



“A Pre-Experimental Study to Evaluate the Effectiveness of a Structured First-Aid Training Programme on Knowledge and Skills Regarding Management of Medical Emergencies among Primary School Teachers at Selected Schools of Indore, Madhya Pradesh.”

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Abstract

Background

Medical emergencies such as bleeding, burns, fractures, choking, fainting, seizures, and other injuries may occur unexpectedly among primary school children. School teachers are often the first adults available to respond. Adequate knowledge and practical first-aid skills are therefore essential for providing immediate and appropriate care until professional medical assistance is available. Evidence indicates that first-aid education can improve knowledge and emergency-response abilities.

Objectives

1. To assess the pre-test knowledge of primary school teachers regarding first-aid management of medical emergencies.
2. To assess the pre-test first-aid skills of primary school teachers.
3. To evaluate the effectiveness of a structured first-aid training programme on knowledge.
4. To evaluate the effectiveness of the structured first-aid training programme on practical skills.
5. To determine the association between post-test knowledge and selected demographic variables.

Methodology

A **quantitative pre-experimental one-group pre-test post-test research design** was adopted. The study was conducted among **100 primary school teachers** from selected schools of Indore, Madhya Pradesh. Participants were selected using **non-probability purposive sampling**. Data were collected using a **30-item structured knowledge questionnaire** and a **20-item practical skill checklist**. A structured first-aid training programme consisting of lecture, demonstration, return demonstration, audiovisual material, and practice sessions was provided. Post-test assessment was conducted after **14 days**. Descriptive and inferential statistics, including paired *t*-test and Chi-square test, were used.

Results

The mean knowledge score increased from **15.02 ± 4.21** in the pre-test to **25.10 ± 2.68** in the post-test. The obtained paired *t*-value was **22.51 (p<0.001)**, indicating a statistically significant improvement in knowledge.

The mean practical skill score increased from **8.64 ± 3.21** to **16.82 ± 2.11** after training. The paired *t*-value was **20.37 (p<0.001)**, demonstrating a significant improvement in first-aid skills.

A significant association was observed between post-test knowledge and **previous first-aid training, previous experience of managing emergencies, and educational qualification (p<0.05)**.

Conclusion

The structured first-aid training programme was **highly effective in improving the knowledge and practical first-aid skills** of primary school teachers. Regular first-aid training, practical demonstrations, and refresher programmes should be incorporated into school health and teacher-development programmes.

Keywords: First Aid, School Teachers, Medical Emergencies, Primary School Children, Knowledge, Skills, Training Programme.

1. INTRODUCTION

Primary school children spend a substantial proportion of their time in school and participate in classroom activities, sports, recreation, and outdoor programmes. During these activities, medical emergencies such as **falls, bleeding, burns, fractures, choking, fainting, seizures, and other injuries** may occur. First aid is the immediate care provided to an injured or suddenly ill person before professional medical assistance becomes available. Appropriate first aid can help preserve life, prevent deterioration, reduce complications, and facilitate timely referral. International first-aid recommendations emphasize evidence-based management of common medical and trauma emergencies. School teachers are frequently the first adults present when an emergency occurs. Therefore, they should possess not only theoretical knowledge but also practical skills to recognize an emergency, provide appropriate initial care, and seek professional assistance when required. Studies among school teachers have demonstrated gaps in first-aid knowledge and have reported improvement following structured training. One study involving school students and teachers found that first-aid knowledge was initially inadequate and improved significantly following training. Another study among primary school teachers reported that although most teachers considered first aid important, many were unfamiliar with the concept and recommended inclusion of first-aid training in teacher education.

2. NEED OF THE STUDY

Medical emergencies and accidental injuries can occur suddenly among primary school children. Teachers are often the **first available responders** and may need to provide immediate care before healthcare professionals arrive. However, teachers may have inadequate knowledge and practical skills regarding appropriate first-aid measures. Incorrect management can delay appropriate treatment or worsen an injury. Evidence from school-based studies indicates that first-aid training can significantly improve knowledge and practical emergency-response abilities. Therefore, a structured training programme involving **lecture, demonstration, return demonstration, and practical practice** is needed to improve teachers' knowledge and skills.

