

A STUDY TO ASSESS THE EFFECTIVENESS OF DEMONSTRATION ON KNOWLEDGE REGARDING FIRST AID MANAGEMENT OF CHOKING AMONG B.ED STUDENTS IN SELECTED COLLEGES, HASSAN

Ms. Sandhya L.,

Assistant Professor, Department of Medical-Surgical Nursing, Government College of Nursing, Hassan Mobile No.: 8660407979; Email ID: sandhyachowhan77@gmail.com

Ms. Jayaveena G. T.,

Assistant Professor, Department of Child Health Nursing, Government College of Nursing, Hassan, Mobile No.: 9663862300; Email ID: jayaveenagt@gmail.com

Ms. Shobha P.,

Assistant Professor, Department of Medical-Surgical Nursing, Government College of Nursing, Hassan; Email ID: shobhasharanya435@gmail.com

Mr. Kallesh B.,

Assistant Professor, Department of Psychiatric Nursing, Government College of Nursing, Hassan, Mobile No.: 8105363632; Email ID: kallesh.bandre@gmail.com

Abstract

Choking is a leading cause of accidental injury and death in children under four, often caused by food, coins, or small toys. This pre-experimental, evaluative study assessed the effectiveness of a demonstration on first aid management of choking among 60 B.Ed. students at NDRK College for Education in Hassan, Karnataka, selected via stratified random sampling. Data collected through structured questionnaires revealed that during the pre-test, 96.2% of students had inadequate knowledge, with an overall mean score of 10.37 (D = 3.233). Following the demonstration, post-test scores significantly improved, with 82.5% demonstrating adequate knowledge and an overall mean score of 25.18 (SD = 3.16). The study concluded that the educational demonstration was highly effective in improving the students' knowledge, while no significant association was found between their knowledge levels and demographic variables.

Keywords: Knowledge; B.Ed Students; First aid management of choking; Demonstration.

Introduction

Choking occurs when a foreign object or food blocks the airway, cutting off oxygen to the brain and necessitating immediate first-aid intervention [1]. The universal sign of choking is clutching the throat, accompanied by symptoms such as an inability to talk, labored or noisy breathing, coughing, cyanosis, and loss of consciousness [1]. Swallowing is a complex process involving multiple nerves and 50 muscle pairs; mistimed reflexes or muscle weakness can cause food or liquids to enter the airway, potentially causing life-threatening complications or pneumonia [2,3].

To clear an obstruction, techniques designed to increase intrathoracic pressure—such as back blows, abdominal thrusts (Heimlich maneuver), and chest thrusts—are utilized sequentially to achieve the desired result [4]. Abdominal thrusts

are specifically indicated for conscious victims when back slaps fail, though rescuers must avoid excessive force to prevent internal organ damage; chest compressions are reserved for unconscious victims [5]. Notably, biomechanical studies demonstrate that self-administered thrusts or pushing the upper abdomen against a chair back generate effective intrathoracic pressures, suggesting these self-rescue variants should be integrated into life-support training [6].

Need for the Study

Choking represents a critical public health burden, ranking as the fourth leading cause of unintentional injury death. It is especially prevalent and fatal among young children under four years old—who frequently aspirate food, coins, or toys—as well as elderly populations over 75 years old suffering from dysphagia or poor dentition [8,9,10]. Despite the high risks, widespread lack of public preparedness remains a critical issue. Studies show that bystanders rarely attempt the Heimlich maneuver or timely CPR on choking victims [11]. While developed countries routinely integrate Basic Life Support (BLS) training into public education, developing nations like India lack uniform programs, leaving the general public ill-equipped to handle these acute airway emergencies before professional health services arrive [12,13].

Literature reviews emphasize that reducing choking mortality requires environmental mealtime modifications, structured oral care, and enhanced community awareness regarding proper physical interventions [14]. Educational assessments reveal significant baseline deficiencies in first-aid knowledge across multiple populations. For instance, a school-based intervention in West Bengal found that fewer than 50% of students could answer basic first-aid questions, with the lowest correct response rate (8.6%) observed for choking management [7]. Similarly, a cross-sectional study among female health science students demonstrated inadequate baseline knowledge—with over 20% incorrectly attempting to blindly sweep the victim's throat with a finger—though scores significantly improved following an educational presentation [15].

