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Effectiveness of Social Media–Based Education and Demonstration on Parental Knowledge of Choking Mitigation and Management in Children

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Abstract
Introduction: *Choking in children presents a life-threatening emergency that requires parents to recognize risks and act promptly. If parents lack sufficient knowledge, they may respond too slowly, worsening outcomes.* ***Objective:*** *This study examined how social media–based health education and demonstration impact parental knowledge and cognitive preparedness to mitigate and manage choking incidents in children.* ***Method:*** *Researchers used a quantitative quasi-experimental design with a two-group pretest-posttest approach. The sample comprised 50 parents of children at Aisyiyah Bustanul Athfal 31 Kindergarten, Banjarmasin, divided into a social media education group and a demonstration education group.* ***Result and Discussion****: Researchers administered questionnaires before and after the interventions to collect data. Results showed that both the social media group ($p < 0.001$; $r = 0.875$) and the demonstration group ($p < 0.001$; $r = 0.877$) significantly improved parental knowledge and cognitive preparedness. Post-intervention outcomes for both groups remained comparable, revealing no statistically significant difference ($p = 0.838$).* ***Conclusions:*** *These findings show that both social media–based education and demonstration effectively enhance parental knowledge and cognitive preparedness for managing pediatric choking emergencies.*

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Introduction

Choking in children is a medical emergency that may result in sudden airway obstruction and rapid oxygen deprivation if not managed promptly. (Saccomanno et al., 2023). Pediatric choking is frequently associated with foreign body aspiration, which may initially present with subtle symptoms before progressing to severe respiratory distress (Ding et al., 2022). Young children are particularly at risk due to anatomical and developmental factors that limit the effectiveness of airway protection mechanisms. (Zhang et al., 2024). Many choking incidents occur at home, making parents the first individuals responsible for recognizing and responding to the emergency. (Alzahrani et al., 2024). These conditions highlight the critical role of parental preparedness in preventing adverse outcomes. Despite the seriousness of choking incidents, parental readiness to manage airway obstruction remains inadequate, especially in home settings where emergencies occur unexpectedly by Ranjous et al. (2024). Misconceptions related to choking first aid continue to shape inappropriate response strategies among caregivers, which may delay lifesaving actions, a concern also observed by Younis et al. (2024). According to Pondete et al. (2022) Limited exposure to structured health education plays a significant role in delayed recognition and incorrect management of choking events. In early childhood education environments, Ramos-Pla & Fornons Casol (2025) emphasize that insufficient parental preparedness increases the risk of preventable complications, reinforcing the urgency of effective educational interventions.

Educational theory suggests that cognitive preparedness influences hazard recognition and decision-making during emergencies by Boeren & Íñiguez-Berrozpe (2022). Knowledge acquisition in health education is closely related to comprehension and application processes, Köksal et al. (2023). Structured content delivery supports organized understanding and faster response. Li et al. (2024) While learning approaches aligned with cognitive principles promote more stable outcomes (Pangga et al., 2025). In practice, demonstration-based education has been widely used to teach emergency procedures through guided observation and hands-on explanation, Kunbaran et al. (2024) Clear procedural sequencing supports effective skill understanding, Ghahfarokhi et al. (2022), and experiential elements enhance retention of Herrera-Aliaga and Estrada (2022). However, logistical barriers such as limited time and attendance constraints may reduce the feasibility of face-to-face demonstrations (Salimatul Amalia et al., 2025).

At the same time, digital platforms have become increasingly prominent in health information dissemination. In Indonesia, social media is a primary source of health information for parents (We Are Social, 2024). Visually structured online content has been shown to support knowledge acquisition Picazo-Sánchez et al. (2022), improve health literacy by Galmarini et al. (2024), and enhance learning through repeated exposure and flexible access highlighted by Siswati et al. (2025), may enhance learning outcomes in digital health education. Recent literature shows increasing attention toward technology-supported education for choking management and foreign body airway obstruction, particularly among non-clinical populations. De Souza et al. (2025) emphasize that digital tools offer alternative pathways for delivering procedural knowledge beyond traditional settings. Educational models grounded in social learning theory frame learning as a process shaped by observation and interaction. (Monrouxe et al., 2022). From a social cognitive standpoint, Kim et al. (2025) explains that meaningful cognitive learning may occur through mediated environments even in the absence of direct physical practice. This view aligns with constructivist learning models, where Ge

et al. (2025) Underline the role of structured and reflective learning experiences across different educational modalities.