3. OBJECTIVES

1. To assess the pre-test knowledge of primary school teachers regarding first-aid management of medical emergencies.
2. To assess the pre-test practical skills of primary school teachers regarding first-aid management.
3. To evaluate the effectiveness of a structured first-aid training programme on knowledge.
4. To evaluate the effectiveness of a structured first-aid training programme on practical skills.

5. To determine the association between post-test knowledge scores and selected demographic variables.
6. To determine the association between post-test skill scores and selected demographic variables.

4. RESEARCH HYPOTHESES

The hypotheses were tested at **0.05 level of significance**.

- **H₁:** There will be a significant difference between the mean pre-test and post-test knowledge scores of primary school teachers after the structured first-aid training programme.
- **H₂:** There will be a significant difference between the mean pre-test and post-test practical skill scores of primary school teachers after the structured first-aid training programme.
- **H₃:** There will be a significant association between post-test knowledge scores and selected demographic variables.
- **H₄:** There will be a significant association between post-test skill scores and selected demographic variables.

5. MATERIALS AND METHODS

Research Approach

A **quantitative evaluative research approach** was adopted.

Research Design

A **pre-experimental one-group pre-test post-test research design** was used.

Research Design Representation

$$O_1 \rightarrow X \rightarrow O_2$$

Where:

- **O₁** = Pre-test assessment
- **X** = Structured first-aid training programme
- **O₂** = Post-test assessment

Study Setting

The study was conducted in **selected primary schools of Indore, Madhya Pradesh.**

Study Population

The population consisted of **primary school teachers** working in selected schools.

Sample Size

The total sample consisted of **100 primary school teachers.**

Sampling Technique

A **non-probability purposive sampling technique** was used.

Inclusion Criteria

Teachers who:

- Were working in selected primary schools.
- Were involved in teaching/supervising primary school children.
- Could understand Hindi or English.
- Were available during data collection.
- Were willing to participate.
- Provided written informed consent.

Exclusion Criteria

Teachers who:

- Were absent during data collection.
- Were unwilling to participate.
- Were on prolonged leave.
- Had recently completed comprehensive first-aid training.

6. RESEARCH INSTRUMENTS

Section A: Demographic Profile

Information was collected regarding:

- Age
- Gender
- Educational qualification
- Teaching experience
- Previous first-aid training
- Previous experience of medical emergencies
- Previous participation in emergency drills
- Source of first-aid information

Section B: Knowledge Questionnaire

A 30-item structured knowledge questionnaire was used.

It covered:

- General principles of first aid
- Assessment of an emergency
- Bleeding and wounds
- Burns
- Fractures and sprains
- Choking
- Fainting
- Seizures
- Nosebleed
- Poisoning
- Unconsciousness
- Emergency referral

Each correct response received **1 mark**.

Maximum score = 30

Knowledge Interpretation

Score Level

0–10 Inadequate

11–20 Moderate

21–30 Adequate

Section C: Practical Skill Checklist

A **20-item observational skill checklist** was used to assess practical first-aid performance.

The checklist covered:

- Scene safety
- Initial assessment
- Calling for help
- Hand hygiene
- Management of bleeding
- Management of burns
- Management of fractures
- Choking response
- Fainting
- Seizure management
- Recovery position
- Emergency referral

Each correctly performed step received **1 mark**.

Maximum score = 20

Skill Interpretation

Score	Level
0–7	Poor
8–14	Moderate
15–20	Good

7. STRUCTURED FIRST-AID TRAINING PROGRAMME

The training programme consisted of approximately **60 minutes of theoretical teaching and 60 minutes of practical demonstration and return demonstration.**

The programme included:

1. Principles of first aid.
2. Emergency assessment and safety.
3. Management of bleeding and wounds.
4. Burns and scalds.
5. Fractures and sprains.
6. Choking.
7. Fainting and unconsciousness.
8. Seizures.
9. Nosebleed.
10. Poisoning.
11. Basic life support and emergency activation.
12. Appropriate referral and communication.

