



Bridging the knowledge Gap in burn prevention and first aid among mothers of under-five children

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Abstract

This study aims to evaluate the knowledge level of mothers of under-five children regarding burn prevention and first aid management and assess the effectiveness of a structured teaching programme. A pre-experimental, one-group pre-test and post-test design was adopted. Mothers of under-five children were selected through purposive sampling. Findings indicate significant improvement in knowledge post-intervention, highlighting the effectiveness of educational programmes in enhancing maternal awareness and preparedness.

Keywords: First aid management structured teaching programme

Introduction

Burn injuries are among the most devastating and preventable public health issues affecting children, particularly those under five years of age. According to the World Health Organization (WHO, 2018) ^[9], burns are a leading cause of morbidity and mortality among children globally, with low- and middle-income countries disproportionately affected. Young children are especially vulnerable due to their developmental characteristics, limited understanding of danger, and dependence on caregivers. In India, burn injuries account for a significant proportion of pediatric emergency visits and hospitalizations, reflecting the urgent need for preventive strategies at the household level (Bhattacharya, 2017) ^[2].

Maternal knowledge and awareness play a pivotal role in mitigating the risk of burn injuries and administering appropriate first aid (Ahuja & Bhattacharya, 2004) ^[1]. However, studies consistently report a gap in knowledge and practice among mothers, particularly those from socio-economically disadvantaged backgrounds (Khandekar *et al.*, 2015) ^[5]. Educating mothers through structured interventions has been shown to enhance their ability to recognize hazards and respond effectively in burn emergencies (Singh *et al.*, 2020) ^[7]. Despite this, few community-level studies have been conducted to assess the impact of such educational programmes in India. Therefore, this study investigates the effectiveness of a structured teaching programme in improving knowledge regarding burn prevention and first aid management among mothers of under-five children, aiming to empower them with life-saving skills.

Background

Burn injuries continue to be a critical concern in pediatric public health, with over 180,000 deaths reported annually

due to burns, most of which occur in low-resource settings (WHO, 2020). Among these, children under five years are disproportionately impacted due to their inherent curiosity and mobility, often combined with lack of environmental safety. The domestic setting, particularly the kitchen, poses the highest risk, where scalds from hot liquids, open flames, and electrical appliances are common sources of injury (Forjuoh, 2006) ^[3]. In many parts of India, traditional cooking methods, overcrowded living conditions, and lack of supervision further amplify the risk (Gupta *et al.*, 2019) ^[4].

Prompt and appropriate first aid following a burn injury is crucial in minimizing tissue damage and improving outcomes. However, knowledge gaps among primary caregivers often lead to harmful practices such as applying toothpaste, mud, or oil on burns (Subrahmanyam, 2008) ^[8]. Various studies highlight the deficiency in awareness and the need for structured education, especially for mothers who serve as primary caregivers (Sharma *et al.*, 2021) ^[6]. Structured teaching programmes have demonstrated potential in improving knowledge, shaping safe practices, and building confidence among mothers (Yadav & Giri, 2019) ^[10]. Recognizing the potential of educational interventions in injury prevention, this study is grounded in the belief that empowering mothers through evidence-based, structured teaching can significantly reduce the burden of pediatric burn injuries in Indian communities.

Methodology

A pre-experimental, one-group pre-test and post-test design was used to evaluate the effectiveness of a structured teaching programme on burn prevention and first aid management among mothers of under-five children. Sixty participants were selected through purposive sampling based on inclusion criteria such as having at least one under-

five child and willingness to participate. Ethical clearance was obtained from the Institutional Ethics Committee, and informed written consent was taken from all participants. A structured questionnaire with two sections—demographic data and knowledge items—was developed, validated by experts, and pre-tested. Data collection occurred in three phases: pre-test, intervention, and post-test. The structured teaching programme covered key topics using lectures,

visual aids, and interactive discussions. The post-test was conducted after seven days using the same tool. All sessions were conducted in the local language to ensure understanding. Participation was voluntary, and confidentiality was maintained. The study adhered to ethical research principles throughout the process.

Results

Table 1: Combined Demographic Distribution of Mothers of Under-Five Children (N = 60)

SL.No.	Demographic Variable	Category	Frequency (f)	Percentage (%)
1	Type of Family	Nuclear	25	41.66%
		Joint	30	50.00%
		Extended	5	8.33%
2	Religion	Hindu	48	80.00%
		Christian	2	3.33%
		Muslim	10	16.66%
		Others	0	0.00%
3	Educational Status	Illiterate	2	3.33%
		Middle School	25	41.66%
		High School	23	38.33%
		Higher Secondary	10	16.66%
4	Occupation	Unemployed	17	28.33%
		Government Job	28	46.66%
		Private Job	9	15.00%
		Self-employed	6	10.00%
5	Family Income (INR)	< 5000	9	15.00%
		5001–10000	23	38.33%
		10001–20000	25	41.66%
		> 20001	3	5.00%
6	No. of Under-Five Children	1	21	35.00%
		2	20	33.33%
		3	10	16.66%
		>3	9	15.00%