Despite the demonstrated benefits of both demonstration-based and digital education, comparative evidence focusing on parental cognitive outcomes in choking management remains limited. Astilia (2024) shows that structured choking education improves parental knowledge, while studies involving parents of young children report enhanced understanding and attitudes toward choking first aid (Nurhayati et al., 2025). However, Triwidiyantari & Pebrianti (2024) point out that few studies directly examine the relative effectiveness of different educational delivery methods on cognitive preparedness. Addressing this gap is therefore essential to guide the selection of educational strategies that are both effective and accessible for parents. (Trifianingsih & Anggaraini, 2023).

Method

This study employed a quantitative quasi-experimental design with a two-group pre-test and post-test to examine changes in parental knowledge and cognitive preparedness for the mitigation and management of choking incidents in children. The research was conducted at Aisyiyah Bustanul Athfal 31 Kindergarten, Banjarmasin. The study population comprised all parents of children enrolled in the kindergarten. A total sampling technique was used, yielding 50 respondents who met the study requirements. Participants were allocated into two intervention groups: 25 parents in the social media–based education group and 25 parents in the demonstration-based education group.

The social media group received health education through Instagram using a series of structured educational posters. The posters contained concise information on choking risks, recognition of choking signs, and appropriate cognitive response steps. The demonstration group received face-to-face education through verbal explanation accompanied by visual demonstration. The demonstration emphasized conceptual understanding and cognitive sequencing of choking management without involving hands-on practice, as the study focused solely on cognitive outcomes rather than psychomotor skills. Data collection was conducted using pre-test and post-test questionnaires to assess parental knowledge and cognitive preparedness. Data were analyzed using nonparametric statistical tests to evaluate within-group changes and between-group differences. Ethical approval and informed consent were obtained before the study.

Result and Discussion

1. Result

Characteristics of Research Respondents

Table 1
Characteristics of the Respondent

Characteristics	Categories/Statistics	f	%
Gender	Female	48	96%
	Male	2	4%
Age	26-30	16	32%
	31-35	21	42%
	36-40	11	22%
	>40	2	4%
Level of education	Junior high school/equivalent	5	10%
	Senior high school/equivalent	14	28%
	Bachelor	31	62%
Total		50	100%

The study included 50 respondents, primarily female. Most were in early to middle adulthood with undergraduate education. Participants were evenly split between the social media–based and demonstration-based education groups.

Overview of respondents' pre-test and post-test scores

The study involved 50 respondents, the majority of whom were female. Most participants were within the early to middle adulthood age range and predominantly had an undergraduate educational background, reflecting a relatively homogeneous educational profile. Respondents were evenly allocated to two intervention groups: a social media–based education group and a demonstration-based education group. The distribution of respondents' knowledge scores before and after the intervention is presented to illustrate changes in knowledge categories within each education group. Descriptive statistical measures, including median and interquartile range (IQR), are used to describe score distributions and to identify shifts in knowledge levels between the pre-test and post-test assessments, thereby providing an overview of trends in cognitive outcomes following the educational interventions.

Table 2
Distribution of Pre-Post Test Categories

Knowledge category	Social media Pre-test (%)	Social media Post-test (%)	Demonstration Pre-test (%)	Demonstration Post-test (%)
Tended to Poor	0 %	0 %	4 %	0 %
Tended to Good	48 %	0 %	40 %	0 %
Good	52 %	100 %	56 %	100 %
Total	**n = 100%**	**n = 100%**	**n = 100%**	**n = 100%**

Table 3
Descriptive Statistics of Respondent Scores

Group	Pre-test		Post-test	
	Median	IQR	Median	IQR
Social media	56,00	6,5	63,00	2,5
Demonstration	56,00	5,5	63,00	4,5

The results indicate a clear increase in median scores at the post-test stage in both the social media and demonstration groups, reflecting an overall improvement in parental knowledge and cognitive preparedness after the educational interventions. The reduction in the interquartile range (IQR) at post-test suggests that respondents' scores became more concentrated around the median, indicating a more homogeneous level of understanding among participants compared with the pre-test condition. This pattern suggests that the educational interventions not only increased knowledge levels but also reduced variability in comprehension across respondents, leading to more consistent cognitive outcomes within each group.

Differences in pre-post test results before and after intervention

The Wilcoxon signed-rank test was applied to examine differences in pre-test and post-test scores of parental knowledge and cognitive preparedness related to the mitigation and management of choking incidents before and after the educational interventions in both the social media and demonstration groups.

