and a 10-statement attitude questionnaire. Both instruments had undergone validity testing, yielding correlation values greater than 0.5140, and reliability testing, with Cronbach's Alpha coefficients of 0.791 for knowledge and 0.779 for attitude. Pre-test data were collected before the intervention. The intervention was conducted on February 20, 2025 using *Magic Lift-The-Flap Book* media. The respondents were divided into two sessions, and each session consisted of four groups with five respondents in each group. The collected data were first tested for normality using the Shapiro-Wilk test. Since the data were not normally distributed, the Wilcoxon Signed Rank Test was used to determine the effect of the intervention on children's knowledge and attitudes.

This study adhered to ethical research principles, including informed consent, anonymity, and data confidentiality. Ethical approval for this study was obtained from the

Health Research Ethics Committee of Poltekkes Kemenkes Bengkulu (No. KEPK.BKL/074/01/2025).

RESULT

Univariate Analysis

This study employed an analysis of individual variables to clearly present the frequency distribution and relative share of each measured variable.

Table 1. Respondents' Profile by Gender and Age

Variables	Frequency	Percentage(%)
Gender		
Male	17	42.5
Female	23	57.5
Total	**40**	**100**
Age (Years)		
10	13	32.5
11	25	62.5
12	2	5.0
Total	**40**	**100**

Referring to the information presented in Table 1, the descriptive analysis of respondent characteristics based on gender and age shows that the majority of respondents are female (57.5%), and most respondents are aged 11 years (62.5%).

Table 2. Respondents' Profile by Eating Habits

Eating Patterns	Pre-Test		Post-Test	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Sweet Foods	30	29.1	8	12.1
Fast Food and Excessive Fats	9	8.8	6	9.1
Snacks	22	21.3	10	15.2
Processed Foods	17	16.5	2	3.0
Other Foods	25	24.3	40	60.0
Total	**103**	**100**	**66**	**100**

Table 2 shows that during the pre-test, the most frequently consumed food among students at SD IT Iqra 2, Bengkulu City was sweet foods, reported by 29.1% of respondents. After the post-test, most students reported consuming other foods, accounting for 60.0% of respondents.

Table 3. Children's Mean Knowledge Scores Pre and Post Intervention Using the *"Magic Lift-The-Flap Book"* Media on Obesity Prevention Among Students at SD IT Iqra 2, Bengkulu City

Knowledge	n	Mean ± SD	Min-Max
Before Intervention	40	69.25±20.304	10-100
After Intervention	40	88.00±15.225	40-100

As presented in Table 3, univariate analysis indicates that before the implementation of the *Magic Lift-The-Flap Book*, children achieved a mean knowledge score of 69.25 with a standard deviation of 20.304, and scores ranged from 10 to 100. After the intervention, the

mean knowledge score rose to 88.00, accompanied by a lower standard deviation of 15.225, with scores ranging from 40 to 100.

Table 4. Frequency Distribution of Knowledge Before and After Intervention Using the *Magic Lift-The-Flap Book*

No.	Question on Obesity Prevention	Before (%)		After (%)	
		Incorrect	Correct	Incorrect	Correct
1.	What is obesity?	25.0	75.0	12.5	87.5
2.	What are the causes of obesity?	25.0	75.0	0.0	100.0
3.	What diseases may develop in individuals with obesity?	45.0	55.0	35.0	65.0
4.	According to MyPlate, how many servings of vegetables should be consumed?	65.0	35.0	35.0	65.0
5.	What strategies can be used to prevent obesity?	22.5	77.5	5.0	95.0
6.	Which foods should be avoided to reduce the risk of obesity?	15.0	85.0	2.5	97.5
7.	What types of physical activities help prevent obesity?	15.0	85.0	2.5	97.5
8.	Which foods are recommended for individuals experiencing obesity?	20.0	80.0	7.5	92.5
9.	How much physical activity should be performed each day?	47.5	52.5	7.5	92.5
10.	How many hours of sleep are recommended at night?	27.5	72.5	12.5	87.5

Table 4 shows that among the ten questions, item 9 demonstrates the greatest improvement in knowledge, which asked about the recommended duration of daily physical activity. Before the intervention using the *Magic Lift-The-Flap Book*, the correct response rate was 52.5%. However, after the intervention, the correct response rate increased significantly to 92.5%.