Because educators are uniquely positioned to oversee and protect children within school environments and the broader community, training future teachers is paramount. Consequently, this study evaluates the effectiveness of an instructional demonstration on the first-aid management of choking among B.Ed. students, aiming to mitigate baseline deficiencies and improve practical emergency intervention skills.

OBJECTIVES OF THE STUDY

- Assess the existing knowledge regarding first aid management of choking among B.Ed. Students in selected colleges.
- Assess the post test knowledge regarding first aid management of choking among B.Ed. Students after giving demonstration.
- Evaluate the effectiveness of demonstration on knowledge regarding first aid management of choking among B.Ed. Students by comparing pretest and post test knowledge scores.
- To determine the association between pre-test knowledge scores of B.Ed Students on first aid management of choking with selected demographic variables.

HYPOTHESES:

H₁: There will be a significant difference between pre test and post test knowledge scores of the B.Ed. Students regarding first aid management of choking.

H₂: There will be a significant association between the pretest knowledge of B.Ed. Students regarding first aid management of choking with selected demographic variables.

OPERATIONAL DEFINITIONS:

1. **ASSESS:** defined as evaluate or estimate the nature, ability, or quality of particular variable.

In this study it refers to the measure the knowledge of B.Ed. Students regarding first aid management of choking.

2. **EFFECTIVENESS:** defined as capability of producing a desired result or the ability to produce desired output.

In this study it refers to the extent to which the demonstration on first aid management of choking achieves desired effect in improving the knowledge of B.Ed. Students.

3. **DEMONSTRATION:** defined as an act of showing that something exists or is true by giving proof or evidence.

In this study it refers to the systematically designed practical exhibition with appropriate explanation regarding first aid management of choking specially designed for B.Ed. Students to improve their knowledge.

4. **KNOWLEDGE:** defined as facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject.

In this study refers to the correct information possessed by B.Ed. Students on first aid management of choking.

5. **B.ED. STUDENTS:** defined as an undergraduate professional degree which prepares students for work as a teacher in schools.

In this study it refers to the students who have completed their bachelor degree and studying a B.Ed course in selected colleges, Hassan.

6. **FIRST AID MANAGEMENT:** defined as the first and immediate assistance given to any person suffering from choking, with care provided to preserve life, prevent the condition from worsening, or to promote recovery.

In this study it refers to the immediate treatment of choking consists of measures to increase intrathoracic pressure, thus forcing the obstructing material upwards and outwards. Three such methods described are abdominal thrusts (Heimlich manoeuvre), back blows (or slap) and chest thrusts (similar to chest compressions during CPR, but sharper in nature and delivered at a slower rate.

7. **CHOKING:** defined as a blockage of the upper airway by food or other objects, which prevents a person from breathing effectively. In this study it refers to the condition caused by the obstruction of foreign body in to the respiratory tract.

ASSUMPTIONS:

- It is assumed that the B.Ed. Students may not have inadequate knowledge about the first aid management of choking.
- The B.Ed students' knowledge may increase after demonstration regarding the first aid management of choking.
- The improved knowledge of B.Ed. Students regarding first aid management of choking may help to utilize when required.

DELIMITATIONS:

- Only knowledge was considered in the present study.
- The study was conducted in one area, which restricts the generalization.

RESEARCH METHODOLOGY

RESEARCH APPROACH

A research approach provides the overall direction for conducting a study and guides the selection of appropriate methods for data collection and analysis. The present study adopted an evaluative research approach, which is suitable for measuring the effectiveness of an intervention by determining how well a programme or procedure works within its

context. This approach was selected to determine the effectiveness of a Demonstration on knowledge regarding the first aid management of choking among B.Ed. students by comparing their pre-test and post-test knowledge scores.

RESEARCH DESIGN

The study employed a Pre-experimental (One-Group Pre-test and Post-test) Research Design. A single group of 60 B.Ed. students was assessed using a pre-test, followed by the implementation of the demonstration intervention, and concluded with a post-test using the same structured questionnaire to evaluate the acquisition of knowledge.

