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Effectiveness of Planned Teaching Programme on Knowledge and Expressed Practice Regarding Safe Intra Hospital Transport of Immobilized Patients among Staff Nurses Working in Selected Hospitals of Ahmedabad City

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ABSTRACT

Objective: The goal of the study was to evaluate the efficacy of a planned educational program on staff nurses' knowledge and expressed practices related safe intrahospital transport of immobilized patients in selected hospitals of Ahmedabad city.

Materials and Methods: The study used a quantitative, pre-experimental same group pre-test and post-test research design. The study was carried out in selected hospitals of Ahmedabad city. The non-probability convenience sampling method was used to choose 60 staff nurses in total. A structured knowledge and expressed practice questionnaire was used to gather data. Expert opinion was used to demonstrate content validity, and Karl Pearson's test-retest approach was used to evaluate the tool's dependability. Descriptive and inferential statistics were used to analyze the data.

Results: The planned teaching programme significantly improved staff nurses' knowledge and expressed practice regarding safe intra hospital transport of immobilized patients, with the mean knowledge and expressed practice score rising from 08 to 14 and 7.13 to 11.3 respectively post-intervention.

Conclusion: The study underlines the importance of structured educational interventions in strengthening nurses' competency in the safe intra hospital transport of immobilized patients, thereby contributing to improved patient care and safety.

Keywords: Safe Intra hospital transport, Planned Teaching Programme, Knowledge, Expressed practice, Staff nurses.

1. INTRODUCTION

Intra-hospital transport (IHT) of critically ill immobilized patients is an essential, but inherently risky part of modern health care system. Immobilized patients are at increased risk for adverse physiological events during transfer because their restricted mobility reduces their ability to protect themselves or to

communicate developing discomfort. This vulnerability increases the chances of preventable complications such as secondary soft tissue injuries, accidental displacement of life support equipment and sudden hemodynamic or respiratory instability (Lemos, 2024). Moreover, the psychological effect of transport should not be underestimated. The sudden change of environment and the stress of movement can exacerbates psychological distress in patients that are already in pain or have clinical anxiety, which in turn may lead to poorer clinical outcomes (Nasa & Juneja, 2023).

There are numerous institutional safety procedures, but the lack of a global standard of care for IHT remains a significant barrier to uniform care. The existing literature reports the incidence of adverse events during critical patient transport to be between 10% and 70%, which is an extremely wide variance. This implies that local, informal guidelines are not sufficient (Waydhas, 1999; Lemos, 2024). The high rate of "unwanted situations" from minor logistical errors to life-threatening physiological crises underscores that clinical expertise alone is insufficient for ensuring patient safety during transit (Hu et al., 2022).

Risk mitigation in the transport setting calls for a holistic strategy that balances three important pillars: sound clinical planning, the use of dedicated and knowledgeable personnel, and the availability of specialized and reliable equipment (Wang et al., 2025). Of these the human factor is perhaps the most crucial. Regularized, standardized training for physicians and nursing personnel is needed to improve the decision-making processes needed under pressure (Hu et al., 2022).

Since they are the first point of entry for critical admissions, emergency departments are especially susceptible to transport errors. Adverse events in these units are mostly due to a combination of five different variables, including patient-related factors (e.g., hemodynamic severity and disease complexity), transport personnel-related factors (e.g., training status and experience), equipment-related factors (e.g., battery life and monitoring capacity), and environmental factors (e.g., transit route duration and staffing levels) (Hu et al., 2022).

With the growing requirement for patients to be transferred between specialist centres of excellence in modern medicine, for example, from the emergency department to diagnostic imaging or the operating theatre, there is an utmost need for systemic evidence-based training (Nasa & Juneja, 2023). A culture of continuous learning is required to bridge the gap between high-level clinical interventions and logistical risks of transport. The study, therefore, seeks to evaluate the efficacy of a planned teaching program (PTP) in enhancing the knowledge and expressed practice of nursing personnels, thereby professionalizing the management of IHT and reducing the possibility of preventable patient harm (Wang et al., 2025).

