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The Effectiveness of Storytelling as a Nutrition Education Method in Enhancing the Knowledge of Preschool and Elementary School Children: A Systematic Review

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ABSTRACT

Children aged 1–12 years are nutritionally vulnerable because these developmental stages require adequate intake to support rapid growth and cognitive development. At the preschool and elementary school ages, children begin forming concepts, categorizing objects, and developing thinking skills, making them an important target for nutrition education. This study aims to analyze the effectiveness of storytelling as a method of nutrition education to improve children's nutritional knowledge. A systematic review method was used to identify relevant articles from Google Scholar and Portal Garuda databases, focusing on studies involving preschool and elementary school children. The results show that storytelling is effective in enhancing children's understanding of healthy and balanced diets because it engages their imagination and simplifies complex information. The impact of this study highlights storytelling as a practical and impactful educational tool for increasing children's nutritional awareness, contributing to better long-term eating habits, and supporting healthy growth and cognitive development.

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1. INTRODUCTION

Inadequate dietary patterns and poor feeding practices are among the primary factors contributing to Indonesia's persistent challenge in addressing the triple burden of malnutrition, which includes undernutrition (wasting and stunting), overweight, and micronutrient deficiencies. According to the Regulation of Indonesia's Minister of Health No. 23/2014, toddlers aged 1–5 years and elementary school children aged 6–12 years are classified as nutritionally vulnerable groups. This is because children at these ages are undergoing critical periods of growth and development that require adequate and balanced nutritional intake. However, in reality, many children in this age group exhibit irregular eating habits, lack appetite, or prefer snacks that are low in nutrients. Based on the 2023 Indonesian Health Survey (SKI) data, the prevalence of stunting among toddlers was recorded at 21.5 percent, underweight at 15.9%, and wasting at 8.5%. Meanwhile, stunting among school-age children was reported at 18.7%, and severe malnutrition (severe thinness) at 11%. Childhood malnutrition has detrimental impacts on cognitive development, motor function, and overall growth (Papotot *et al.*, 2021).

Poor dietary habits can lead to inadequate nutritional status, resulting in both undernutrition and overnutrition (Fitriani *et al.*, 2023). School-age children require sufficient energy to support their daily activities and physical development. However, insufficient nutritional intake and lack of awareness about the importance of nutritious foods often lead to vitamin and mineral deficiencies (Azizah & Rizana, 2023). Nutrition education is one of the crucial efforts to address this issue because it aims to improve children's understanding and awareness regarding the importance of healthy and balanced eating patterns. At the preoperational stage of cognitive development (ages 2–7), children begin to use symbols and language to represent their thoughts and form simple concepts. As they move into the concrete operational stage (ages 8–11), children develop the ability to categorize, conserve, and comprehend logical concepts and numbers (Magalhaes *et al.*, 2025). These cognitive stages provide essential opportunities to introduce effective nutrition education strategies that match their developmental level.

Various methods can be used to implement nutrition education for children, including counseling, digital animations, visual media, games, and storytelling (Mulya *et al.*, 2021). Among these approaches, storytelling is recognized as a highly engaging method because it conveys educational messages creatively and interactively. Storytelling is an effective tool for delivering nutrition education to children because it helps them understand complex nutritional concepts in a fun and engaging manner while also developing imagination and socio-emotional skills (Supriatin & Nusya, 2019). Furthermore, storytelling is relatively simple to implement, cost-effective, and suitable for large groups of children (JR *et al.*, 2018). This method is considered suitable for children aged 3–12 years because they enjoy various types of stories, including fairy tales, fantasy, folk stories, and adventures (Alfina *et al.*, 2024).

Considering the importance of nutrition education and the potential of storytelling as an educational approach, this study aims to assess the effectiveness of storytelling in increasing nutritional knowledge among preschool and elementary school children. Because children at these ages are in crucial stages of cognitive and nutritional development, understanding how storytelling can improve their knowledge of nutrition is essential. This research is expected to offer valuable insights into the role of storytelling as a practical nutrition education tool and to provide recommendations for its integration into early childhood and school-based education programs.