The schematic representation of the design is illustrated below:

Group	Pre-test	Intervention	Post-test
B.Ed. Students ($N = 60$)	O_1	X	O_2

- O_1 : Pre-test knowledge score regarding first aid management of choking.
- X : Implementation of the Demonstration on first aid management of choking.
- O_2 : Post-test knowledge score regarding first aid management of choking.

VARIABLES OF THE STUDY

- **Independent Variable:** The Demonstration regarding first aid management of choking.
- **Dependent Variable:** Knowledge of B.Ed. students regarding the first aid management of choking.
- **Demographic Variables:** Age, gender, religion, stream of course studied in PUC, year of B.Ed. course, family monthly income, type of family, and source of information regarding first aid management of choking.

SETTING OF THE STUDY

The study was undertaken at NDRK College for Education and NDRK College of Education, Hassan, Karnataka. This setting was selected due to geographical proximity, excellent availability of subjects, and administrative permission to conduct the study.

POPULATION, SAMPLE, AND SAMPLING TECHNIQUE

The target population comprised B.Ed. students studying in selected colleges of Hassan. The final sample consisted of 60 B.Ed. students studying at NDRK College for Education, Hassan, selected using a **Stratified Random Sampling** technique.

- **Inclusion Criteria:** B.Ed. students studying in the selected colleges in Hassan who were available at the time of data collection and willing to participate in the study.
- **Exclusion Criteria:** B.Ed. students who were unavailable during data collection or unwilling to participate.

DEVELOPMENT OF THE DEMONSTRATION

The educational demonstration was prepared based on the assessed learning needs of the B.Ed. students, an extensive review of literature, investigator experience, and consultations with subject experts and a statistician. The instructional content was systematically organized into four components:

1. Meaning and causes of choking
2. Signs and symptoms of choking
3. First aid management of choking
4. Practical demonstration of the Heimlich maneuver

The final content layout went through formal content validation before implementation.

DESCRIPTION OF THE TOOL

A Structured Knowledge Questionnaire was selected and developed as the data collection tool. The instrument consisted of two parts:

- **Part I: Socio-demographic Data:** Contained 8 items seeking personal information (Age, gender, religion, stream of course studied in PUC, year of B.Ed. course, family monthly income, type of family, and source of information).
- **Part II: Knowledge Questionnaire:** Consisted of 30 multiple-choice items covering four distinct areas:
 - *Aspect-I:* General information on choking (7 items)
 - *Aspect-II:* Signs and symptoms of choking (4 items)
 - *Aspect-III:* Knowledge about first aid management of choking (7 items)
 - *Aspect-IV:* Heimlich maneuver (12 items)

Each correct response was awarded a score of '1' and incorrect responses received a score of '0', resulting in a maximum possible score of 30. The scores were categorized as follows:

- **Adequate Knowledge:** > 75% (23–30 marks)
- **Moderately Adequate Knowledge:** 50% – 75% (16–22 marks)
- **Inadequate Knowledge:** < 50% (< 15 marks)

VALIDITY AND RELIABILITY

Content validity of the tool and the demonstration structure was established by 7 experts, comprising 2 physicians and 5 nurse educators from the department of Medical-Surgical Nursing. Suggestions were incorporated to improve item clarity.

Reliability of the instrument was established via the split-half method on 6 samples from NDRK College of Education. The internal consistency of the halves was calculated using Pearson's Correlation formula, and the total tool reliability was corrected using the Spearman-Brown prophecy formula. The reliability coefficient was found to be **0.88**, indicating high reliability and tool feasibility.

PILOT STUDY

A pilot study was conducted from 01-06-2021 to 08-06-2021 on 8 subjects studying at NDRK College of Education, Hassan, selected via stratified random sampling. Pre-tests and post-tests were administered digitally using Google Forms, and the demonstration was conducted virtually via Zoom. The pilot study confirmed the overall design feasibility and determined the baseline timeframe required for data collection.

DATA COLLECTION PROCEDURE

Formal administrative permission was obtained from the Principal of NDRK College for Education, Hassan. The main study data collection was executed from 16-06-2021 to 16-07-2021 with 60 B.Ed. students who met the inclusion criteria.