The training used **lecture, demonstration, audiovisual aids, posters, models/manikins, and return demonstration.** The emphasis on hands-on practice is consistent with evidence supporting structured first-aid education.

8. DATA COLLECTION PROCEDURE

Permission was obtained from the concerned school authorities. Written informed consent was obtained from all participants.

A pre-test was conducted using the knowledge questionnaire and practical skill checklist. Following the pre-test, the structured first-aid training programme was administered.

After **14 days**, the same knowledge questionnaire and practical skill checklist were used for the post-test assessment.

Confidentiality and anonymity of participants were maintained.

9. RESULTS

Table 1. Pre-test and Post-test Knowledge Scores (N=100)

Assessment	Mean	SD	Mean Difference	Paired <i>t</i>	p-value
Pre-test	15.02	4.21			
Post-test	25.10	2.68	10.08	22.51	<0.001

The mean knowledge score increased from **15.02 ± 4.21** in the pre-test to **25.10 ± 2.68** in the post-test. The calculated paired *t*-value of **22.51** was statistically significant at **p<0.001**.

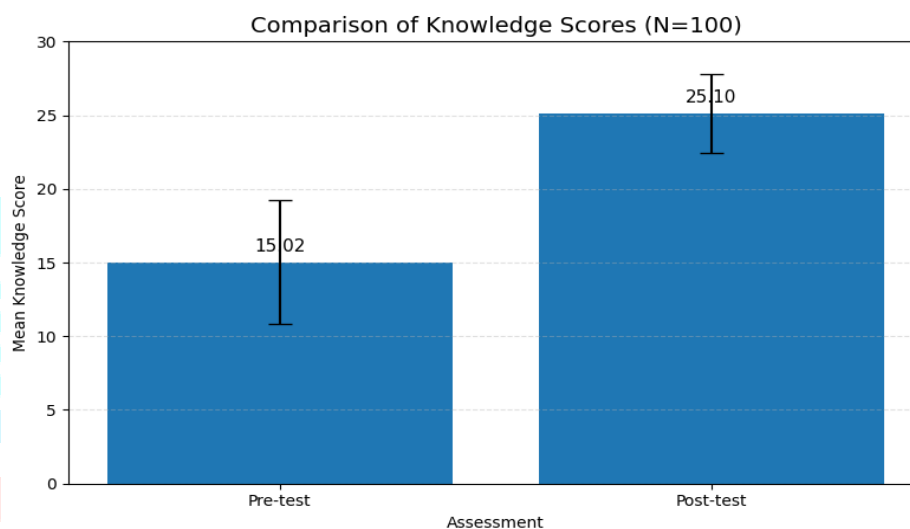


Table 2. Pre-test and Post-test Skill Scores (N=100)

Assessment	Mean	SD	Mean Difference	Paired <i>t</i>	p-value
Pre-test	8.64	3.21			
Post-test	16.82	2.11	8.18	20.37	<0.001

The mean practical skill score increased from **8.64 ± 3.21** to **16.82 ± 2.11** following the training programme. The difference was statistically significant (**t=20.37, p<0.001**).

