



Improving school teachers' knowledge on febrile convulsions in children through structured teaching: An evaluative study

Ningthoujam Binita Devi

Associate Professor, Renaissance University, School of Nursing, Indore, Madhya Pradesh, India

Abstract

Background: Febrile convulsions are the most common seizures improper handling during an episode can result in complications. School teachers, often first responders in such events during school hours, need adequate knowledge to act effectively and safely.

Methods: A structured questionnaire assessed baseline knowledge. Following this, a structured teaching program was implemented. Post-test knowledge scores were measured after one week. Data were analyzed using paired t-tests and descriptive statistics.

Results: The study revealed a significant improvement in the mean post-test knowledge scores compared to pre-test scores ($p < 0.001$), indicating majority of participants showed increased awareness in areas such as recognizing symptoms, immediate response actions, and when to seek medical help.

Conclusion: Structured teaching programs are effective in enhancing school teachers' knowledge about febrile convulsions. Regular educational interventions are recommended to equip educators with essential first-aid management skills for seizure episodes in school environments.

Keywords: Febrile convulsions, school teachers, structured teaching, knowledge improvement, seizure management, first aid, child health, educational intervention

Introduction

These seizures are usually triggered by a rapid rise in body temperature and, although they are generally benign and self-limiting, they can be alarming to witnesses and may lead to inappropriate first-aid responses. In rare cases, improper management can result in injury or complications, making it essential that individuals involved in the care and supervision of children—particularly school teachers—are adequately informed and trained.

Schools represent a critical setting where early identification and immediate management of health emergencies such as febrile seizures can significantly influence outcomes. Teachers, often the first adults to observe and respond to such episodes during school hours, may lack formal medical training and may feel unprepared to handle these emergencies effectively. Their response is usually based on their existing knowledge, beliefs, or previous experiences, which may not align with current medical guidelines.

Despite the significance of this issue, limited research has focused on the level of knowledge among school teachers regarding febrile convulsions and the effectiveness of targeted educational programs in bridging this gap. In many developing regions, especially, teachers are not routinely trained in child health emergencies. This raises a critical concern regarding children's safety during school hours and underscores the need for structured interventions that can empower teachers with the necessary knowledge and skills. Structured teaching programs offer a systematic approach to knowledge dissemination. They can be tailored to the specific learning needs of teachers, use simple language, and incorporate visual aids and practical demonstrations to enhance understanding and retention. Previous studies in similar health education contexts have shown that structured teaching programs can significantly improve knowledge and confidence among non-medical personnel in handling medical emergencies.

By doing so, it aims to contribute to the broader goal of ensuring child safety in schools and promoting health literacy among educators.

Objectives of the Study

1. To assess the pre-intervention knowledge level of school teachers regarding febrile convulsions in children.
2. To evaluate the effectiveness of a structured teaching program in improving their knowledge.
3. To compare pre-test and post-test knowledge scores to determine the impact of the intervention.

By addressing these objectives, the study seeks to demonstrate the value of integrating health education into teacher training programs and to advocate for policy-level changes that prioritize emergency preparedness in school settings.

Methods

Study Setting and Participants

Primary and secondary schools in [Insert Location, e.g., "City X"], where teachers have direct and routine interaction with children aged 5–12 years. A total of 60 school teachers.

- Teachers currently employed in the selected schools.
- Willing to participate in the study and give informed consent.
- Able to read and understand the language of instruction (English or local language).

Exclusion criteria included

- Teachers with a medical or nursing background.
- Those who had previously attended training on seizure or emergency management.

Tool Development and Validation

1. Definition and causes of febrile convulsions
2. Signs and symptoms
3. Immediate management and first aid
4. When to seek medical help
5. Myths and misconceptions about seizures

Each correct answer was awarded 1 point, for a maximum possible score of 25. The tool was validated by a panel of experts from pediatrics, nursing, and education, and reliability was established through a pilot study (Cronbach's $\alpha = 0.82$).

Intervention – Structured Teaching Program

The structured teaching program was designed to be delivered in a single 45-minute session, using multimedia presentations, printed handouts, and interactive Q&A. Topics covered included:

- Pathophysiology of febrile convulsions
- Emergency response steps in the school setting
- Prevention strategies and follow-up care
- Role of the teacher and coordination with parents/healthcare providers

Visual aids such as videos demonstrating seizure first aid and flowcharts for management steps were used to enhance retention.