The structural protocol was as follows:

1. Students were briefed on the study's purpose and requested to participate during an initial Zoom meeting.
2. The pre-test structured questionnaire link was disseminated via the students' official WhatsApp group using Google Forms.
3. The instructional Demonstration was delivered live through a Zoom Meeting, followed by an interactive Q&A session to clear immediate doubts.

4. The post-test Google Form link was shared following the intervention to gather post-interventional data.
5. A final Zoom session was arranged to address outstanding participant queries.

PLAN FOR DATA ANALYSIS

The compiled data will be organized into a master data sheet and analyzed using descriptive and inferential statistics.

- **Descriptive Statistics:** Frequencies and percentages will be utilized to summarize demographic profile characteristics. Mean, mean percentage, and standard deviation (*SD*) will be applied to quantify the pre-test and post-test knowledge levels.
- **Inferential Statistics:** A **Paired *t*-test** will be utilized to compare pre-test and post-test knowledge scores to establish the significance and overall effectiveness of the demonstration. A **Chi-square (χ^2) test** will be implemented to identify statistically significant associations between pre-test knowledge levels and selected socio-demographic variables.

RESULTS

Table 1: Socio-Demographic Profile of the Participants

N = 60

S.No.	Demographic Variable	Category	Frequency (f)	Percentage (%)
1	Age (in years)	a. 20–21 Years	9	15.0
		b. 22–23 Years	26	43.3
		c. 24–25 Years	17	28.3
		d. 26 Years and above	8	13.3
2	Gender	a. Male	29	48.3
		b. Female	31	51.7
3	Religion (<i>Note: Corrected from Family Type</i>)	a. Hindu	38	63.3
		b. Christian	17	28.3
		c. Muslim	5	8.3
4	Stream of Course (PUC)	a. Science	20	33.3
		b. Arts	25	41.7
		c. Commerce	15	25.0
5	Year of B.Ed. Course	a. I Year	30	50.0

		b. II Year	30	50.0
6	Family Monthly Income	a. Less than ₹5,000	13	21.7
		b. ₹5,001–10,000	17	28.3
		c. ₹10,001–15,000	23	38.3
		d. ₹15,001 and above	7	11.7
7	Type of Family	a. Nuclear Family	46	76.7
		b. Joint Family	12	20.0
		c. Extended Family	2	3.3
8	Source of Information	a. Mass Media	19	31.7
		b. Health Workers	26	43.3
		c. Relatives	14	23.3
		d. Others	1	1.7

In India, acute airway emergencies like choking present a critical public health challenge due to a widespread lack of public preparedness and the absence of standardized community life support training. While structured Basic Life Support (BLS) and first-aid courses are heavily integrated into the public safety models of developed countries, India lacks a uniform, government-mandated emergency management curriculum for the general public. Consequently, school teachers and community leaders frequently act as untrained first responders, making targeted educational interventions—such as structured first-aid demonstrations for future educators—essential to bridge the emergency care gap and reduce preventable accidental mortality.

Table 2: Domain-Wise Comparison of Pre-Test and Post-Test Knowledge Scores

N = 60

Sl. No.	Knowledge Domain	Max Score	Pre-Test Mean	Pre-Test SD	Post-Test Mean	Post-Test SD	Mean Difference	Paired t-test Value
1	General information of choking	7	2.68	1.444	6.10	0.986	3.417	15.298*
2	Signs and symptoms of choking	4	1.35	0.799	3.22	0.739	1.867	13.187*
3	Knowledge about First aid management	7	2.38	1.136	5.67	1.145	3.283	15.435*
4	Heimlich maneuver	12	3.95	1.770	10.20	1.232	6.250	24.348*

*Significant at $p < 0.05$ level.

Table 2 illustrates a highly significant increase in knowledge scores across all four evaluated domains following the implementation of the educational demonstration.

- The most substantial knowledge gain was observed in the **Heimlich maneuver** domain, where the mean score increased by 6.250, shifting from a pre-test score of 3.95 ($SD = 1.770$) to a post-test score of 10.20 ($SD = 1.232$). This gain is statistically validated by the highest computed paired t -value in the study ($t = 24.348$).
- Significant improvements were also documented in **General information of choking** (Mean Diff = 3.417, $t = 15.298$), **First aid management** (Mean Diff = 3.283, $t = 15.435$), and **Signs and symptoms of choking** (Mean Diff = 1.867, $t = 13.187$).

