RESEARCH PAPER

Effectiveness of a Planned Teaching Programme on Knowledge Regarding Selected Pediatric Fall Prevention Tools among Staff Nurses in Selected Hospitals: A Quasi-Experimental Study

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ABSTRACT

Pediatric falls are an important patient-safety concern in hospital settings and may result in physical injury, psychological distress, prolonged hospitalization, and increased health-care burden. Staff nurses play a key role in identifying children at risk of falls and implementing appropriate preventive measures. Adequate knowledge regarding pediatric fall prevention tools is therefore essential for safe and evidence-based nursing practice.

Aim: To assess the effectiveness of a Planned Teaching Programme on knowledge regarding selected pediatric fall prevention tools among staff nurses in selected hospitals.

Methods: A quantitative research approach with a quasi-experimental one-group pre-test–post-test design was adopted. A total of 80 staff nurses were selected using a non-probability convenience sampling technique. Data were collected using a demographic questionnaire and a 30-item structured knowledge questionnaire. The reliability coefficient of the tool was 0.949. A pre-test was conducted before administration of the Planned Teaching Programme, and the post-test was conducted on the seventh day. Descriptive and inferential statistics were used for analysis.

Results: In the pre-test, 62.5% of staff nurses had poor knowledge, 21.25% had average knowledge, and 16.25% had good knowledge. The mean pre-test knowledge score was 5.48 ± 4.95. In the post-test, 67.5% achieved excellent knowledge, 27.5% had very good knowledge, and 5% had good knowledge. The mean post-test score increased to 25.07 ± 3.06. The difference between pre-test and post-test knowledge scores was statistically significant ($t=29.20$, $p=0.0001$). Pre-test knowledge was significantly associated with age, professional qualification, years of experience, and previous knowledge regarding pediatric fall prevention tools.

Conclusion: The Planned Teaching Programme was effective in improving staff nurses' knowledge regarding selected pediatric fall prevention tools. Regular structured educational programmes can strengthen nurses' competency in fall-risk assessment and contribute to safer pediatric care.

Key words: Pediatric falls; Fall prevention tools; Staff nurses; Planned Teaching Programme; Knowledge

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INTRODUCTION

Patient safety is a fundamental component of quality health care, and prevention of inpatient falls is an important nursing responsibility. The World Health Organization (WHO) identifies patient falls among common preventable adverse events in health-care settings and reports that approximately one in ten patient's experiences harm during health care. Globally, falls account for approximately 684,000 deaths annually, while nearly 37.3 million falls are severe enough to require medical attention. Children constitute an important risk group because developmental characteristics, curiosity, limited hazard perception, mobility, unfamiliar hospital environments, illness, medication use, and altered cognition may increase their vulnerability to falls [1,2].

Falls among hospitalized children may result in bruises, fractures, head injuries, fear, prolonged hospitalization, and additional health-care burden. Consequently, early identification of children at risk is essential. Pediatric fall-risk assessment tools provide a systematic approach to recognizing risk factors and initiating individualized preventive interventions. A meta-analysis of nine studies reported a pooled sensitivity of 79% and specificity of 36% for pediatric inpatient fall-risk assessment scales, indicating limitations in predictive accuracy and emphasizing the importance of appropriate application and clinical interpretation [3]. The revised Humpty Dumpty Fall Scale demonstrated improved performance, with 84%

sensitivity and 57% specificity [4]. A recent multicenter validation involving 55,711 pediatric encounters identified 151 falls (approximately 0.3%), and the updated scale achieved 85% sensitivity [5].

Nurses have a central role in pediatric fall prevention through continuous risk assessment, environmental safety, caregiver education, monitoring, documentation, and implementation of preventive measures. Evidence indicates that focused education can significantly improve nurses' knowledge regarding pediatric fall prevention [6]. Therefore, a Planned Teaching Programme regarding selected pediatric fall prevention tools may strengthen nurses' knowledge, promote standardized risk assessment, and contribute to safer and evidence-based pediatric nursing care.

Need for the Study

Despite the preventable nature of many inpatient falls, pediatric falls continue to represent an important patient-safety concern. Hospitalized children are exposed to unique risks related to developmental age, unfamiliar surroundings, impaired mobility, medications, procedures, neurological conditions, and dependence on parents or caregivers. Falls among hospitalized children may result in physical injury, psychological distress, prolonged hospitalization, increased treatment costs, and reduced quality of care. Evidence-based fall prevention therefore requires nurses not only to recognize risk factors but also to correctly apply standardized pediatric fall-risk assessment tools and initiate appropriate preventive interventions [1,7].