Table 5. Average Attitudes of Children Before and After Intervention Using the *Magic Lift-The-Flap Book* on Obesity Prevention at SD IT Iqra 2, Bengkulu City

Attitude	n	Mean±SD	Min-Max
Before Intervention	40	24.50±2.287	17-28
After Intervention	40	36.50±2.620	29-40

As shown in Table 5, prior to the implementation of the *Magic Lift-The-Flap Book*, children recorded a mean attitude score of 24.50 with a standard deviation of 2.287, with scores ranging 17 to 28. Following the intervention, the mean attitude score increased to 36.50, with a standard deviation of 2.620, and post-intervention scores ranged from 29 to 40.

Table 6. Frequency Distribution of Attitudes Before and After Intervention Using the *Magic Lift-The-Flap Book*

No.	Statement	Before (%)				After (%)			
		SA	A	D	SD	SA	A	D	SD
1.	Obesity is a condition of having too much body fat, leading to weight gain and negatively affecting health.	12.5	40.0	40.0	7.5	72.5	25.0	2.5	0.0
2.	Managing a healthy diet and exercising regularly can help prevent obesity.	10.0	35.0	42.5	12.5	85.0	15.0	0.0	0.0
3.	Excessive consumption of sweet foods does not make me obese.	12.5	57.5	25.0	5.0	5.0	5.0	30.0	60.0
4.	Consuming fruits and vegetables can increase the risk of obesity.	2.5	35.0	60.0	2.5	0.0	2.5	30.0	67.5
5.	Engaging in physical activity for at least 30 minutes every day can prevent obesity.	10.0	45.0	27.5	17.5	80.0	20.0	0.0	0.0
6.	Dancing, cycling, running, and gardening can prevent obesity.	10.0	40.0	40.0	10.0	67.5	30.0	0.0	2.5
7.	Fast food is good for health.	10.0	45.0	40.0	5.0	0.0	5.0	22.5	72.5
8.	Sleeping by 9 PM, for 9-10 hours at night, is recommended.	2.5	20.0	47.5	30.0	85.0	15.0	0.0	0.0
9.	Excessive consumption of processed foods like nuggets, sausages, and corned beef can cause obesity.	12.5	45.0	32.5	10.0	67.5	25.0	5.0	2.5
10.	Playing on phones and watching TV are enjoyable activities that can prevent obesity.	10.0	12.5	72.5	5.0	5.0	10.0	15.0	70.0

The results in Table 6 indicate that among the 10 attitude statements, the largest increase was observed for statement 8. This statement addressed the importance of sleeping by 9 PM for 9-10 hours at night. Before the intervention using the *Magic Lift-The-Flap Book*, only 2.5% of respondents answered "Strongly Agree." However, after the intervention, there was a significant increase, with 85.0% of respondents expressing agreement.

Bivariate analysis

Bivariate analysis refers to a statistical approach applied to evaluate hypotheses and explore the association between two variables.

Table 7. Assessment of Data Normality

No.	Variables	Shapiro-Wilk			Conclusion
		Statistic	*df*	*Sig.*	
1.	Knowledge				
	Before	0.937	40	0.028	Not Normal
	After	0.763	40	0.000	Not Normal
2.	Attitude				
	Before	0.915	40	0.005	Not Normal
	After	0.907	40	0.003	Not Normal

Table 8. Children's Mean Knowledge Scores Pre- and Post-Intervention Using the "*Magic Lift-The-Flap Book*" Media on Obesity Prevention Among Students at SD IT Iqra 2, Bengkulu City

Variable	n	Mean±SD			P
		Before	After	ΔMean	*Value*
Knowledge	40	69.25±20.304	88.00±15.225	18.75	<0,001
Attitude	40	24.50±2.287	36.58±2.620	12.08	<0,001

Based on Table 8, the Wilcoxon test showed a significant change in children's knowledge and attitudes, with mean knowledge and attitude scores of 18.75 and 12.08, respectively**.** The analysis yielded a p-value of <0,001, below the 0.05 significance level. At a 95% confidence level, the results indicate that the *Magic Lift-The-Flap Book* has a significant effect on children's knowledge and attitudes toward obesity prevention at SD IT Iqra 2 in Bengkulu City.