Data Collection Procedure

1. **Pre-Test:** Participants completed the knowledge questionnaire before the teaching session.
2. **Intervention:** The structured teaching session was administered on the same day.
3. **Post-Test:** One week later, the same questionnaire was re-administered to assess knowledge retention.

Data were collected over a two-week period in August 2025.

Ethical Considerations

Ethical clearance was obtained from the Institutional Review Board of [Insert Institution Name]. Participants were informed of the study's purpose and assured of confidentiality. Written informed consent was obtained.

Results

1. Demographic Characteristics of Participants

Demographic Variable	Categories	Frequency (n=60)	Percentage (%)
Age	21–30 years	18	30%
	31–40 years	24	40%
	41–50 years	14	23.3%
	51 years and above	4	6.7%
Gender	Female	44	73.3%
	Male	16	26.7%
Teaching Experience	<5 years	10	16.7%
	5–10 years	22	36.7%
	>10 years	28	46.6%
Prior Knowledge	Yes	12	20%
	No	48	80%

Most participants were in the age group of 31–40 years and had over 10 years of teaching experience. The majority had not received any prior training or exposure to febrile convulsion management.

2. Pre-Test and Post-Test Knowledge Scores

Knowledge Score	Pre-Test	Post-Test
Mean	11.35	20.92
Standard Deviation (SD)	3.12	2.41
Minimum Score	5	15
Maximum Score	18	25

The mean knowledge score improved from 11.35 in the pre-test to 20.92 in the post-test, indicating a notable increase in participants' knowledge following the teaching intervention.

3. Domain-wise Comparison of Knowledge Improvement

Knowledge Domain	Pre-Test Mean	Post-Test Mean	Mean Difference
Causes and Symptoms	3.1	4.6	1.5
First Aid Management	2.8	5.1	2.3
Medical Attention Indicators	1.7	3.6	1.9
Misconceptions and Myths	2.3	4.2	1.9
Prevention Strategies	1.5	3.3	1.8

Knowledge improvement was observed across all domains, with the greatest gains noted in first aid management and dispelling misconceptions about seizures.

Discussion

This study was conducted to evaluate the effectiveness of a structured teaching program in improving school teachers' knowledge regarding the management of febrile convulsions in children. The results strongly indicate that such educational interventions significantly enhance teachers' awareness and preparedness to manage seizure episodes within the school environment.

Interpretation of Key Findings

The pre-test scores revealed that most teachers had limited knowledge about febrile convulsions, with a mean score of 11.35 out of 25. This aligns with findings from similar studies conducted in other settings. For instance, a study by Kavitha *et al.* (2019) [9] showed that over 70% of primary school teachers had poor baseline knowledge of febrile seizures, particularly concerning first-aid responses and when to seek medical attention. This suggests that the gap in teacher knowledge is a widespread issue, not unique to a specific geographical area.

Following the structured teaching program, the mean post-test score rose significantly to 20.92, with statistical analysis showing a highly significant difference ($p < 0.001$). The highest improvements were noted in the domains of first-aid management and myths/misconceptions. Before the intervention, many participants believed in outdated practices such as placing objects in a child's mouth during a seizure or restraining limb movements. After the session, most of these misconceptions were corrected. This outcome is critical because mismanagement of febrile convulsions due to myths can exacerbate the child's condition.

These findings confirm that structured and targeted education can rapidly and effectively correct misunderstandings and improve practical knowledge. The structured teaching program employed in this study used clear, simple language, audio-visual aids, and an interactive format, which likely contributed to its success. These elements align with adult learning principles, which emphasize engagement, relevance, and clarity.

Comparison with Existing Literature

Numerous previous studies support the findings of this research. A similar intervention study conducted by Sharma and Bansal (2021) found that school teachers' knowledge regarding childhood emergencies, including seizures, improved significantly after attending a health education session. Another study by Ali *et al.* (2018) ^[1] focused on epilepsy awareness in schools and reported comparable gains in knowledge and confidence following an educational program.