2. MATERIALS AND METHODS

A pre-experimental one-group pre-test and post-test design was used in a quantitative study to assess the efficacy of a Planned Teaching Program (PTP) on safe intra-hospital management of immobile patients among staff nurses employed by selected hospitals of Ahmedabad city. This took place over the course of three months, from December 2024 to February 2025. The target population consisted of registered staff nurses employed by particular Ahmedabad city hospitals. A non-probability convenience sampling method was used to choose 60 staff nurses in total. The study comprised nurses who were available and willing to participate during the data collection period. Prior to data collection, administrative authorization was acquired from the relevant authorities. Every participant provided written informed permission. Throughout the study, participant anonymity and confidentiality were upheld.

Three methods were used to gather the data: (1) a structured demographic questionnaire that asked about age, gender, education, work experience, current department of employment, and prior knowledge about

safe intra-hospital transport of immobilized patients; (2) a structured knowledge questionnaire with 20 multiple-choice questions about safe intra-hospital transport of immobilized patients; and (3) a structured expressed practice questionnaire with 15 multiple-choice questions about safe intra-hospital transport of immobilized patients.

Knowledge Scoring and Categorization:

The study employed a structured questionnaire with a primary focus on knowledge regarding safe intra-hospital movement of immobilized patients. Twenty items in all were created. In accordance with the questions, the participants were supposed to demonstrate their proper response. Every item was worth one mark. The questions had a maximum score of 20. The investigator awarded a "0" for incorrect responses and a "1" for accurate ones. Knowledge was classified as poor if the score was between 0 and 06, average if the score was between 07 and 12, and good if the score was between 13 and 20.

Expressed Practice Scoring and Categorization

A 15-item structured expressed practice questionnaire was used to evaluate the expressed practice of safely transporting immobile patients within hospitals. Every item was worth one mark. The questionnaire's maximum score was 15. The investigator awarded a "0" for incorrect responses and a "1" for accurate ones. The investigator separated expressed practice scores into the following categories and took into account samples of expressed practice in accordance with those divisions. Poor expressed practice was defined as having a score between 0 and 5, ordinary expressed practice as having a score between 06 and 10, and good expressed practice as having a score between 11 and 15.

3. RESULTS

The results are shown in the following sections: participant demographics; pre-test and post-test knowledge and expressed practice scores of samples, including the efficacy of the planned teaching programme; and correlation between pre-test knowledge and expressed practice scores with demographic variables among staff nurses employed in particular Ahmedabad city hospitals.

3.1 ANALYSIS AND INTERPRETATION OF DEMOGRAPHIC CHARACTERSITICS OF THE SAMPLES

Table 1: Frequency and percentage wise distribution of samples based on demographic characteristics.

[n=60]

Sr. No	Demographic Characteristics	Variables	Frequency (f)	Percentage (%)
1	Age in years	22 - 26	16	26.7
		27 - 31	29	48.3
		32 to 36	9	15.0
		37 & above	6	10.0
2	Gender	Male	18	30.0
		Female	42	70.0
3	Professional Qualification	ANM	5	8.3
		GNM	29	48.3
		B.Sc. Nursing/ P.B.B.Sc. Nursing	26	43.3
		M.Sc. Nursing and above	0	0

4	Current Department of Work in the Hospital	Emergency Department	10	16.7
		Intensive Care Unit	12	20.0
		General Ward	30	50.0
		Other Department	8	13.3
5	Years of Experience	0 to 05	21	35.0
		06 to 10	33	55.0
		11 to 15	6	10.0
		16 and above	0	0
6	Previous knowledge	Yes	60	100
		No	0	0

Table 1 shows that the study sample ($n = 60$) was predominantly female (70.0%), with nearly half of the participants (48.3%) falling into the 27 to 31 age demographic and none exceeding 15 years of professional experience. In terms of professional background, the majority held either a GNM (48.3%) or a B.Sc. N./P.B.B.Sc. N. degree (43.3%), with exactly half (50.0%) currently deployed in the General Ward. Notably, the cohort displayed high mid-level experience, with 55.0% having 6 to 10 years in the field, and 100% of the participants possessed prior knowledge regarding the study's subject matter.

3.2 ANALYSIS AND INTERPRETATION OF DATA RELATED TO PRE-TEST AND POST-TEST KNOWLEDGE AND EXPRESSED PRACTICE SCORE OF THE SAMPLES

Table-2: Frequency and percentage wise distribution of samples according to the level of knowledge on safe intra hospital transport of immobilized patients.