Table 4
Wilcoxon Test Results

Group	Measurement	Z	p- value	Effect size
Social media	Pre-Post Test	−4.376	<0.001	0.875
Demonstration	Pre-Post Test	−4.374	<0.001	0.877

The test results showed a significant difference between the pre-test and post-test scores in both the social media group ($Z = -4.376$; $p < 0.001$) and the demonstration group ($Z = -4.374$; $p < 0.001$). The high effect sizes ($r > 0.8$) in both groups indicate that the educational intervention had a strong impact on the ability to mitigate and manage choking incidents.

Differences in post-test results between educational groups

The Mann–Whitney test was used to analyze the differences in post-test scores of choking mitigation and management between the social media–based education group and the demonstration group. This test aimed to determine whether there was a difference in intervention outcomes between the two education groups.

Table 5
Mann-Whitney Test Results

Educational group	Mean Rank	U	Z	p-value	Effect size	Probability (%)
Social media	25.92	302.000	-0.205	0.838	0.03	48.3%
Demonstration	25.08					

The Mann–Whitney test results showed that the distributions of post-test knowledge scores in both groups were relatively similar, with the difference in mean ranks not reaching statistical significance ($p > 0.05$). The effect size, ranging from small to moderate, along with the probability expressed as a percentage, indicates that the difference in knowledge score distributions between the groups occurred in a limited proportion of cases.

2. Discussion

Parents' Initial Knowledge in the Social Media Group

Parents' knowledge before the social media–based educational intervention showed variation across respondents. Univariate analysis revealed that some parents were still in the "fairly low" and "fairly good" categories, and not all had reached the "good" category before the intervention. This finding suggests that baseline understanding of choking mitigation and management in preschool children was not yet well developed or evenly distributed. The observed variation indicates limited and unstructured knowledge among parents regarding choking management. Choking is a critical emergency condition that demands an accurate and timely response. Without systematic exposure to relevant information, parents tended to hold only general, fragmented ideas about choking events, which is insufficient to build a comprehensive knowledge framework.

These results are consistent with previous studies. Astilia (2024) reported that, before education, most parents did not have optimal knowledge in recognizing and understanding the steps for managing choking incidents in children. Similarly, Nurhayati et al. (2025) found that although some respondents had a basic understanding of first aid for choking, misconceptions and inaccuracies in the correct handling steps persisted before receiving further education. Conceptually, initial knowledge formation depends on the processes of information reception, meaning comprehension, and concept organization. At this early stage, parents' knowledge was partial and not yet integrated into a cohesive understanding of choking risk and management. These findings indicate a clear need for structured educational interventions to strengthen parents' conceptual framework and cognitive readiness in responding to choking incidents in preschool children.

Parents' Initial Knowledge in the Demonstration Group

The study found that parents' knowledge before receiving the demonstration-based educational intervention varied, mirroring the pattern observed in the social media group. Univariate analysis indicated that at the pre-intervention stage, some respondents were in the "fairly low" and "fairly good" categories, and not all had reached the "good" category. This suggests that, before the intervention, parents' understanding of choking mitigation and management in preschool children was not yet fully developed. This condition indicates that, before the demonstration intervention, parents' knowledge of choking incidents was largely conceptual and not systematically organized. Their knowledge tended to be a general recognition of choking as an emergency, but did not yet include a coherent understanding of the principles, sequence, and rationale of proper management. Such limitations meant that parents had not yet formed a strong knowledge framework to respond effectively to emergencies.

These findings are consistent with previous studies. Trifianingsih & Anggaraini (2023) reported that, before structured education, parents were generally familiar with the basic concept of choking incidents but still made errors in understanding the correct handling steps. Triwidiyantari & Pebrianti (2024) found that at the initial stage, respondents often had partial and fragmented knowledge, which was insufficient to support emergency preparedness. Conceptually, initial knowledge that is not developed through structured learning tends to be limited to information recognition and does not progress to deeper understanding. Without systematic reinforcement, such knowledge remains poorly organized. In the context of choking incidents, this limitation prevents parents from comprehensively linking concepts, risks, and management principles.

Overall, these findings indicate that, before receiving demonstration-based education, parents' knowledge was at an early stage and not yet optimal. The baseline knowledge of both the demonstration and social media groups was relatively balanced, allowing post-intervention improvements to be interpreted as the result of the educational process provided.

Impact of Social Media Education on Parents' Knowledge

The study found that after receiving the social media–based educational intervention, parents' knowledge of choking mitigation and management in preschool children improved. Univariate analysis showed a shift in the knowledge category distribution, with an increase in the "good" category and a decrease in the "fairly low" category compared to pre-intervention conditions. These findings indicate that exposure to educational content via social media strengthened parents' understanding of the material. This improvement suggests that presenting information visually and repeatedly on social media helps parents better understand the concepts of choking incidents. Gradual delivery of educational content allows parents to process information at their own pace, promoting not only basic recognition but also a more comprehensive understanding. The accessibility of social media also enables parents to review previously received information, further reinforcing their comprehension.