DISCUSSION

This study examined impact of the *Magic Lift-The-Flap Book* on children's knowledge and attitudes toward obesity prevention among fifth-grade students at SD IT Iqra 2, Bengkulu City. Based on respondent characteristics, most participants were female (57.5%), and the majority were 11 years old (62.5%). Regarding eating patterns, pretest results indicated that sweet foods were the most frequently consumed (29.1%). Following the post-test, however, most students reported consuming other foods (60.0%). Children aged 10–12 years are at a stage of cognitive development in which they begin to process health-related information more effectively, making this age group suitable for health education interventions (Notoatmodjo, 2018).

Gender differences may also influence children's nutritional intake and risk of obesity. Boys typically have a higher basal metabolic rate and tend to engage in more physical activity, resulting in greater energy requirements compared to girls (Ryantama & IB, 2021). However, some studies indicate that obesity prevalence may be higher among girls due to differences in fat distribution and psychological development, which can affect eating behavior (Sandalayuk *et al*., 2021). In addition, elementary school children often consume snack foods that are attractive, affordable, and easily accessible, particularly foods with sweet and savory flavors (Fadilah *et al*., 2022). Excessive sugar intake contributes to fat accumulation in the body, thereby increasing the risk of obesity if not balanced with healthy dietary habits. Previous research by Sriwahyuni *et al*. (2021) also identified a significant relationship between dietary patterns and obesity among elementary school children ($p < 0.05$).

The results of this study demonstrated a significant increase in children's knowledge about obesity prevention following the intervention with the *Magic Lift-The-Flap Book*. Before the intervention, several respondents exhibited limited understanding of obesity prevention, particularly regarding healthy lifestyle behaviors such as adequate physical activity and balanced diet. However, after the educational intervention, the average knowledge score increased from 69.25 to 88.00. One of the most notable improvements was observed in the question related to the recommended duration of daily physical activity, which increased by 40%. These findings indicate that the educational media effectively enhanced students' comprehension of key information related to obesity prevention.

The increase in knowledge observed in this study is consistent with several previous studies highlighting the effectiveness of interactive educational media in improving children's understanding of health information. Harvianto *et al*. (2022) reported that the use of lift-the-flap book media significantly improved school-aged children's knowledge regarding nutrition education. Similarly, Kusbandiyah (2022) found that nutrition education interventions increased children's knowledge about balanced nutrition among obese children. Nurahmadi and Dalimunthe (2024) also demonstrated that pop-up book media significantly improved elementary school students' knowledge of nutrition. Furthermore, Manalu (2023) demonstrated that interactive flipbook media about obesity and healthy food improved students' knowledge, while Reskiaddin *et al*. (2023) found that educational comic media significantly improved students' knowledge about health topics.

From a theoretical perspective, knowledge is obtained through cognitive processes after individuals receive information through sensory perception and observation. According to Notoatmodjo (2018), knowledge is formed when individuals process information captured through the senses, particularly through visual and auditory stimuli. Attractive visual and interactive learning media can stimulate children's curiosity and attention, enabling them to process information more effectively. Interactive media such as the *Magic Lift-The-Flap Book* combine visual elements, colors, and hidden information that can be explored by opening each page, encouraging children to actively participate in the learning process. This interactive experience facilitates deeper understanding and retention of information delivered during the educational sessions (Hamid *et al*., 2020).

Another factor that may contribute to the increase in knowledge scores is the relatively short interval between the intervention and the post-test evaluation. Putri *et al*. (2021) emphasized that memory retention plays a crucial role in determining the effectiveness of educational interventions. Information recently received tends to remain stored in short-term

memory, making it easier for respondents to recall the information when completing post-test questions. Therefore, the short time interval between the intervention and the post-test in this study may have influenced the improved knowledge scores observed among respondents.