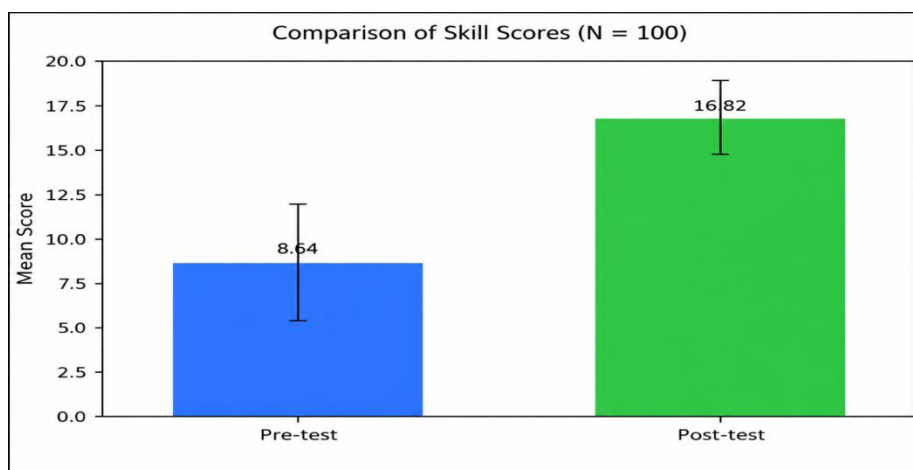


Table 3. Distribution of Teachers According to Knowledge Level

Knowledge Level	Pre-test f (%)	Post-test f (%)
Inadequate	24 (24%)	4 (4%)
Moderate	58 (58%)	26 (26%)
Adequate	18 (18%)	70 (70%)
Total	100 (100%)	100 (100%)

The proportion of teachers with adequate knowledge increased from **18% in the pre-test to 70% in the post-test.**

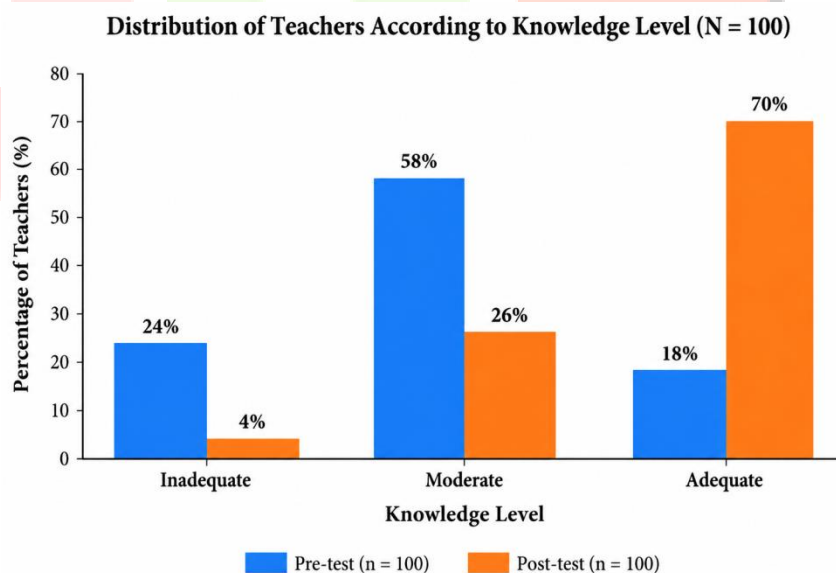
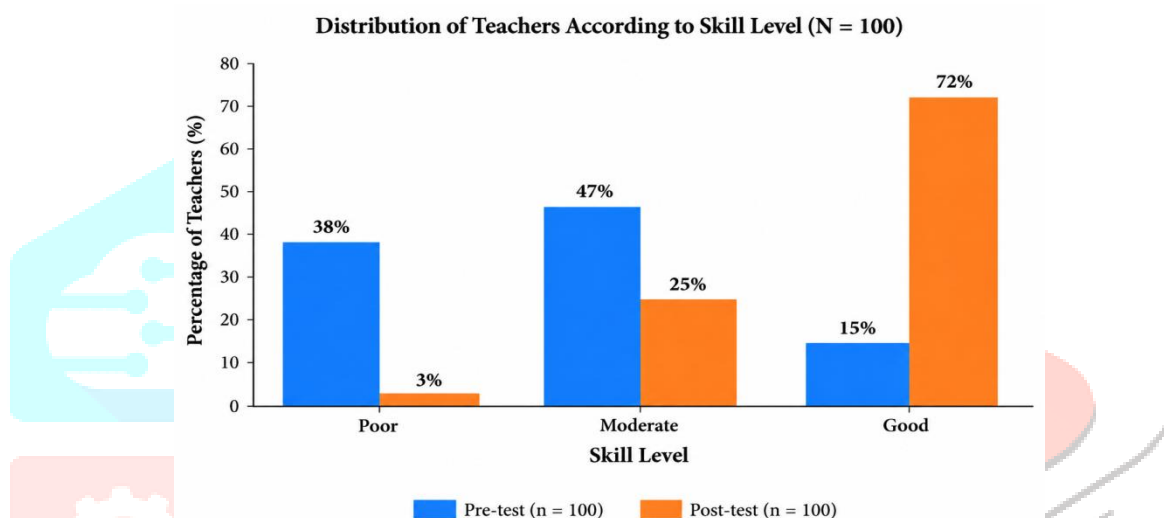