[n=60]

Level of knowledge	**Score**	**Pre-test**		**Post-test**	
		Frequency (f)	**Percentage (%)**	**Frequency (f)**	**Percentage (%)**
Poor Knowledge	0 - 6	35	58.3	0	0
Average knowledge	07 - 12	16	26.7	22	36.7
Good knowledge	13 -20	9	15.0	38	63.3
Total		60	100%	60	100%

Table 2 shows that in the pre-test, the majority of participants (58.3%) had poor knowledge, while 26.7% were average and 15.0% were good. Following the intervention, the post-test scores demonstrated a significant upward shift: 63.3% achieved good knowledge, 36.7% reached an average level, and none (0%) remained in the poor category.

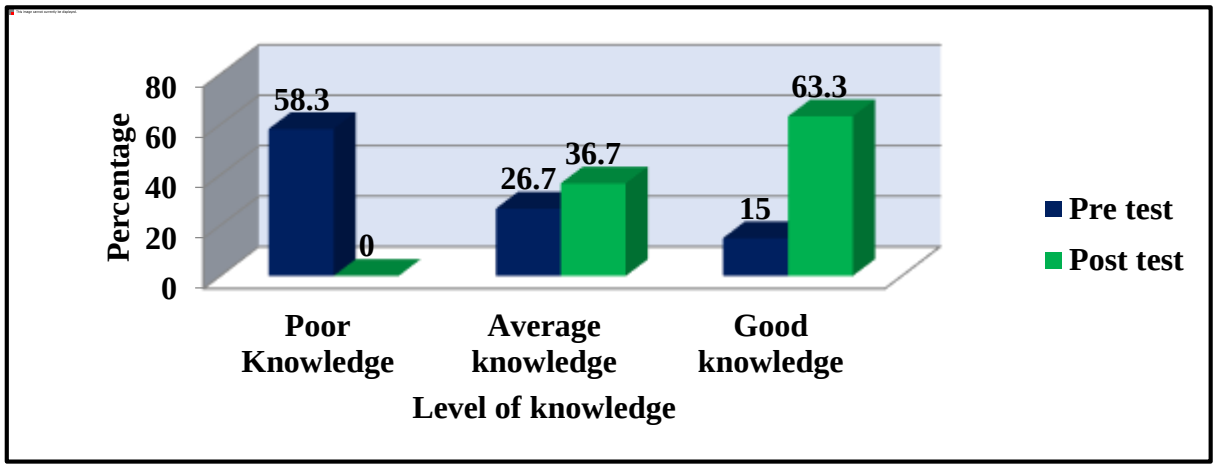

Figure 1: Column graph showing distribution of samples according to the level of knowledge.

Table 3: Mean, Mean %, Median, Mode and Standard Deviation (SD) of pre-test and post-test knowledge scores of participants.

[n=60]

Knowledge score	Mean	SE	Mean difference	SD	df	Paired 't' test value	Table value	Remarks
Pre test	8	0.250	6.40	3.75	59	25.534	2.000	S
Post test	14.40			3.13				

In Table 3, the paired t-test confirmed that the planned teaching program significantly increased staff nurses' knowledge regarding safe intra-hospital transport, leading to the acceptance of research hypothesis H_1. The mean knowledge score increased from 8.00 ± 3.75 in the pre-test to 14.40 ± 3.13 in the post-test, yielding a substantial mean improvement of 6.40. This improvement was statistically highly significant ($t(59) = 25.534$, $p < 0.05$), exceeding the critical table value of 2.000.

Table 4: Area wise comparison of pre-test and post-test knowledge score of staff nurses regarding safe intra hospital transport.