2. METHODS

This study employed a systematic review approach, involving a series of structured processes to gather, analyze, and evaluate data, theories, and research articles relevant to the topic. The focus of the review was on studies involving preschool and elementary school-aged children who participated in nutrition education interventions using the storytelling method. The article search process followed a systematic flow to ensure transparency and is illustrated in **Figure 1**. Literature sources were identified using specific keywords, including "nutrition education," "storytelling," "preschool," and "elementary school," to ensure that only highly relevant articles were selected. A rigorous screening process was applied to ensure that all included studies met predetermined inclusion criteria. Eligible articles were required to assess the effectiveness of storytelling-based nutrition education interventions in improving children's nutritional knowledge. Additionally, studies had to focus on populations of preschool children (ages 3–6) or elementary school children (ages 6–12). To maintain the credibility and reliability of the findings, only articles published in accredited journals or reputable databases such as Google Scholar and Portal Garuda were included. Furthermore, to ensure the timeliness and applicability of the data, only studies published within the last five years (2019–2024) were selected. From the initial 26 articles identified, 11 articles met the inclusion criteria and were analyzed in this review. This study was also ethically reviewed and approved by the Research Ethics Committee of the Faculty of Public Health, Sriwijaya University, under approval number: 564/UN9.FKM/TU.KKE/2025.

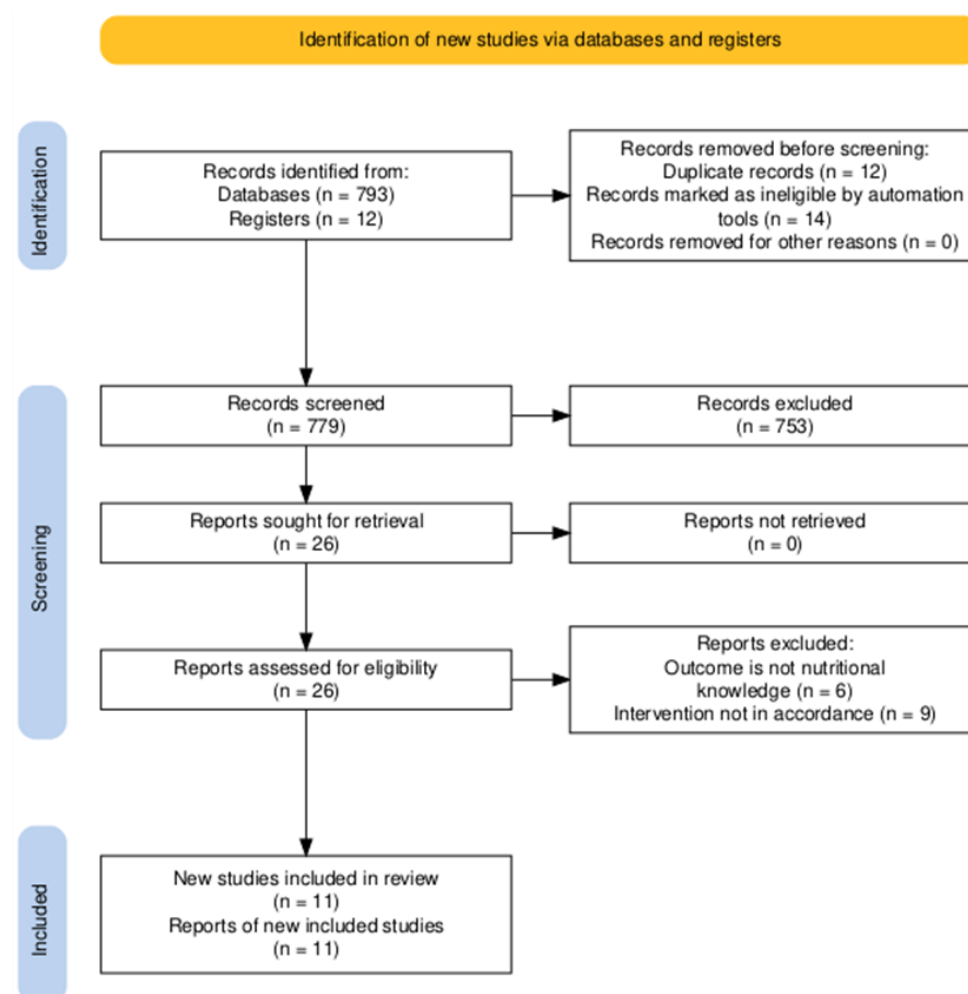


Figure 1. PRISMA diagram.