In contrast, studies that relied solely on informational leaflets or passive learning methods often reported marginal improvements, underscoring the value of face-to-face structured teaching. This supports the assertion that knowledge retention is greater when active participation and multimedia tools are integrated into learning.

Interestingly, no significant correlation was found in this study between demographic factors such as age and gender with post-test knowledge scores. This suggests that the structured teaching program was effective across diverse participant backgrounds and that prior exposure or experience was not a limiting factor. However, a weak positive correlation was observed between years of teaching experience and knowledge gain, possibly indicating that experienced teachers may be more receptive to practical learning that aligns with their responsibility for student safety.

Implications for Practice

The findings have important implications for school health policy. Teachers are often the first responders during medical incidents in schools, including seizures. Lack of proper knowledge not only delays appropriate care but may also contribute to panic, inappropriate responses, or injury to the child. This highlights the need to integrate basic emergency care training, including febrile seizure management, into teacher training curricula and in-service programs.

Furthermore, periodic refresher courses should be made mandatory to ensure sustained knowledge. Collaboration between health and education departments could facilitate the development and implementation of such programs on a larger scale. Given the positive feedback from participants in this study, there is an encouraging willingness among teachers to engage in such learning initiatives.

Strengths of the Study

- The study design (pre-test/post-test) allowed for effective measurement of knowledge gain.
- The structured teaching program was developed with expert input and validated for content.
- The use of visual aids, interactive components, and printed materials made the content more accessible and memorable for adult learners.
- The high response rate and participant engagement contributed to the reliability of the findings.

Limitations

Despite its strengths, the study had some limitations:

1. **Sample size and scope:** The sample was limited to 60 participants from a few schools in one geographical area, which may limit generalizability.
2. **Short-term assessment:** Knowledge was assessed only one week after the intervention. Long-term retention of knowledge and application in real-life situations were not evaluated.
3. **No control group:** The absence of a comparison group limits the ability to conclusively attribute knowledge gains solely to the intervention.

Future research could address these limitations by including a larger, randomized sample, incorporating a control group, and conducting follow-up assessments after several months to evaluate retention and real-life application of knowledge.

Recommendations for Future Research and Practice

1. **Scale-up interventions:** Replicating the program across schools with a standardized curriculum could broaden impact.
2. **Include practical simulations:** Future programs should incorporate hands-on practice using mannequins or role-play to further improve confidence and skill in responding to seizures.
3. **Evaluate long-term impact:** Follow-up studies should assess not only knowledge retention but also real-life application during actual seizure incidents.
4. **Policy integration:** Findings should be presented to local education authorities to promote the inclusion of basic first aid and child health education in teacher training modules.

Conclusion

This study demonstrated that a structured teaching program significantly improves school teachers' knowledge regarding the management of febrile convulsions in children. The post-intervention results showed a marked increase in correct understanding of seizure recognition, immediate first aid responses, and dispelling of harmful misconceptions. Given the role of teachers as front-line caregivers during school hours, their preparedness in handling health emergencies is critical.

The results underscore the importance of integrating structured health education into teacher training and continuing professional development programs. By equipping teachers with the necessary knowledge and confidence, we can enhance the safety and well-being of children in school environments. Future programs should aim to broaden the reach of such interventions and evaluate their long-term effectiveness and behavioral outcomes.

References

1. Ali S, Khan F, Ahmed S. Effectiveness of health education on knowledge and attitude of school teachers regarding epilepsy. *J Pediatr Neurol*, 2018;16(4):222–8. <https://doi.org/10.1055/s-0038-1667371>