[n=60]

Areas	**Max score**	**Pre test**			**Post test**			**% of knowledge gain**
		Mean	**Mean %**	**SD**	**Mean**	**Mean %**	**SD**	
Definition & indications	3	1.42	47.33	0.85	2.18	72.67	0.70	25.33
Principles	2	0.85	42.50	0.68	1.57	78.50	0.53	36.00
Transport Equipment and Tools	4	1.60	40.00	1.06	2.78	69.50	1.01	29.50

Pre-transport Protocols and Standards	3	1.23	41.00	0.83	2.18	72.67	0.72	31.67
Complications and Prevention	2	0.68	34.00	0.62	1.40	70.00	0.67	36.00
Role and Responsibilities of Nurse	6	2.22	37.00	1.34	4.28	71.33	1.39	34.33
Overall	20	8	40.00	3.75	14.40	72.00	3.13	32.00

Table 4 shows that knowledge improved across all areas after the intervention, resulting in an overall knowledge gain of 32.00% as the total mean score rose from 8.00 (40.00%) to 14.40 (72.00%). The highest areas of improvement were Principles (up 36.00% to a post-test score of 78.50%) and Complications and Prevention (up 36.00% to 70.00%). Significant progress was also observed in Role and Responsibilities of Nurse, which saw a 34.33% increase to 71.33%, while the remaining domains—Pre-transport Protocols and Standards, Transport Equipment and Tools, and Definition & Indications—all achieved post-test scores exceeding 69%.

Table-5: Frequency and percentage distribution of pre-test and post-test level of expressed practice regarding safe intra hospital transport of immobilized patients among Staff nurses

[n=60]

Level of Expressed Practice	**Scores**	**Pre test**		**Post test**	
		F	**%**	**F**	**%**
Poor practice	0-5	21	35.0	0	0
Average practice	6-10	30	50.0	22	36.67
Good practice	11-15	9	15.0	38	63.33
Total		60	100%	60	100%

Table 5 shows that in pre-test, half of the participants (50.0%) demonstrated average practice scores, 35.0% scored poor, and only 15.0% scored good. Following the intervention, practice levels shifted significantly upward in the post-test, with the majority (63.33%) achieving good practice scores, 36.67% scoring average, and none (0%) remaining in the poor category.

Table 6: Mean, Mean %, Median, Mode and Standard Deviation (SD) of pre-test and post-test expressed practice scores of participants.

[n=60]

Practice score	**Mean**	**Mean%**	**SD**	**% of practice gain**
Pre-test	7.13	47.56	2.72	4.20
Post-test	11.33	75.56	2.10	(28%)

Table 6 shows the mean pre-test expressed practice score is 7.13±2.72 with mean percentage 47.56%. Whereas the mean post-test expressed practice score was 11.33±2.10 with mean percentage 75.56%. Total

percentage of practice gain was 28%. This difference in expressed practice score is tested using inferential statistics in the next section.

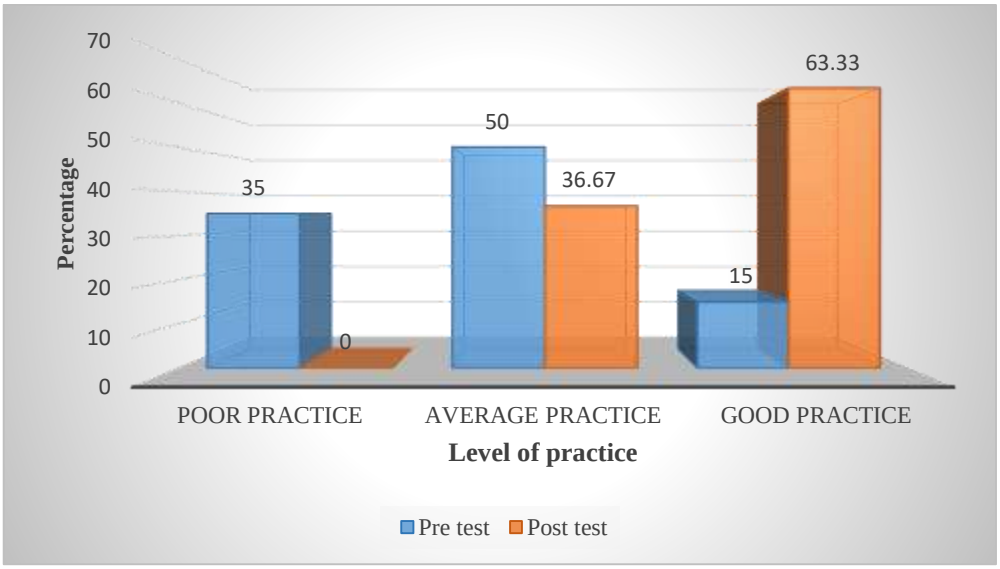

Figure 2: Column graph showing distribution of samples according to the level of expressed practice scores