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3. RESULTS AND DISCUSSION

3.1. Results

The review was conducted on 11 works of literature that have undergone the screening process. The articles to be reviewed consist of literature published from 2019 to 2024. The outcomes are presented in **Tables 1 and 2**.

Based on the analysis of 6 reviewed articles involved preschool children as samples, in terms of research design, 5 articles employed a quasi-experimental design, and the remaining used a pre-experimental design. The findings indicate that the use of the storytelling method in nutrition education activities was supported by various media tools to enhance the storytelling process, such as puppets, illustrations, and booklets.

The study conducted by some researchers in Desa Suli in Indonesia on children aged 4-6 years revealed statistically significant results, indicating a positive impact on students' knowledge regarding vegetables and fruits (Thalib *et al.*, 2021). The research conducted with preschool children at TK Panorama Kids Pekanbaru revealed statistical test results with a p-value of 0.000 ($p < 0.05$), indicating an effect on knowledge levels before and after the intervention using storytelling with the aid of finger puppet media. Another study conducted by Fitri indicated an increase in knowledge scores following an intervention involving nutrition education using the storytelling method with hand puppet media for children at TK Munzhiroh Pekanbaru (Fitri *et al.*, 2023). This finding aligns with the research by Setiana, which showed that the storytelling method enhanced by finger puppet media significantly increased children's knowledge, resulting in a p-value of 0.000 ($p < 0.05$) (Setiana *et al.*, 2019). A similar study was also conducted by Mulya, which stated that the educational method using puppets and balanced nutrition storytelling had a significant impact on the nutritional knowledge of children at TK Islam Silmi Samarinda, with a p-value of 0.000 ($p < 0.05$) (Mulya *et al.*, 2021).

Based on the analysis, 5 reviewed articles focused on elementary school-aged children. In terms of research design, 2 articles employed a quasi-experimental design, and the remaining 3 used a pre-experimental design. The findings indicate that the use of the storytelling method in nutrition education activities was supported by various media tools to enhance the storytelling process, such as puppets and illustrated storybooks. Moreover, the intervention using the storytelling method with storybook media had a significant effect on knowledge, with a p-value of 0.002 ($p < 0.05$) (Fitryadi *et al.*, 2019). In 2022, a similar study found that the use of storytelling through storybook media, with a p-value of 0.000 ($p < 0.05$), significantly influenced students' knowledge of balanced nutrition (Padmiswari *et al.*, 2022). In line with the previous research, the storytelling method could enhance students' knowledge of fruits and vegetables, as evidenced by the increase in the average knowledge score from 77.19 to 94.06 (Alfina *et al.*, 2024). The use of the storytelling method with comic media effectively improved students' knowledge about healthy breakfast. The statistical test results showed a p-value of 0.001 ($p < 0.05$) with an average knowledge increase of 4.46 points. However, when compared to the independent reading method, which yielded a p-value of 0.441 ($p < 0.05$), this demonstrates that both methods have the same level of effectiveness (Nababan & Tete, 2024). A comparable study was conducted by Wahidah, which found that nutrition education through the storytelling method significantly influenced the improvement of 4th-grade students' understanding of sports and nutrition with a p-value of 0.000 ($p < 0.05$) (Wahidah *et al.*, 2021).

Table 1. The results of the literature review on the effectiveness of storytelling as a nutrition education method in enhancing knowledge among preschool-aged children.

