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A Study to Assess the Effectiveness of Structure Teaching Programme on Knowledge Regarding Prevention of Deep Vein Thrombosis in Bed Ridden Patients Among Nursing Interns in Selected Nursing Colleges at Kuppam Chittoor District, A.P

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ABSTRACT

Background: Deep Vein Thrombosis (DVT) is a serious vascular condition characterized by the formation of a thrombus in the deep veins, most commonly in the lower extremities. It is a major component of venous thromboembolism (VTE), which includes both DVT and pulmonary embolism (PE). DVT is a significant cause of morbidity and mortality worldwide, particularly among hospitalized and bedridden patients. Immobility, venous stasis, endothelial injury, and hypercoagulability collectively described by Virchow's triad are the principal mechanisms underlying thrombus formation. (1) Globally, venous thromboembolism is recognized as a leading preventable cause of hospital-related death. According to estimates from the World Health Organization, cardiovascular diseases account for approximately 17.9 million deaths annually, and thrombotic disorders form a significant proportion of circulatory system complications.(2) Studies suggest that the annual incidence of VTE ranges from 1–2 per 1,000 population, increasing sharply with age and hospitalization.(3) Hospitalized and immobilized patients are at particularly high risk, especially those admitted for surgery, trauma, stroke, cancer, or prolonged bed rest. Structured Teaching Programmes (STPs) are systematic educational interventions designed to enhance knowledge, skills, and clinical practice through organized instruction and reinforcement. Research has demonstrated that educational interventions significantly improve healthcare professionals' knowledge and compliance with DVT prevention protocols by equipping nursing interns with updated evidence-based knowledge and practical guidance, STPs can strengthen preventive practices and reduce DVT-related complications. Considering the high incidence of DVT among immobilized patients and the crucial role of nursing interns in preventive care, there is a need to assess the effectiveness of structured educational strategies. Therefore, the present study aims to assess the effectiveness of a Structured Teaching Programme on knowledge regarding prevention of Deep Vein Thrombosis in bedridden patients among nursing interns in selected nursing colleges at Kuppam,

Chittoor District, Andhra Pradesh, with the objective of improving patient safety and quality of care. **Methods:** a Quantitative pre-experimental study was conducted in December 2025 among 96 nursing interns studying in PES College of Nursing at Kuppam samples were selected by using convenient sampling technique, informed consent were taken before the study nursing interns knowledge were assessed by using structured self-administered questionnaire.

Results: In regards age Majority of them 59 (61.5%) of the nursing interns were belongs to age group between 22-23 years old, In regards Residential Status Majority 77 (80.2%) of them are hostler, In regards Marital Status Majority 92 (95.8%) of the nursing interns are Unmarried, In regards Religion Majority 51 (53.1%) of the nursing interns were belongs to Christian the pre-test knowledge reveals that 16 (16.7%) nursing interns had adequate knowledge, 39 (40.6 %) were had Moderate Knowledge, 36 (37.5%) were had inadequate Knowledge and 5(5.2%) were had poor knowledge, the post- test knowledge reveals that majority 83(86.5%) of the nursing interns were had adequate knowledge, 10(10.4%) were had in Moderate Knowledge, 3 (3.1%) were had in adequate Knowledge and no one in the level of poor knowledge, Comparison of pre-test and post- test mean, SD "t" and p-values of knowledge scores among nursing interns. shows that the pre-test knowledge mean were 26.65 with a SD of 4.162 and in post-test knowledge mean were 15.10 with a SD of 5.901 the association of pre-test scores of knowledges on prevention of deep vein thrombosis in bed ridden patients among nursing interns with their selected demographic variables Religion was significant at the level of $p<0.001$ respectively. Other variables such as Age, Residential status and Marital Status were not significant

Conclusion: The present study assessed the knowledge regarding prevention of deep vein thrombosis (DVT) among nursing interns at PES College of Nursing, Kuppam. The findings revealed that most of the nursing interns initially had moderate to inadequate knowledge about DVT prevention in bedridden patients. After the educational intervention, a significant improvement in knowledge was observed among the participants. The majority of nursing interns achieved an adequate level of knowledge in the post-test compared to the pre-test. This indicates that the teaching programme was effective in improving their understanding of DVT prevention. Adequate knowledge among nursing interns is essential for early identification and prevention of complications in bedridden patients. The study

Also showed that religion had a statistically significant association with the pre-test knowledge scores. However, other demographic variables such as age, residential status, and marital status were not significantly associated. The results highlight the importance of continuous education and training for nursing interns. Therefore, structured educational programmes can play a vital role in enhancing knowledge and improving patient care practices related to DVT prevention.