Table 7: Effectiveness of Planned teaching programme on expressed practice regarding safe intra hospital transport of immobilized patients among Staff nurses

[n=60]

Practice score	Mean	SE	Mean difference	SD	df	Paired 't' test value	Table value	Remarks
Pre test	7.13	0.194	4.20	2.72	59	21.620	2.000	S
Post test	11.33			2.10				

According to Table 7, the paired t-test confirmed that the planned teaching program significantly enhanced staff nurses' expressed practice scores regarding safe intra-hospital transport, leading to the acceptance of research hypothesis H_2. The mean practice score rose from 7.13 ± 2.72 in the pre-test to 11.33 ± 2.10 in the post-test, demonstrating a substantial mean improvement of 4.20. This improvement was statistically highly significant ($t(59) = 21.620, p < 0.05$), easily exceeding the critical table value of 2.000.

3.3 ANALYSIS AND INTERPRETATION OF DATA RELATED TO ASSOCIATION BETWEEN PRE-TEST KNOWLEDGE AND EXPRESSED PRACTICE SCORES WITH DEMOGRAPHIC CHARACTERISITCS

Table 8: Association between pre-test knowledge scores and demographic characteristics of staff nurses

[n=60]

Sr. No.	Demographic characteristics	Poor	Average	Good	(f)	χ^2 value	Table value	df	Remark
1	**Age in years**					**19.427**	**12.592**	**6**	**S**
	22 - 26	13	2	1	**16**				
	27 - 31	20	7	2	**29**				
	32 to 36	1	4	4	**9**				
	37 & above	1	3	2	**6**				
2	**Gender**					**9.942**	**5.991**	**2**	**S**
	Male	16	1	1	**18**				
	Female	19	15	8	**42**				
3	**Professional Qualification**					**24.017**	**9.488**	**4**	**S**
	ANM	5	0	0	**5**				
	GNM	24	3	2	**29**				
	B.Sc. N./ P.B.B.Sc. N.	6	13	7	**26**				
	M.Sc. N.	0	0	0	**0**				
4	**Current Department of Work**					**19.680**	**12.592**	**6**	**S**
	Emergency Department	4	6	0	**10**				
	Intensive Care Unit	3	5	4	**12**				
	General Ward	24	2	4	**30**				
	Other Department	4	3	1	**8**				
5	**Years of Experience**					8.629	9.488	4	NS
	0 to 5	15	4	2	**21**				
	06 to 10	19	10	4	**33**				
	11 to 15	1	2	3	**6**				
	>16	0	0	0	**0**				
7	**Previous knowledge**					No statistics are computed because this variable is constant			
	Yes	35	16	9	**60**				
	No	0	0	0	**0**				

S: Significant, NS: Non-significant at 0.05 level of significance

Table 8 reveals that the demographic variables "age (χ^2=19.427, df= 6), gender (χ^2=9.942, df= 2), qualification (χ^2=24.017, df= 4) and department of work (χ^2=19.680, df= 6) has the calculated chi square value more than the table value at 0.05 level of significance, thus it shows the presence of significant association between pre-test knowledge score and above mentioned demographic variable, whereas for the rest of the demographic variables there was no significant association.

Table 9: Association between pre-test expressed practice scores and selected demographic variables of Staff nurses

[n=60]