Table 4. Distribution of Teachers According to Skill Level

Skill Level	Pre-test f (%)	Post-test f (%)
Poor	38 (38%)	3 (3%)
Moderate	47 (47%)	25 (25%)
Good	15 (15%)	72 (72%)
Total	100 (100%)	100 (100%)

The proportion of teachers demonstrating good practical skills increased from **15% to 72%** following the intervention.



10. ASSOCIATION OF POST-TEST KNOWLEDGE WITH DEMOGRAPHIC VARIABLES

The findings showed statistically significant associations between post-test knowledge and:

- **Educational qualification (p=0.018)**
- **Previous first-aid training (p<0.001)**
- **Previous experience of managing medical emergencies (p=0.006)**

No statistically significant association was observed with gender.

11. DISCUSSION

The present study demonstrated a substantial improvement in teachers' knowledge following the structured first-aid training programme. The mean knowledge score increased from **15.02 ± 4.21** to **25.10 ± 2.68**, with a statistically significant paired *t*-value of **22.51 (p<0.001)**.

Similarly, practical skills improved from a mean score of 8.64 ± 3.21 to 16.82 ± 2.11 , with a paired t -value of 20.37 ($p < 0.001$).

These findings are consistent with previous research showing that first-aid training significantly improves knowledge among school teachers and students. Research involving primary school teachers has also highlighted the need for regular first-aid education and updating of skills. The improvement in practical skills is particularly important because first-aid competence requires more than theoretical knowledge. Structured demonstrations and hands-on practice can improve the ability of teachers to perform appropriate emergency procedures. The findings support the integration of first-aid education into teacher development and school health programmes. Recent school-based research from India has also demonstrated the feasibility of training teachers to facilitate first-aid education in school settings.

12. CONCLUSION

The study concluded that the **structured first-aid training programme was highly effective** in improving both knowledge and practical first-aid skills among primary school teachers.

The mean knowledge score increased from **15.02 to 25.10**, while the mean skill score increased from **8.64 to 16.82**, with both improvements statistically significant at $p < 0.001$.

The findings emphasize the importance of **regular first-aid training, practical demonstrations, return demonstrations, and refresher programmes** for school teachers to improve their preparedness for managing medical emergencies among primary school children.

13. RECOMMENDATIONS

1. Regular first-aid training should be provided to all school teachers.
2. Schools should conduct periodic **mock emergency drills and return demonstrations**.
3. First-aid training should be incorporated into **teacher orientation and professional development programmes**.
4. Schools should maintain adequately equipped and accessible **first-aid kits**.
5. Refresher training should be provided periodically to improve retention of first-aid knowledge and skills.
6. Similar studies should be conducted with **larger samples and multiple schools**.
7. Future studies may use a **randomized controlled design** with an experimental and control group.
8. Follow-up studies may assess **long-term retention of knowledge and practical skills**.

14. REFERENCES

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