Evidence demonstrates important gaps in nurses' preparation for pediatric fall prevention. A 2025 Indian study conducted at AIIMS Bhopal among 64 nursing officers found that 76.6% had only average knowledge before an educational intervention, while only 14.06% had good knowledge. Importantly, only 26.56% had received previous formal training on fall prevention. Following targeted education, the mean knowledge score increased from 16.2 ± 4.20 to 24.0 ± 3.37, and 71.9% achieved good knowledge, with a statistically significant improvement ($p<0.001$) [6]. Another pediatric nursing educational project reported a statistically significant improvement in fall-prevention knowledge ($p=0.001$), with 63% of participants showing improved overall knowledge scores [8].

The need for education is further strengthened by variations in the diagnostic performance of pediatric fall-risk assessment tools. A meta-analysis reported pooled sensitivity of 79% and specificity of only 36% [3], while the revised Humpty Dumpty Fall Scale improved these values to 84% and 57%, respectively [4]. Thus, merely having a tool does not ensure effective fall prevention; nurses must understand its risk factors, scoring criteria, interpretation, limitations, and associated preventive measures.

Therefore, the present study is needed to assess existing knowledge and determine the effectiveness of a Planned Teaching Programme regarding selected pediatric fall prevention tools among staff nurses. The findings may support continuing nursing education, standardized fall-risk assessment, and safer pediatric nursing practice.

Aim

To assess the effectiveness of a Planned Teaching Programme on knowledge regarding selected pediatric fall prevention tools among staff nurses in selected hospitals.

OBJECTIVES

Primary Objective

To assess the effectiveness of a Planned Teaching Programme on knowledge regarding selected pediatric fall prevention tools among staff nurses in selected hospitals.

Secondary Objectives

1. To assess and compare the pre-test and post-test knowledge scores regarding selected pediatric fall prevention tools among staff nurses in selected hospitals.
2. To determine the association between the pre-test knowledge scores regarding selected pediatric fall prevention tools and selected demographic variables among staff nurses in selected hospitals.

METHODOLOGY

A quantitative research approach with a quasi-experimental one-group pre-test–post-test design was adopted to assess the effectiveness of a Planned Teaching Programme on knowledge regarding selected pediatric fall prevention tools among staff nurses. The study was conducted in selected hospitals among 80 staff nurses selected through non-probability convenience sampling. Staff nurses working in pediatric units, available during data collection, and willing to participate were included.

Data were collected using a demographic questionnaire and a 30-item structured knowledge questionnaire, with one mark awarded for each correct response. The tool was validated by experts and demonstrated high reliability ($r = 0.949$). A pre-test was conducted on Day 1, followed by the Planned Teaching Programme, and the post-test was administered on Day 7 using the same questionnaire. Data were analyzed using descriptive statistics such as frequency, percentage, mean, and standard deviation.

A paired t-test was used to determine the effectiveness of the intervention, while appropriate inferential tests were used to examine the association between knowledge scores and selected demographic variables.

RESULT

Section I

Distribution of Staff Nurses according to their demographic characteristics.

Among the 80 staff nurses, the majority (70.0%) were aged 21–30 years, while 15.0% were aged 31–40 years and 7.5% each were aged 41–50 years and above 50 years. Most participants were female (86.3%), whereas 13.7% were male. Regarding professional qualification, 56.3% had RGNM/GNM Nursing, 25.0% had P.B.B.Sc./P.C.B.Sc. Nursing, and 18.7% had B.Sc. Nursing qualifications.

In terms of professional experience, 43.8% had 1–5 years of experience, 35.0% had less than one year, 12.4% had more than 10 years, and 8.8% had 6–10 years of experience. Regarding monthly family income, 42.4% reported ₹10,001–15,000, followed by 28.8% with ₹15,001–20,000, 18.8% below ₹10,000, and 10.0% above ₹20,000.

With respect to area of work, 27.5% were working in NICU, 25.0% in PICU, 18.8% in Pediatric OPD, 17.5% in the medical pediatric ward, and 11.3% in the surgical pediatric ward.

Only 23.7% of staff nurses had prior knowledge regarding selected pediatric fall prevention tools, whereas 76.3% had no prior knowledge. Among the 19 participants who had prior knowledge, the most common source was training programmes (36.8%), followed by books (21.2%). Mass media, teachers, friends, and other sources each accounted for 10.5%, while none reported supervisors or family members as sources of knowledge.