In addition to improving knowledge, the results also demonstrated a significant improvement in children's attitudes toward obesity prevention. The average attitude score increased from 24.50 before the intervention to 36.58 afterward. This finding suggests that the *Magic Lift-The-Flap Book* intervention not only strengthened children's cognitive understanding but also positively influenced their perceptions and attitudes toward healthy lifestyle behaviors. For example, one statement regarding adequate sleep duration showed considerable improvement . Before the intervention, only a small proportion of respondents strongly agreed that children should sleep at 21:00 and obtain 9–10 hours of sleep at night. However, after the intervention, a significantly higher proportion expressed strong agreement, indicating greater awareness of healthy lifestyle practices.

These findings are consistent with previous studies reporting positive effects of educational interventions on children's attitudes toward health behaviors. Harvianto *et al*. (2022) foundthat the use of lift-the-flap book media significantly improved children's attitudes regarding nutrition education. Similarly, previous studies reported that educational interventions using interactive media such as comics can significantly improve students' knowledge and attitudes toward health behaviors (Pratiwi *et al*., 2023). Attitude can be defined as an individual's tendency to respond positively or negatively toward a particular object or concept, which is influenced by knowledge, beliefs, and emotional responses (Notoatmodjo, 2018).

Improvement in knowledge often leads to changes in attitudes, which in turn influence health behaviors. Nasution (2024) explained that increased knowledge can encourage individuals to develop more positive attitudes toward healthy lifestyles. In the context of obesity prevention, positive attitudes toward balanced nutrition, adequate physical activity, and healthy sleep habits can contribute to healthier behavior patterns among children. Jannah and Kusumaningrum (2021) also stated that knowledge and attitudes play an important role in shaping health behaviors, including dietary patterns and physical activity, which are essential factors in preventing obesity.

The effectiveness of the *Magic Lift-The-Flap Book* observed in this study can be explained by its interactive and engaging design. Educational media play an important role in facilitating health education because they help convey complex information in a more understandable and attractive format. According to Ediana *et al*. (2022), educational media function as supporting

tools that enhance the effectiveness of health education by improving participants' attention and comprehension. Hamid *et al*. (2020) also emphasized that learning media can increase students' motivation and interest in learning activities, especially when the media are interactive and visually appealing.

Interactive media such as the *Magic Lift-The-Flap Book* are particularly suitable for elementary school students because they combine visual illustrations, storytelling, and interactive exploration. The presence of hidden information behind each flap encourages curiosity and active participation, making the learning experience more enjoyable for children. As a result, students become more engaged during the educational session and are more likely to absorb and retain the information provided.

The statistical analysis using the Wilcoxon test further confirmed the effectiveness of the intervention. The results showed a significant difference between the pre-test and post-test scores for both knowledge and attitudes ($p < 0.001$), indicating that the *Magic Lift-The-Flap Book* had a significant impact on improving children's knowledge and attitudes regarding obesity prevention. These findings are supported by previous studies. Harvianto *et al*. (2022) demonstrated that lift-the-flap book media significantly improved children's knowledge and attitudes about nutrition topics. Ningrum *et al*. (2021) also reported that students who used lift-the-flap book media achieved better learning outcomes compared to those who did not use the media. Other studies, such as Rahmayani (2023) and Utami *et al*. (2020), also demonstrated that lift-the-flap book media are effective in improving children's understanding of various educational topics and promoting healthy behaviors.

Overall, the findings of this study indicate that the *Magic Lift-The-Flap Book* is an effective educational medium for improving children's knowledge and attitudes toward obesity prevention. By providing engaging and interactive learning experiences, this media can help children better understand healthy lifestyle concepts and develop positive attitudes toward obesity prevention behaviors.