Topic	Design	Sample Size and Sampling Technique	Media	Research Findings	Reference
The Influence of Storytelling on Knowledge of Vegetable and Fruit Consumption Patterns in Children Aged 4-6 Years in RT 015, Suli Village, Salahutu District	Pre-experimental design	The sample consisted of 32 children aged 4-6 years	Pictures	A significant effect was found on the respondents' knowledge regarding vegetable and fruit consumption patterns, indicating that the storytelling method is highly effective in enhancing the respondents' knowledge.	(Thalib <i>et al.</i> , 2021)
The Effectiveness of Health Food Story Through Finger Puppet	Quasi-experimental design	The sample consisted of 25 children, selected using the total sampling technique.	Finger puppet	The results indicate an effect on the respondents' nutrition knowledge before and after the intervention using finger puppets.	(Permanasari & Utami, 2022)
The Influence of Storytelling Method Using Hand Puppets on The Vegetable Consumption Knowledge of Preschool Age Children	Quasi-experimental design	The sample consisted of 30 children aged 3-6 years, selected using the total sampling technique.	Hand puppet	The storytelling method has a significant effect on knowledge regarding vegetable consumption among preschool-aged children.	(Fitri <i>et al.</i> , 2023)
The Effect of Theme-Based Storytelling and Flashcards on Nutritional Knowledge in Early Childhood Education	Quasi-experimental design	The sample consisted of 251 children aged 5-6 years, selected using the purposive sampling technique.	Finger puppet	The findings show that the storytelling method enhances children's nutrition knowledge.	(Setiana <i>et al.</i> , 2019)
The Influence of BOGIMBA Educational Media (Puppets and Balanced Nutrition Storytelling) on Children's Nutrition Knowledge at Silmi Islamic Kindergarten, Samarinda	Quasi-experimental design	The sample consisted of 51 children aged 4-5 years, selected using the total sampling technique.	Dolls	There was a significant effect observed after the intervention on children's knowledge level regarding nutrition at TK Islami Silmi Samarinda.	(Mulya <i>et al.</i> , 2021)
Application of Storytelling Methods in Optimizing Fruit and Vegetable Consumption in Preschool Children	Quasi-experimental design	The sample consisted of 120 children, selected using the total sampling technique.	Booklet	The group that underwent the intervention using the storytelling method, supported by a booklet, showed a growth in knowledge about vegetables.	(Lestari <i>et al.</i> , 2019)

Table 2. The results of the literature review on the effectiveness of storytelling as a nutrition education method in enhancing knowledge among elementary school-aged children.

Topic	Design	Sample Size and Sampling Technique	Media	Research Findings	Reference
The Effect of Storytelling Method Through Fairy Tale Book Media on Children's Knowledge and Attitudes About Fruit and Vegetable Consumption	Pre-experimental design	The sample size consisted of 32 children aged 8-12 years, selected using the purposive sampling technique.	Fairy tale book	The findings reveal that the storytelling intervention through storybook media has a significant impact on the knowledge of students at MIN 2 Kota Bengkulu.	(Alfina <i>et al.</i> , 2024)
The Influence of Nutrition Education Through Storybook Media on the Knowledge, Attitudes, and Consumption Behavior of Vegetables and Fruits in 5th Grade Students at SDIT Thariq Bin Ziyad in 2019	Quasi-experimental design	The sample consisted of 33 children aged 10-12 years, selected using the purposive sampling technique.	Storybook	There is an effect of nutrition counseling using the storytelling method with storybook media on the knowledge related to vegetables and fruits among 5th-grade students at SDIT Thariq bin Ziyad.	(Fitryadi <i>et al.</i> , 2019)
The Effectiveness of Balanced Nutrition Education Through Illustrated Storybook Media	Pre-experimental design	The sample consisted of 30 children aged 10-12 years, selected using the non-probability sampling technique.	Storybook	The findings show that there is a significant effect on students' knowledge after the nutrition education intervention through storytelling using illustrated storybook media.	(Padmiswari <i>et al.</i> , 2022)
The Effectiveness of Reading Comics and the Storytelling Method in Enhancing Students' Knowledge About Healthy Breakfasts	Quasi-experimental design	The sample consisted of 45 children from grades 4, 5, and 6, selected using the simple random sampling technique.	Comic	The findings indicate that the use of the storytelling method is effective in enhancing the knowledge of SD Katolik Feondari students regarding healthy breakfast.	(Nababan & Tete, 2024)
Storytelling: A Creative Approach to Enhancing Sports and Nutrition Knowledge in Elementary School Children	Pre-experimental design	The sample consisted of 40 children from class 4B, selected using the quota sampling technique.	Paper puppets (wayang)	The findings show the effect of providing education through the storytelling method regarding sports and nutrition on improving the knowledge of 4B grade students.	(Wahidah <i>et al.</i> , 2021)