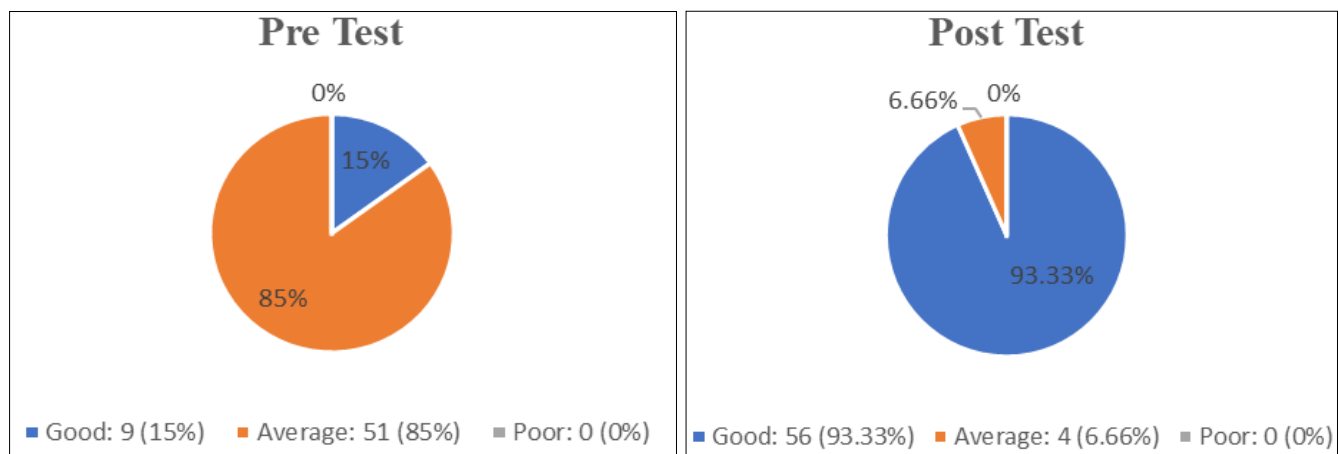


Fig 1: Knowledge Score Distribution

Table 2: Association with Demographic Variables
Chi-Square Test Results

Demographic Variable	χ^2 Value	df	Table Value	Significance
Age	2.44	3	7.81	NS
Type of Family	0.18	2	5.99	NS
Religion	0.10	2	5.99	NS
Education	3.77	3	7.81	NS
Occupation	1.53	3	7.81	NS
Family Income	3.14	3	7.81	NS
Source of Information	3.46	3	7.81	NS
Number of Under-Five Children	0.95	2	5.99	NS

The association between selected demographic variables and the knowledge scores of mothers regarding burn prevention and first aid management was analyzed using the chi-square test. The results indicated that none of the variables showed a statistically significant association with knowledge scores, as all calculated chi-square values were less than the respective table values at a 0.05 level of significance. Specifically, the chi-square value for age was 2.44 (df=3), for type of family 0.18 (df=2), for religion 0.10 (df=2), for education 3.77 (df=3), for occupation 1.53 (df=3), for family income 3.14 (df=3), for source of information 3.46 (df=3), and for number of under-five children 0.95 (df=2). All these values were lower than the

corresponding table values (7.81 for $df=3$ and 5.99 for $df=2$), indicating that the differences observed were not statistically significant. Hence, it can be inferred that demographic variables such as age, type of family, religion, education, occupation, family income, source of information, and number of under-five children did not significantly influence the mothers' knowledge regarding burn prevention and first aid management.

Table 3: Paired 't' Test Between Pre and Post-Test Scores

Test Type	Mean Score	SD	Mean Difference	t-value
Pre-Test	2.15	0.36	0.78	19.946*
Post-Test	2.93	0.25		

*Significant at 0.05 level; Critical t-table value = 2.00

The effectiveness of the educational intervention on mothers' knowledge regarding burn prevention and first aid management was assessed using a paired t-test. The results revealed a significant improvement in the post-test knowledge scores compared to the pre-test scores. The mean pre-test score was 2.15 with a standard deviation of 0.36, while the mean post-test score increased to 2.93 with a standard deviation of 0.25. The mean difference in scores was 0.78, and the calculated t-value was 19.946, which is statistically significant at $p < 0.05$. This indicates that the educational intervention was highly effective in enhancing the knowledge of mothers regarding burn prevention and first aid management for under-five children.

Conclusion

This study clearly demonstrates the effectiveness of a structured teaching programme in enhancing the knowledge of mothers of under-five children regarding burn prevention and first aid management. The significant improvement in post-test scores, as evidenced by the paired t-test ($t = 19.946$, $p < 0.05$), indicates that educational interventions can play a pivotal role in equipping mothers with essential life-saving knowledge. The absence of statistically significant associations between demographic variables and knowledge scores suggests that educational programmes can be uniformly beneficial across different socio-demographic groups. Given the high incidence of pediatric burn injuries in domestic settings and the prevalent harmful first aid practices, this study underscores the urgent need for community-based health education initiatives. Empowering mothers through structured, culturally appropriate education not only improves their preparedness but also contributes to the broader goal of injury prevention and child safety at the household level.

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