This study had several limitations. First, the classroom conditions during the intervention were sometimes less conducive, which may have affected students' concentration during the educational session. Second, anthropometric data were not measured directly by the researchers, potentially reducing the accuracy of the findings. Third, the study relied on self-reported questionnaire responses, which may be subject to response bias or inaccuracies . Fourth, BMI was not specifically analyzed as an outcome variable. Moreover, the BMI distribution of respondents differed from the previously reported obesity prevalence in the school population, as most participants in this study had normal BMI status. This difference

may limit the generalizability of nutritional status findings and suggests that the study sample may not fully represent the broader student population. Despite these limitations, this study still provides valuable insights into the effectiveness of the *Magic Lift-The-Flap Book* as an educational medium for improving children's knowledge and attitudes toward obesity prevention.

CONCLUSION

This study demonstrated that the use of the *Magic Lift-The-Flap Book* had a significant effect on improving children's knowledge and attitudes toward obesity prevention among fifth-grade students at SD IT Iqra 2, Bengkulu City. The results showed an increase in the average knowledge score from 69.25 before the intervention to 88.00 after the intervention, as well as an increase in the average attitude score from 24.50 to 36.58. Statistical analysis using the Wilcoxon test indicated a significant difference between pre-test and post-test results ($p < 0.001$). These findings suggest that the *Magic Lift-The-Flap Book* is an effective educational medium for enhancing children's knowledge and attitudes related to obesity prevention.

REFERENCES

A'la, E. C. S., & Fauziah, G. E. (2024). Pengembangan media *lift-the-flap book* (buku berjendela) pada pelajaran IPS kelas IV di MI Islamiyah II Sidodadi Canggu Kediri. *Jurnal Pendidikan Guru Madrasah Ibtidaiyah, 2*(1), 23–32. https://doi.org/10.59829/kjqh2r52

Aini, N. D., Maharani, A. A., Maharani, T. D., Nurannisa, N. S., & Herbawani, C. K. (2023). Risiko obesitas pada anak akibat konsumsi *fast food* dan *junk food*: Literature review. *Muhammadiyah Journal of Nutrition and Food Science (MJNF), 4*(2), 110–119. https://doi.org/10.24853/mjnf.4.2.110-119

Ali, A., Al-Ani, O., & Al-Ani, F. (2024). Children's behaviour and childhood obesity. *Pediatric Endocrinology, Diabetes and Metabolism, 30*(3), 148–158. https://doi.org/10.5114/pedm.2024.141761

Cahyani, D. I., Kartasurya, M. I., & Rahfiludin, M. Z. (2020). Gerakan masyarakat hidup sehat dalam perspektif implementasi kebijakan: Studi kualitatif. *Jurnal Kesehatan Masyarakat Indonesia, 15*(1), 10–18. https://doi.org/10.26714/jkmi.15.1.2020.10-18

Dungga, E. F. (2020). Hubungan pola makan dan aktivitas fisik dengan kejadian obesitas pada anak. *Jambura Nursing Journal, 2*(1), 103–111. https://doi.org/10.37311/jnj.v2i1.4479

Ediana, D., *et al*. (2022). *Teknologi pengembangan media kesehatan*. Yayasan Kita Menulis.

Fadilah, N., & Sefrina, L. R. (2022). Hubungan pola makan, asupan kebiasaan makan, dan aktivitas fisik terhadap kejadian obesitas pada anak sekolah dasar: Literature review. *JUMANTIK (Jurnal Ilmiah Penelitian Kesehatan), 7*(3), 200–210. https://doi.org/10.30829/jumantik.v7i3.11298

Hamid, M. A., Ramadhani, R., Masrul, M., Juliana, J., Safitri, M., Munsarif, M., & Simarmata, J. (2020). *Media pembelajaran*. Yayasan Kita Menulis.

Harvianto, A. Z., Melani, V., & Sitoayu, L. (2022). Pengaruh pendidikan gizi *lift-the-flap book* terhadap pengetahuan dan sikap anak usia sekolah 10–12 tahun tentang vitamin larut

lemak. *Media Gizi Indonesia, 17*(2), 140–147. https://doi.org/10.20473/mgi.v17i2.140-147

Jannah, M., & Kusumaningrum, I. (2021). Paparan informasi, pengetahuan, sikap tentang pedoman gizi seimbang dan status obesitas pada anak sekolah di Sekolah Dasar Negeri Pulogebang 11 Pagi Jakarta Timur. *ARTERI: Jurnal Ilmu Kesehatan, 2*(3), 67–73. https://doi.org/10.37148/arteri.v2i3.168

Kementerian Kesehatan Republik Indonesia. (2022). *Profil kesehatan Indonesia 2022*. Kementerian Kesehatan RI.