Keywords: Deep vein thrombosis, Bedridden Patients, nursing interns

I. INTRODUCTION

"Prevention is better than cure, especially when the cost of failure is a life."

Deep Vein Thrombosis (DVT) is a serious vascular condition characterized by the formation of a thrombus in the deep veins, most commonly in the lower extremities. It is a major component of venous thromboembolism (VTE), which includes both DVT and pulmonary embolism (PE). DVT is a significant cause of morbidity and mortality worldwide, particularly among hospitalized and bedridden patients. Immobility, venous stasis, endothelial injury, and hypercoagulability collectively described by Virchow's triad are the principal mechanisms underlying thrombus formation. (1) Globally, venous

thromboembolism is recognized as a leading preventable cause of hospital-related death. According to estimates from the World Health Organization, cardiovascular diseases account for approximately 17.9 million deaths annually, and thrombotic disorders form a significant proportion of circulatory system complications.(2) Studies suggest that the annual incidence of VTE ranges from 1–2 per 1,000 population, increasing sharply with age and hospitalization.(3) Hospitalized and immobilized patients are at particularly high risk, especially those admitted for surgery, trauma, stroke, cancer, or prolonged bed rest. In India, the burden of DVT is increasingly recognized due to rising surgical procedures, aging population, and prolonged hospitalization. Indian studies report variable incidence rates of DVT among hospitalized patients, ranging from 10% to 28% in high-risk groups without prophylaxis.(4) Despite advancements in diagnostic modalities such as duplex ultrasonography and D-dimer testing, DVT often remains underdiagnosed due to lack of awareness and inadequate screening practices. Bedridden patients are especially vulnerable because prolonged immobility leads to venous stasis in the lower limbs, reduced calf muscle pump activity, and increased coagulation tendency. Clinical manifestations may include unilateral leg swelling, pain, warmth, redness, and tenderness; however, many cases remain asymptomatic until complications such as pulmonary embolism occur. PE can be fatal and is responsible for a significant proportion of sudden in-hospital deaths. (5)Prevention of DVT is a critical component of patient safety and quality care in hospitals. Evidence-based preventive measures include early mobilization, leg exercises, and use of graduated compression stockings, intermittent pneumatic compression devices, adequate hydration, and pharmacological prophylaxis with anticoagulants when indicated.(6) International guidelines strongly recommend risk assessment for all hospitalized patients and timely initiation of prophylactic measures.(7) Nursing professionals play a pivotal role in DVT prevention. Nursing interns, who are directly involved in bedside care, must possess adequate knowledge regarding risk factors, early signs, preventive strategies, and monitoring of patients on anticoagulant therapy. However, studies indicate gaps in knowledge and inconsistent implementation of DVT prevention protocols among nursing students and interns. (8) Structured Teaching Programmes (STPs) are effective educational strategies to enhance knowledge, improve clinical competence, and promote adherence to preventive guidelines in clinical practice. (9)

II.METHODS AND MATERIALS

A Quantative pre-experimental study was conducted in December 2025 among 96 nursing students who is doing their internship at PES College of Nursing, Kuppam. the samples were selected by using convenient sampling technique, informed consent were taken before the study, nursing interns knowledge were assessed by using structured self-administered questionnaire. Which includes demographic variables and Questionnaire on knowledge regarding prevention of deep vein thrombosis in bedridden patient.

Objectives of the present study includes

1. To assess the pre level of knowledge regarding prevention of deep vein thrombosis
2. To assess the post-test level of knowledge regarding prevention of deep vein thrombosis
3. To assess the effectiveness of STP by comparing pre and post –test knowledge
4. To associate the pre-test level of knowledge with their selected demographic variables

Collected data was entered into MS Excel 2013 and analyzed using Epi Info 7.0. Appropriate statistical methods used to find out the results based on the objectives.