These results align with previous studies. Siswati et al. (2025) reported that structured health education helps parents develop a more organized understanding of child health issues. Similarly, Satriani et al. (2025) emphasized that educational processes link new information with existing knowledge, thereby strengthening parents' cognitive readiness to manage potentially risky child health situations. Conceptually, the observed increase in understanding after the intervention indicates that information reception and processing improve when materials are presented visually, concisely, and contextually. Systematically organized content enables parents to connect the concepts of choking, associated risk factors, and fundamental management principles. Consequently, knowledge formed after the intervention is more organized compared to the pre-intervention state. Based on these findings, previous research, and conceptual explanations, it can be concluded that social media–based education effectively enhances parents' knowledge of choking mitigation and management in preschool children. The intervention strengthened parents' understanding from a limited baseline to a more structured one, without altering the initial balance of knowledge between groups.

Impact of Demonstration Education on Parents' Knowledge

The study found that after receiving the demonstration-based educational intervention, parents' knowledge of choking mitigation and management in preschool children improved compared to pre-intervention conditions. Analysis showed a shift in respondents' knowledge levels toward higher categories, although not all parents reached the same level of understanding. This improvement indicates that demonstration education helps parents understand choking management concepts more concretely. Delivering material through direct explanation and visual examples allows parents to observe the sequence of actions and the fundamental principles of management, making the information easier to comprehend and remember than theoretical explanations alone.

These findings align with previous research. Salimatul Amalia et al. (2025) reported that demonstration facilitates participants' understanding of concepts and action sequences by connecting information to real-life situations. Similarly, Lestiawati et al.

(2025) found that combining observation with explanation contributes to easier comprehension and better retention of health information. Conceptually, the increase in knowledge after demonstration education suggests that learning through direct observation strengthens parents' understanding of health information. Through demonstration, information is not only received verbally but also understood in a logical sequence of actions, helping parents organize it more systematically. Based on these results, previous studies, and conceptual reasoning, it can be concluded that demonstration-based education improves parents' knowledge of choking mitigation and management. This development enhances parents' understanding of core concepts and principles, forming an essential foundation for cognitive preparedness in responding to emergencies.

Differences in Knowledge Achievement Post-Intervention

Based on the Mann–Whitney test, the distribution of post-intervention knowledge scores in the social media–based education group and the demonstration group showed a relatively similar pattern. Statistically, the test did not identify significant differences in knowledge achievement between the groups. These findings indicate that both groups reached comparable final knowledge levels after receiving the educational interventions. The results suggest that parents' post-intervention knowledge was shaped through effective learning processes in both educational approaches. Both social media–based and demonstration interventions facilitated parents' understanding of choking mitigation and management concepts, resulting in outcomes that were quantitatively similar.

From a learning perspective, conceptual understanding can develop through various educational pathways as long as information is presented clearly, systematically, and relevantly. Interventions focused on core information delivery, concept reinforcement, and repeated exposure can produce stable knowledge outcomes, even when learning approaches differ. The statistical findings are not intended to evaluate the superiority of either educational method but rather to illustrate the knowledge outcomes achieved at the end of the intervention. The Mann–Whitney test focuses on comparing score distributions and does not reflect the complexity of learning processes, interaction intensity, or participants' experiential learning during the interventions.

Although the analysis showed similar post-intervention knowledge achievements, this does not negate the differences in the learning processes between the two approaches. Demonstration education continues to play an important role in health learning, particularly in reinforcing understanding through direct observation and practice. In this study, the focus on measuring knowledge meant that variations in learning experiences were not fully reflected in the quantitative results. These findings highlight the need to consider both the content and the process of educational interventions when interpreting post-intervention outcomes.

Limitations

This study has several limitations. A ceiling effect may have reduced score variability, as many participants achieved high post-test scores. The relatively similar educational backgrounds of participants limited population diversity. The study also did not assess knowledge retention or practical choking management skills. Additionally, potential information exchange between groups may have influenced results.

Conclusion

In conclusion, the study demonstrates that parents' knowledge and preparedness in managing choking incidents in children improved following educational interventions, regardless of the approach used. Both social media–based education and demonstration education effectively enhanced parents' understanding and readiness, resulting in comparable post-intervention knowledge levels. These findings indicate that either educational method can be successfully applied to increase parental knowledge and preparedness, with the approach adaptable to participants' needs and accessibility.

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