3.2. Discussion

Preschool-aged children start to cultivate the ability to listen actively to conversations among their peers in playgroups. Their attention span begins to develop, enabling them to focus for extended durations on diverse narratives. Furthermore, they may proficiently memorize instructions and simple messages (Hasanah *et al.*, 2019). Piaget's theory states that preschool-aged children are in the preoperational stage, which is distinguished by a greater receptivity for learning methods that use visuals and narratives. Enjoyable learning allows children to focus more and enhances their attention (Ayyubi *et al.*, 2024). Incorporating media such as puppets, pictures, and illustrated books in storytelling facilitates preschool children's understanding of nutrition concepts through symbolic representation, which aligns with their cognitive development stage.

Elementary school-aged children, according to Piaget, are in the concrete operational stage, which improves their capacity for basic logical reasoning and cause-and-effect relationship comprehension. At this point, they begin to develop concepts, recognize connections, and solve problems—but only when they are connected to things or circumstances, they are already familiar with other reports. The research findings indicate that children's logical reasoning is not yet fully developed by the age of seven. However, as they mature, their cognitive processes begin to reorganize allowing them to classify information. Therefore, storytelling plays a significant role in enhancing literacy skills during the early stages of education (Yazıcı & Bolay, 2017). Nutrition education through the storytelling method renders message delivery entertaining and enjoyable, hence facilitating comprehension of the material. The use of picture books that integrate narrative and factual content enhances logical reasoning skills (Salwaa *et al.*, 2023).

The storytelling method serves as a tool to broaden understanding, foster imagination, and derive values from the various characters and roles within a narrative (Supriatin & Nusya, 2019). In early childhood education, storytelling sessions conducted by educators can effectively capture children's interest and enhance their motivation. By linking the narrative to their daily experiences and prior knowledge, storytelling fosters meaningful understanding and enhances their ability to grasp new concepts (Maureen *et al.*, 2022). Storytelling is a popular medium of information and communication among children, which can train them to focus on specific objects for designated durations. During the storytelling process, children concentrate on spoken sentences and visual aids, such as images or puppets, that support the narrative (Rukiyah, 2018). This is supported by a study conducted by Katona, which claims that the implementation of visual media aims to capture students' full attention and improve their focus on the lesson by presenting pertinent visual materials in the classroom. Additionally, visual media functions as a valuable resource for educators, facilitating the delivery of subject matter in a way that is more understandable and engaging for students. The incorporation of this element into the learning process enhances the classroom experience, thereby boosting student interest and engagement (Katona *et al.*, 2023). In line with this, storytelling encompasses the expression of a narrative or event through visual or auditory means, including narration or song. This approach can be utilized as a teaching method in educational activities that promote different aspects of early childhood development (Rafiola *et al.*, 2022). Storytelling is acknowledged as a potent educational approach for children, as it improves memory retention more effectively than direct advice. Stories are more profoundly ingrained in a child's memory, facilitating long-term recall. Additionally, storytelling enables children to comprehend moral messages and the underlying essence of a narrative. By incorporating engaging and age-appropriate themes, storytelling fosters children's ability to focus, listen attentively, and visualize the content without external

distractions (Astarani *et al.*, 2023). The use of learning media with a focus on visual elements can improve student concentration, thereby supporting better learning outcomes (Khotimah *et al.*, 2019).

Based on the literature review conducted by the researcher regarding storytelling as a method of nutrition education for preschool and elementary school children, storytelling serves as an effective approach to delivering nutrition education to these age groups. Children exhibit a strong enthusiasm for narratives. Storytelling supports the development of various aspects of a child's growth, including intelligence, sensitivity, creativity, and imagination.

4. CONCLUSION

Based on the conducted literature analysis, nutrition education through storytelling has proven effective in enhancing nutritional knowledge among preschool and elementary school children. The stories delivered needed to be tailored to the age and cognitive development stage to ensure that nutrition education messages were optimally understood. Training for educators and healthcare professionals on effective storytelling techniques was necessary. This training improved their ability to deliver nutrition education materials interactively.

5. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

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