III. RESULTS

The results of the study were presented as Tables and graphs as per the objectives of the study.

Section-A: Frequency and percentage distribution of demographic variables.

Table: 1- Frequency and percentage distribution of demographic variables

n=96

S. NO	DEMOGRAPHIC VARIABLES		FREQUENCY	PERCENTAGE
1	Age	A) 19 to 21 Years	28	29.2
		B) 22 to 23 Years	59	61.5
		C) 23 to 25 Years	9	9.4
2	Residential Status	A) Hostler	77	80.2
		B) Day scholar	19	19.8
3	Marital Status	A) Married	4	4.2
		B) Unmarried	92	95.8
4	Religion	A) Hindu	43	44.8
		B) Christian	51	53.1
		C) Muslim	2	2.1

Table-1 Demographic Variable shows about 28 (229.2%) of the nursing interns were belongs to age group between 19-21 years old, 15 (61.5%) of the nursing interns were belongs to age group between 22-23 years old, 9 (9.4%) of the nursing interns were belongs to age group between 23-25 years old Majority 77 (80.2%) of them are hostler, 19 (19.8%) of them are day scholars, Majority 92 (95.8%) of the nursing interns are Unmarried, 4 (4.2%) of them are Married, majority 51 (53.1%) of the nursing interns were belongs to Christian, 43(44.8%) of them were belongs to Hindu, 2 (2.1%) of them were belongs to Muslim.

Section-B: Frequency and percentage distribution of the pre-test level of knowledge among nursing interns

Table: 2- Frequency and percentage distribution of the pre-test level of knowledge among nursing interns

n=96

LEVEL OF KNOWLEDGE	FREQUENCY	PERCENTAGE
Adequate Knowledge	16	16.7
Moderate Knowledge	39	40.6
In adequate Knowledge	36	37.5
Poor Knowledge	5	5.2

Above table-2: Shows that 16 (16.7%) nursing interns had adequate knowledge, 39 (40.6 %) were had Moderate Knowledge, 36 (37.5%) were had inadequate Knowledge and 5(5.2%) were had poor knowledge.

Section-C: Frequency and percentage distribution of the post-test level of knowledge among nursing interns.

Table: 3 - Frequency and percentage distribution of the post-test level of knowledge among nursing interns.

n=96

LEVEL OF KNOWLEDGE	FREQUENCY	PERCENTAGE
Adequate Knowledge	83	86.5
Moderate Knowledge	10	10.4
In adequate Knowledge	3	3.1
Poor Knowledge	0	0

Above table- 3: Shows that majority 83(86.5%) of the nursing interns were had adequate knowledge, 10(10.4%) were had in Moderate Knowledge, 3 (3.1%) were had in adequate Knowledge and no one in the level of poor knowledge.

Section- D: Comparison of frequency and percentage distribution of pre-test and post-test level of knowledge among nursing interns

Table: 4 - : Comparison of frequency and percentage distribution of pre-test and post-test level of knowledge among nursing interns.

n=96

LEVEL OF KNOWLEDGE	PRE-TEST		POST-TEST	
	Frequency	%	Frequency	%
Adequate Knowledge	16	16.7	83	86.5
Moderate Knowledge	39	40.6	10	10.4
In adequate Knowledge	36	37.5	3	3.1
Poor Knowledge	5	5.2	0	0

Above table-4 shows that comparison between pre-test and post-test knowledge scores in pre-test 16 (16.7%) nursing interns were had adequate knowledge, 39 (40.6%) were had Moderate Knowledge and 36 (37.5%) were had inadequate Knowledge and 5(5.2%) were had poor knowledge, and in post-test majority 83 (86.5%) nursing interns were had adequate knowledge,10(10.4%) were had moderate Knowledge,3(3.1%) wer had inadequate knowledge and none of them were in poor knowledge.

Section-E: Comparison of pre-test and post- test mean, SD "t" and p-values of knowledge scores among nursing interns.