Kementerian Koordinator Bidang Pembangunan Manusia dan Kebudayaan. (2023). *Pemerintah terus berupaya menurunkan angka obesitas pada anak*. https://www.kemenkopmk.go.id/pemerintah-terus-berupaya-menurunkan-angka-obesitas-pada-anak

Khusnaeni, N., Rofiah, S., & Handayani, D. (2022). Pengembangan media *lift-the-flap book* untuk menstimulasi kemampuan kognitif tema 7 subtema 1 siswa kelas II sekolah dasar. *Journal on Teacher Education, 4*(2), 202–212. https://doi.org/10.31004/jote.v4i2.7098

Kusbandiyah, E. (2022). *Pengaruh pendidikan kesehatan menggunakan media pop-up book terhadap pengetahuan dan sikap tentang gizi seimbang pada anak obesitas di SDII Al Abidin Surakarta* [Undergraduate thesis, Universitas Kusuma Husada Surakarta].

Manalu, D. C. (2023). Pengembangan media *flipbook* obesitas dan makanan sehat anak sekolah. *Journal of Nutrition and Culinary, 3*(1), 1–9. https://doi.org/10.24114/jnc.v3i1.42336

Ningrum, I., Hafidah, R., & Dewi, N. (2021). Pengaruh media *lift-the-flap book* terhadap keterampilan menyimak anak usia 5–6 tahun. *Jurnal Kumara Cendekia, 9*(1), 44–52. https://doi.org/10.20961/kc.v9i1.47897

Notoatmodjo, S. (2018). *Ilmu perilaku kesehatan*. Rineka Cipta.

Nasution, E., Hidayat, H. P., & Sihotang, U. (2024). Pengaruh media booklet terhadap peningkatan pengetahuan dan sikap anak dalam memilih makanan jajanan sehat pada anak sekolah dasar di SD Negeri 104244 Jati Sari Lubuk Pakam. *Journal of Educational Innovation and Public Health, 2*(1), 157–166. https://doi.org/10.55606/innovation.v2i1.2124

NCD Risk Factor Collaboration (NCD-RisC). (2024). Worldwide trends in underweight and obesity from 1990 to 2022: A pooled analysis of 3663 population-representative studies with 222 million children, adolescents, and adults. *The Lancet, 403*(10431), 1027–1050. https://doi.org/10.1016/S0140-6736(23)02750-2

Nurahmadi, R., & Dalimunthe, N. K. (2024). Pengaruh edukasi gizi melalui media *pop-up book* terhadap pengetahuan gizi dan kebiasaan makan pagi siswa Sekolah Dasar Negeri 3 Tiuh Memon. *Journal of Nutrition College, 13*(3), 210–219. https://doi.org/10.14710/jnc.v13i3.40863

Pratiwi, R. S., Triana, N. Y., & Hanum, F. (2023). Pengaruh pendidikan kesehatan dengan media komik terhadap tingkat pengetahuan tentang kesehatan gigi dan mulut pada siswa kelas IV dan V di SD Negeri 1 Dukuhwaluh. *LANCAH: Jurnal Inovasi dan Tren, 1*(2), 174–183. https://doi.org/10.35870/ljit.v1i2.2111

Putri, V. H., Sitoayu, L., & Ronitawati, P. (2021). Pengaruh media AR book terhadap peningkatan pengetahuan dan sikap gizi seimbang pada anak usia sekolah. *AcTion: Aceh Nutrition Journal, 6*(2), 118–127. https://doi.org/10.30867/action.v6i2.380