Section II

Description of Assessment of Level of the Knowledge Regarding Selected Pediatric Fall Prevention Tools Among Staff Nurses Working in Selected Hospitals

Table 1: Assessment with level of pre test knowledge regarding selected pediatric fall prevention tools among staff nurses in selected hospitals

n= 80

Level of pre test knowledge	Score Range	Level of Pre test Knowledge Score	
		Frequency (f)	Percentage(%)
Poor	0-6	50	62.5
Average	7-12	17	21.25
Good	13-18	13	16.25
Very Good	19-24	0	0
Excellent	25-30	0	0
Minimum score		0	
Maximum score		17	
Mean knowledge score		5.48 ± 4.95	
Mean % Knowledge Score		18.29± 16.52	

Table 2 shows that, in the pre-test, the majority of staff nurses, 50 (62.5%), had poor knowledge regarding selected pediatric fall prevention tools. Seventeen (21.25%) had average knowledge, while 13 (16.25%) had good knowledge. None of the participants had very good or excellent knowledge in the pre-test.

The pre-test knowledge scores ranged from 0 to 17, with a mean score of 5.48 ± 4.95. The mean percentage knowledge score was 18.29 ± 16.52%. These findings indicate that the overall baseline knowledge of staff nurses regarding selected pediatric fall prevention tools was low before administration of the Planned Teaching Programme.

Description of Assessment Post Test Knowledge Regarding Selected Pediatric Fall Prevention Tools Among Staff Nurses in Selected Hospitals

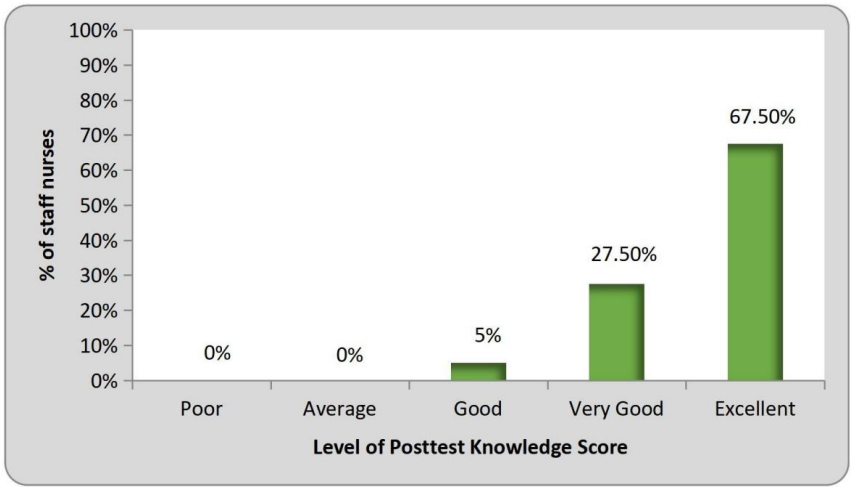


Fig.1: Bar diagram representing assessment with post test knowledge score regarding selected pediatric fall prevention tools.

Figure 1 depicts the post-test knowledge levels of staff nurses regarding selected pediatric fall prevention tools. The majority of staff nurses, 54 (67.5%), achieved an excellent level of knowledge, while 22 (27.5%) had very good knowledge and 4 (5.0%) had good knowledge. None of the participants had poor or average knowledge in the post-test.

The post-test scores ranged from 16 to 29, with a mean knowledge score of 25.07 ± 3.06 and a mean percentage knowledge score of 83.58 ± 10.22%. The findings indicate a marked improvement in knowledge following the Planned Teaching Programme.

Evaluation Of The Effectiveness Of The Planned Teaching Programme On Knowledge Regarding Selected Pediatric Fall Prevention Tool Among Staff Nurses In Selected Hospitals

Table 2: Significance of difference between knowledge score in pre and post test of Staff Nurses regarding selected pediatric fall prevention tools among staff nurses in selected hospitals

n=80

Test	Mean	SD	Mean Difference	Tabulated value	t-value	p-value
Pre Test	5.48	4.95	19.58±5.99	1.98	29.20	0.0001 S,p<0.05
Post Test	25.07	3.06				

Table 2 shows that the mean pre-test knowledge score was 5.48 ± 4.95, whereas the mean post-test knowledge score increased to 25.07 ± 3.06. The mean difference between the pre-test and post-test knowledge scores was approximately 19.59 points.

The calculated paired t-value was 29.20, which was greater than the tabulated value of 1.98, and the difference was statistically significant at p=0.0001 (p<0.05). This indicates that the Planned Teaching Programme was highly effective in improving the knowledge of staff nurses regarding selected pediatric fall prevention tools.