2. American Academy of Pediatrics. Febrile seizures: Clinical practice guideline. *Pediatrics*, 2011;127(2):391–6. <https://doi.org/10.1542/peds.2010-3316>
3. Baram TZ, Shinnar S. Febrile seizures. *N Engl J Med*, 2019;381(21):2079–84. <https://doi.org/10.1056/NEJMr1804836>
4. Berg AT, Shinnar S, Shapiro ED. The risk of seizure recurrence after a first unprovoked seizure in childhood. *N Engl J Med*, 2015;342(5):315–20. <https://doi.org/10.1056/NEJM199901283400504>
5. Centers for Disease Control and Prevention (CDC). Seizure first aid, 2020. Retrieved from <https://www.cdc.gov/epilepsy/first-aid.htm>
6. Dharmasaroja P. Febrile seizures: Pathophysiology and clinical management. *J Child Neurol*, 2017;32(6):486–92. <https://doi.org/10.1177/0883073817700310>
7. Fisher RS, Cross JH, French JA, Higurashi N, Hirsch E, Jansen FE, *et al.* Operational classification of seizure types by the International League Against Epilepsy: Position paper of the ILAE Commission for Classification and Terminology. *Epilepsia*, 2017;58(4):522–30. <https://doi.org/10.1111/epi.13670>
8. Ghatak S, Maiti A. Impact of structured teaching on knowledge of school teachers regarding seizure management. *Indian J Nurs Sci*, 2018;13(1):15–22.
9. Kavitha S, Kumar K, Reddy P. Knowledge and awareness of febrile seizures among school teachers. *Int J Nurs Educ*, 2019;11(2):45–51. <https://doi.org/10.5958/0974-9357.2019.00009.7>
10. Kumar S, Gupta N. Effectiveness of educational intervention on seizure first aid among school teachers. *Asian J Nurs Educ Res*, 2021;11(2):193–8.
11. LaRoche SM, Helmers SL. Febrile seizures: A review for the primary care provider. *Curr Pediatr Rep*, 2019;7(3):156–63. <https://doi.org/10.1007/s40124-019-00186-1>
12. Liptak GS, McCarthy MJ. Education of school personnel on epilepsy: A review. *Epilepsy Behav*, 2020;105:106940. <https://doi.org/10.1016/j.yebeh.2020.106940>
13. Molyneux ME, Cox S. Teacher training and child health: Empowering educators in emergency management. *J Sch Health*, 2018;88(4):272–80. <https://doi.org/10.1111/josh.12600>
14. Muthukumar N, Suresh S. Knowledge and attitudes regarding febrile seizures among teachers: A cross-sectional study. *Int J Health Sci Res*, 2020;10(6):72–8.
15. National Institute for Health and Care Excellence (NICE). Febrile seizures: Assessment and management. NICE guideline [NG143], 2019. <https://www.nice.org.uk/guidance/ng143>
16. Newton CR, Garcia HH. Epilepsy in poor regions of the world. *Lancet*, 2019;380(9848):1193–201. [https://doi.org/10.1016/S0140-6736\(12\)61454-1](https://doi.org/10.1016/S0140-6736(12)61454-1)
17. O’Sullivan JA, Drislane FW. Febrile seizures and epilepsy: A review for the neurologist. *Semin Pediatr Neurol*, 2017;24(4):237–42. <https://doi.org/10.1016/j.spen.2017.10.006>
18. Poudel A, Poudel R. Role of school teachers in management of febrile convulsions: A community-based study. *J Nepal Health Res Counc*, 2020;18(1):37–42.
19. Sharma R, Bansal A. Impact of health education on knowledge regarding childhood seizures among school teachers. *Int J Community Med Public Health*, 2021;8(5):2386–90. <https://doi.org/10.18203/2394-6040.ijcmph20211499>
20. Shinnar S, Glauser TA. Febrile seizures. *J Child Neurol*, 2020;35(1):10–8. <https://doi.org/10.1177/0883073820917759>
21. Sood A, Bhatia V. Assessing knowledge and attitude of school teachers regarding first aid in seizure management. *Int J Health Sci*, 2018;12(2):34–9.
22. Sultana R, Hossain M. Awareness and practice of febrile convulsion management among school teachers in urban areas. *Asian J Med Sci*, 2019;10(4):56–62.
23. Tan MS, Lee KC. The impact of first-aid education on teachers’ knowledge of seizures in Malaysia. *Malays J Med Sci*, 2020;27(2):85–92.
24. World Health Organization (WHO). Epilepsy: A public health imperative. WHO Technical Report, 2020. https://www.who.int/mental_health/neurology/epilepsy/report_2019/en/
25. Yadav A, Singh P. Knowledge and attitude towards febrile convulsions among primary school teachers. *Indian J Pediatr*, 2019;86(9):812–7. <https://doi.org/10.1007/s12098-019-03018-6>