• Table 3: Association of Pre-Test Knowledge Scores with Selected Demographic Variables

- Here is the clean, properly formatted Markdown table for the Chi-square analysis, followed by an objective, publication-ready statistical interpretation.
- Table 3: Association Between Pre-Test Knowledge Scores and Demographic Variables $N = 60$**

Demographic Variable	Category	Total (n)	Below Median	Median & Above	χ ² Value	p-value	Significance
Age	20–21 Years	9	3	6	0.755	0.860	NS
	22–23 Years	26	12	14			
	24–25 Years	17	6	11			
	26 Years and above	8	3	5			
Gender	Male	29	10	19	0.712	0.399	NS
	Female	31	14	17			
Religion	Hindu	38	16	22	1.698	0.428	NS
	Christian	17	5	12			
	Muslim	5	3	2			
Stream of Course (PUC)	Science	20	9	11	3.375	0.185	NS
	Arts	25	12	13			
	Commerce	15	3	12			
Year of B.Ed. Course	I Year	30	10	20	3.044	0.058	NS
	II Year	30	14	16			
Family Monthly Income	Less than ₹5,000	13	8	5	6.575	0.087	NS
	₹5,001–10,000	17	7	10			

	₹10,001–15,000	23	5	18			
	₹15,001 and above	7	4	3			
Type of Family	Nuclear Family	46	19	27	0.338	0.844	NS
	Joint Family	12	4	8			
	Extended Family	2	1	1			
Source of Information	Mass Media	19	7	12	1.744	0.627	NS
	Health Workers	26	11	15			
	Friends/Relatives	14	5	9			
	Others	1	1	0			

- *NS = Non-Significant at $p < 0.05$ level.

Table 3 evaluates the baseline relationship between the socio-demographic characteristics of B.Ed. students and their pre-test knowledge regarding the first-aid management of choking using Pearson's Chi-square (χ^2) test. The data indicates that none of the selected demographic variables—including age ($\chi^2=0.755, p=0.860$), gender ($\chi^2=0.712, p=0.399$), religion ($\chi^2=1.698, p=0.428$), stream of course ($\chi^2=3.375, p=0.185$), year of B.Ed. study ($\chi^2=3.044, p=0.058$), family monthly income ($\chi^2=6.575, p=0.087$), type of family ($\chi^2=0.338, p=0.844$), and prior source of information ($\chi^2=1.744, p=0.627$)—demonstrated a statistically significant association with the baseline knowledge scores, as all calculated p-values exceeded the threshold of 0.05.

Conclusion

This study successfully demonstrated that a structured instructional demonstration is a highly effective educational tool for addressing a critical baseline knowledge deficit among B.Ed. students regarding the first aid management of choking. While the study faced internal validity and generalization constraints due to its pre-experimental design, lack of a control group, and geographic specificity ($N = 60$), the highly significant domain-wise improvements in post-test scores—particularly regarding the Heimlich maneuver—emphasize critical implications across educational dimensions. These findings highlight an urgent need for academic administrators and curriculum designers to incorporate standardized first-aid training programs and workshops into teacher education, ultimately equipping future educators with the vital life-saving competencies necessary to protect student safety and effectively manage acute airway emergencies in school environments.

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Conflicts of Interest

The authors declare no financial, personal, or professional conflicts of interest regarding the design, implementation, data analysis, or reporting of this study.

Funding and Sponsorship

This study received no financial support or sponsorship from any funding agency. All expenses related to the development of the demonstration protocol, software logistics, and data collection instruments were borne entirely by the investigator.

Ethical Considerations and Informed Consent

Official administrative approval was obtained from the institutional head of NDRK College for Education, Hassan. The purpose, scope, and ultimate benefits of the research were clearly explained to all eligible B.Ed. students prior to the initiation of data collection. Informed consent was obtained electronically from each subject, and absolute confidentiality, anonymity, and the right to voluntary participation were strictly maintained throughout the study.

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