Section III

Association of Level of Pre Test Knowledge Score Regarding Selected Pediatric Fall Prevention Tools Among Staff Nurses in Selected Hospitals in Relation to Their Demographic Variables

The findings revealed that the pre-test knowledge score regarding selected pediatric fall prevention tools had a statistically significant association with age (F=2.78, p<0.05), professional qualification (F=16.84, p<0.05), years of experience (F=11.15, p<0.05), and previous knowledge regarding selected pediatric fall prevention tools (t=3.23, p<0.05).

No statistically significant association was observed between pre-test knowledge scores and gender (t=0.48, p=0.66), monthly family income (F=1.76, p=0.16), area of work (F=0.77, p>0.05), or source of previous knowledge (F=1.08, p=0.41).

Thus, age, professional qualification, years of experience, and previous knowledge were significantly associated with the baseline knowledge of staff nurses regarding selected pediatric fall prevention tools, whereas the remaining demographic variables showed no significant association.

Statistical correction needed: The reported F=2.78 with df=3,76 does not correspond to p=0.001; its p-value is approximately 0.047. Therefore, the age result remains significant at p<0.05, but the p-value should be rechecked before manuscript submission.

DISCUSSION

The present study assessed the effectiveness of a Planned Teaching Programme on knowledge regarding selected pediatric fall prevention tools among 80 staff nurses. The pre-test findings revealed an important knowledge deficit, as 62.5% of staff nurses had poor knowledge, 21.25% had average knowledge, and only 16.25% had good knowledge. The mean pre-test knowledge score was 5.48 ± 4.95. Following the Planned Teaching Programme, a marked improvement was observed: 67.5% of nurses achieved excellent knowledge, 27.5% had very good knowledge, and only 5% remained in the good category. The mean post-test score increased to 25.07 ± 3.06. The difference was statistically significant ($t=29.20$, $p=0.0001$), confirming the effectiveness of the educational intervention.

These findings are consistent with the study conducted by Shafqat et al. among 64 nursing officers working in pediatric units at AIIMS Bhopal. Before targeted education, the majority of nurses had average knowledge and only 14.06% demonstrated good knowledge regarding pediatric fall prevention. Following the educational intervention, 71.9% achieved good knowledge, and the mean knowledge score increased significantly from 16.2 ± 4.20 to 24.0 ± 3.37 ($p<0.001$) [6]. This supports the present finding that structured educational interventions can substantially improve nurses' understanding of pediatric fall prevention.

Similarly, DiGerolamo and Chen-Lim evaluated an educational intervention among pediatric oncology nursing personnel and reported significantly higher post-intervention knowledge scores ($p=0.001$), with 63% of participants demonstrating improvement in overall knowledge [8]. Their findings further support the role of organized nursing education in strengthening knowledge of fall risk factors and evidence-based preventive practices.

In the present study, pre-test knowledge was significantly associated with age, professional qualification, years of experience, and previous knowledge, whereas gender, family income, area of work, and source of knowledge showed no significant association. Shafqat et al. similarly found a significant relationship between knowledge and age ($p=0.029$) [6], providing partial agreement with the present findings. Overall, the evidence indicates that Planned Teaching Programmes can effectively address knowledge gaps and strengthen staff nurses' preparedness for safe pediatric fall-risk assessment and prevention.

CONCLUSION

The present study concluded that the Planned Teaching Programme was effective in improving the knowledge of staff nurses regarding selected pediatric fall prevention tools. Before the intervention, the majority of staff nurses had poor or average knowledge, indicating an evident need for structured educational support in pediatric fall-risk assessment and prevention. After implementation of the Planned Teaching Programme, a substantial improvement was observed, with most participants achieving very good or excellent levels of knowledge.

The significant difference between the pre-test and post-test knowledge scores demonstrated that a well-planned educational intervention can strengthen nurses' understanding of pediatric fall prevention tools and their appropriate application in clinical practice. The study also identified significant associations between pre-test knowledge and selected demographic characteristics such as age, professional qualification, years of experience, and previous knowledge, suggesting that professional background and prior exposure may influence baseline knowledge.

Overall, the findings emphasize the importance of regular in-service education, continuing nursing education, and competency-based training on pediatric fall-risk assessment and prevention. Incorporating structured teaching programmes into hospital education policies may enhance nurses' knowledge, support standardized fall-risk assessment, promote timely preventive measures, and contribute to improved patient safety among hospitalized children.

Conflict of Interest: The authors certify that they have no involvement in any organization or entity with any financial or non-financial interest in the subject matter or materials discussed in this paper.

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