Table: 5 - Comparison of pre-test and post- test mean, SD "t" and p-values of knowledge scores among nursing interns

n=96

Knowledge scores on life style modification among CAD Patient within experimental group	Number	Mean	SD	t-value	p-value	Significance
Pre-t-test	96	26.65	4.162			
Post-test	96	15.10	5.901	13.784	<0.001	Yes

Above table-5 shows that comparison between pre-test and post-test knowledge mean, standard deviation and t, p values, the pre-test knowledge mean were 26.65 with a SD of 4.162 and in post-test knowledge mean were 15.10 with a SD of 5.901

Section-F: Association of pre-test level of knowledge among nursing interns with their selected demographic variables.

Table: 6 - Association of pre-test level of knowledge among nursing interns with their selected demographic variables.

n=96

S.No	Demographic variables		Level of Knowledge				Chi-square Value	p-Value
			Adequate Knowledge	Inadequate Knowledge	Moderate knowledge	Poor Knowledge		
1	Age	A) 19 to 21 Years	4	10	14	0	12.575	0.215
		B) 22 to 23 Years	9	22	25	3		
		C) 23 to 25 Years	3	4	0	2		
2	Residential Status	A) Hostler	13	30	33	1	12.127	0.007
		B) Day scholar	3	6	6	5		
3	Marital Status	A) Married	0	1	3	0	2.301	0.512
		B) Unmarried	16	35	36	5		
4	Religion	A) Hindu	8	12	20	3	5.877 S	0.437
		B) Christian	8	22	19	2		
		C) Muslim	0	2	0	0		

Table:6 Shows that the association of pre-test scores of knowledges on prevention of deep vein thrombosis in bed ridden patients among nursing interns with their selected demographic variables Religion was significant at the level of $p<0.001$ respectively. Other variables such as Age, Residential status and Marital Status were not significant.

IV. DISCUSSION

The present study assessed the effectiveness of a Structured Teaching Programme (STP) on knowledge regarding prevention of Deep Vein Thrombosis (DVT) among nursing interns. Regarding Objective 1, the pre-test findings revealed that 16 (16.7%) nursing interns had adequate knowledge, 39 (40.6%) had moderate knowledge, 36 (37.5%) had inadequate knowledge, and 5 (5.2%) had poor knowledge regarding DVT prevention. These findings indicate that the majority of nursing interns had insufficient knowledge before the educational intervention. Similar findings were reported by Praveen et al. (2023) and Choudhary et al. (2022), who identified poor knowledge regarding DVT prevention among nurses prior to educational programmes.

Regarding Objective 2, the post-test findings showed significant improvement in knowledge after administration of the Structured Teaching Programme. In the post-test, 83 (86.5%) nursing interns had

adequate knowledge, 10 (10.4%) had moderate knowledge, 3 (3.1%) had inadequate knowledge, and none of the participants had poor knowledge. The increase in adequate knowledge from 16.7% in the pre-test to 86.5% in the post-test clearly demonstrates the effectiveness of the STP. These findings are supported by studies conducted by Dr. Veena Boswal et al. (2024) and Mohamed Khalil et al. (2023), who also reported significant improvement in knowledge following structured educational interventions.

Regarding Objective 3, the study found no significant association between pre-test knowledge scores and demographic variables such as age and marital status. These findings are consistent with James et al. (2021) and Sikder et al. (2020), who also reported no significant association between demographic variables and knowledge regarding DVT prevention. However, slight variations were observed in certain demographic characteristics across studies.

Overall, the findings of the present study indicate that the Structured Teaching Programme was effective in improving the knowledge of nursing interns regarding prevention of Deep Vein Thrombosis among bedridden patients. Therefore, regular educational programmes and training sessions should be encouraged to strengthen nursing knowledge and improve patient care practices.

CONCLUSION

Overall, the Structured Teaching Programme (STP) implemented among nursing interns regarding prevention of deep vein thrombosis in bedridden patients has proven to be highly effective. Analysis conducted after the intervention showed a significant improvement in the knowledge levels of nursing interns. The study highlights the importance of focused educational interventions in enhancing clinical knowledge and strengthening evidence-based nursing practice. The Structured Teaching Programme helped bridge the knowledge gap and improved the interns' understanding of preventive measures for deep vein thrombosis. Furthermore, the findings emphasize that well-planned and systematically delivered educational programmes can significantly contribute to better patient care outcomes. Thus, in the field of nursing education and clinical training, Structured Teaching Programmes can be considered an effective strategy for improving knowledge and promoting quality patient care practices.

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