Rahmawati, H., Fatmawati, T. Y., Efni, N., & Ariyanto, A. (2023). Optimalisasi gerakan nusantara tekan obesitas (GENTAS) pada remaja. *Jurnal Abdimas Kesehatan (JAK), 5*(2), 375–382. https://doi.org/10.36565/jak.v5i2.538

Rahmayani, D. A., Iswari, M., Ardisal, A., & Mahdi, A. (2023). Efektivitas penggunaan media grafis lift-the-flap book untuk meningkatkan kemampuan mengenal cuaca pada anak

autisme kelas III di SD Pembangunan Laboratorium UNP. *Jurnal Pendidikan Tambusai*, 7(3), 20391–20396. https://doi.org/10.31004/jptam.v7i3.9492

Reskiaddin, L. O., Ibnu, I. N., & Aprilia, F. (2023). Pengaruh media komik terhadap pengetahuan dan sikap siswa tentang kebersihan diri dan keamanan makanan di Sekolah Dasar Negeri 47 Kota Jambi. *Media Publikasi Promosi Kesehatan Indonesia (MPPKI), 6*(3), 457–463. https://doi.org/10.56338/mppki.v6i3.2954

Rezka, W. D., Hidayat, O. S., & Siregar, R. (2022). *Pengembangan lift-the-flap book berbasis multimedia interaktif dalam pembelajaran PPKn kelas V sekolah dasar*. *Educational Technology Journal, 2*(2), 38–43. https://doi.org/10.26740/etj.v2n2.p38-43

Ryantama, A. A., & IB, S. (2021). Prevalensi dan karakteristik obesitas pada anak di poliklinik anak Rumah Sakit Umum Pusat Sanglah Denpasar periode Januari–Desember 2016. *Jurnal Medika Udayana, 10*(1), 92–96. https://doi.org/10.24843/MU.2021.V10.i1.P17

Sandalayuk, M., Arda, Z. A., Hafid, W., Badu, F. D., Harun, A., Hatta, H., Nuryani, Akbar, H., & Kanan, M. (2024). Determinan kejadian obesitas pada anak sekolah dasar: Studi *cross-sectional*. *Haga Journal of Public Health (HJPH), 2*(1), 1–8. https://doi.org/10.62290/hjph.v2i1.37

Sriwahyuni, Junaidi, Noyumala, A. A., & Tangkelayuk, V. (2021). Pola makan terhadap kejadian obesitas pada anak. *Jurnal Asuhan Ibu dan Anak, 6*(2), 91–98. http://doi.org/10.33867/jaia.v6i2.268

Sumarni, S., & Bangkele, E. Y. (2023). Persepsi orang tua, guru, dan tenaga kesehatan tentang obesitas pada anak dan remaja. *Healthy Tadulako Journal (Jurnal Kesehatan Tadulako), 9*(1), 58–64. https://doi.org/10.22487/htj.v9i1.658

Utami, D. R. A. T., Yuliati, N., & Aisiyah, L. N. (2020). Pengembangan media *lift-the-flap book* untuk mengenalkan perilaku hidup sehat pada anak kelompok B di TK Puri Ananda Kecamatan Kaliwates Kabupaten Jember. *Journal of Early Childhood Education and Research (JECER), 1*(1). https://doi.org/10.19184/jecer.v1i1.16062

Vajravelu, M. E., Tas, E., & Arslanian, S. (2023). Pediatric obesity: Complications and current day management. *Life, 13*(7), 1591. https://doi.org/10.3390/life13071591

World Health Organization. (2024). *Obesity and overweight*. https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight

Zahari, Q. F., Prashanti, N. A. S., Salsabella, S., Jumiatmoko, J., Hafidah, R., & Nurjannah, N. E. (2022). Kemampuan fisik motorik anak usia dini dengan masalah obesitas. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini, 6*(4), 2844–2851. https://doi.org/10.31004/obsesi.v6i4.1570

Zulaekah, S., & Oktaria, A. (2020). Tingkat kecukupan zat gizi makro dan indeks massa tubuh pasien *overweight* pengunjung fasilitas kesehatan tingkat pertama. *Flurecol Proceedings*, 1(1), 45–52.