Sr. No.	Demographic variables	Poor	Average	Good	(f)	χ^2value	Table value	df	Remarks
1	**Age in years**					9.418	12.592	6	NS
	22 - 26	9	6	1	**16**				
	27 – 31	10	16	3	**29**				
	32 to 36	1	5	3	**9**				
	37 & above	1	3	2	**6**				
2	**Gender**					2.184	5.991	2	NS
	Male	8	9	1	**18**				
	Female	13	21	8	**42**				
3	**Professional Qualification**					**10.258**	**9.488**	**4**	**S**
	ANM	3	2	0	**5**				
	GNM	14	13	2	**29**				
	B.Sc. N./ P.B. B.Sc. N.	4	15	7	**26**				
	M.Sc. N.	0	0	0	**0**				
4	**Current Department of Work**					**17.310**	**12.592**	**6**	**S**
	Emergency Department	5	4	1	**10**				
	ICU	1	5	6	**12**				
	General Ward	13	16	1	**30**				
	Other Department	2	5	1	**8**				
5	**Years of Experience**					9.248	9.488	4	NS
	0 to 05 Years	12	7	2	**21**				
	06 to 10 Years	9	19	5	**33**				
	11 to 15 Years	0	4	2	**6**				
	>16 years	0	0	0	**0**				
6	**Previous knowledge**					No statistics are computed because this variable is constant			
	Yes	21	30	9	**60**				
	No	0	0	0	**0**				

S: Significant, NS: Non-significant at 0.05 level of significance

Table 9 reveals that pre-test practice scores had a statistically significant association ($p < 0.05$) only with qualification ($\chi^2 = 24.017$, $df = 4$) and department of work ($\chi^2 = 19.680$, $df = 6$), confirming hypothesis H_4 for these variables. No significant association was found for the remaining demographic variables.

DISCUSSION

The current study assessed the impact of a planned teaching programme (PTP) on the knowledge and

expressed practice of staff nurses regarding the safe intra-hospital transport of immobilized patients. Our findings demonstrate that a structured educational intervention significantly enhances both the cognitive understanding and the practical application of safety protocols among nursing staff.

The significant improvement in post-test knowledge and expressed practice scores compared to pre-test baseline levels underscores the efficacy of targeted educational initiatives. Previous research consistently highlights that while nurses recognize the inherent risks of IHT—such as hemodynamic instability, equipment-related complications, and physiological deterioration—formal training remains frequently inadequate (Lemos, 2024; Wang et al., 2025). Our results confirm that systematic interventions, including the use of standardized checklists and specialized training, are essential to bridge the gap between theoretical awareness and clinical competency. As evidenced by recent studies, institutionalized training is a primary driver in ensuring that nursing care standards in critical care units are upheld during transport (Lemos, 2024).

Intra-hospital transport is a high-risk activity where patients are highly vulnerable to adverse events, such as equipment malfunction or the dislodgement of critical lines (Putra et al., 2022). Recent qualitative research has shown that when nurses are supported by scientific and comprehensive programmes, they are significantly more motivated to adhere to safety protocols, thereby reducing the incidence of transit-related complications (Wang et al., 2025). The improvement observed in this study suggests that nurses, when properly trained, are better equipped to anticipate these complications, ensure equipment readiness, and maintain continuous monitoring throughout the transport process. Furthermore, the use of transport checklists has been proven to translate key aspects of pre-transit preparation into actionable, bedside documents that minimize preparation lapses (Wang et al., 2025).

Our finding regarding the limited association between demographic variables and pre-test knowledge is consistent with broader literature, where prior experience alone does not always guarantee high safety proficiency (Wang et al., 2025). This suggests that the complexity of modern IHT protocols requires updated, universal training for all nursing staff, rather than relying solely on tenure or previous clinical experience.

Limitations and Future Directions

While the current study highlights clear benefits, the use of pre-experimental research design limits the generalization of the study. Future research should utilize randomized controlled trials to establish long-term knowledge retention and track the actual incidence of patient-related adverse events post-training. Additionally, replicating this study with a larger, multi-center sample would improve the generalizability of these findings.

Conclusion

This study underlines that a planned teaching programme (PTP) significantly improves staff nurses' knowledge and clinical practice regarding the safe intra-hospital transport (IHT) of immobilized patients. By improving competencies from a baseline "fair" level, the intervention effectively bridges the gap between theoretical awareness and patient safety application. As IHT remains a high-risk activity prone to adverse physiological and equipment-related events, standardized education is essential to mitigate these risks (Lemos, 2024; Wang et al., 2025). Given that clinical experience alone does not ensure safety proficiency, healthcare institutions should formalize IHT training within routine nursing curricula (Wang

et al., 2025). Future research should focus on long-term knowledge retention and the objective reduction of transport-related adverse events (Putra et al., 2022).

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