

A Study to Assess the Effectiveness of Structured Teaching Programme On Knowledge Regarding Prevention of Deep Vein Thrombosis Among Orthopedic Patients with Injury of the Lower Extremities Admitted in Selected Hospital Jaipur

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How to cite this article : Sharma DK. A Study to Assess the Effectiveness of Structured Teaching Programme On Knowledge Regarding Prevention of Deep Vein Thrombosis Among Orthopedic Patients with Injury of the Lower Extremities Admitted in Selected Hospital Jaipur. GFNPSS-IJMR 2026; 7:9: 3635-3639

Submitted: 07 September 2026: **Accepted:** 16 September 2026: **Published:** 30 September 2026

Abstract :

Background of the problem: Blood transfusion the transfer of blood or blood components from one person (the donor) into the bloodstream of another person (the recipient) known as blood transfusion. Blood transfusion may be done as a lifesaving maneuver to replace blood cells or blood products lost through bleeding or due to depression of the bone marrow. Transfusion of one's own blood (autologous) is the safest method but requires advanced planning, and not all patients are eligible for it. Directed donor blood allows the patient to receive blood from known donors. Volunteer donor blood is usually most readily available and, when properly tested, has a low risk of side effects.

Materials & Methods: A quantative research, Non experimental descriptive survey design approach was considered appropriate for the present study. The sample size for the study was 100 registered nurses working in different areas in selected hospital at Jaipur. It includes the description of research approach, research design, and setting of the study, sampling technique, development of tool, validation of the tool, data collection technique and plan for data analysis.

Results: Over all mean knowledge were 17.48. The results show that existing mean knowledge of staff nurse was 4.25 in the aspect of introduction of blood and blood products ,3.86 in the aspect of introduction, indications, points to be remembered, blood grouping, Rh factor, complications & contradiction of blood transfusion, and safe practices of blood transfusion score was 9.37. The result shows, Knowledge level of respondents on safe practices on blood transfusion showed that 18 percentages of staff nurses had inadequate knowledge, 78 percentage staff nurses had Moderate knowledge and 04 percentage staff nurses had adequate knowledge.

Conclusion: The study revealed with the assumption of the study to assess the knowledge regarding safe practices on blood transfusion of registered nurses working at selected hospital at Jaipur in a view to develop a protocol on safe blood transfusion.

Keywords: B.Sc. Nursing students, Knowledge, Booklet, Safe Practice of Blood Transfusion and Hospital

INTRODUCTION

Blood is the red liquid that circulates in the arteries and veins of humans and other vertebrate animals, carrying oxygen to and carbon dioxide from the tissues of the body. It contains white and red blood cells, platelets, proteins, and other elements. The blood is transported throughout the body by the circulatory system. Blood functions in two directions: arterial and venous. Arterial blood is the means by which oxygen and nutrients are transported to tissues while venous blood is the means by which carbon dioxide and metabolic by-products are transported to the lungs and kidneys, respectively, for removal from the body.¹

Blood transfusion the transfer of blood or blood components

from one person (the donor) into the bloodstream of another person (the recipient) known as blood transfusion. Blood transfusion may be done as a lifesaving maneuver to replace blood cells or blood products lost through bleeding or due to depression of the bone marrow.²

In the India, about 25 million blood transfusions are given every year. Transfusions are given to increase the blood's ability to carry oxygen, restore the amount of blood in the body (blood volume), and correct clotting problems.³

In the India, the Food and Drug Administration (FDA) strictly regulates the collection, transportation, and storage of blood and its components. These regulations were developed to protect both the donor and the recipient.

Additional standards are upheld by many state and local health authorities, as well as by organizations such as the American Red Cross and the AABB (formerly, the American Association of Blood Banks). Because of these regulations, giving blood and receiving blood are very safe.⁴

People have different blood types. Blood type is determined by whether certain antigens (complex sugar or protein molecules [blood group antigens A and B and Rh factor]) are present on the surface of red blood cells. These antigens can trigger an immune response. The four main blood types are A, B, AB, and O (distribution in general population) A: Antigen A (but not B) is present. (40%), B: Antigen B (but not A) is present. (10%), AB: Antigens A and B are present. (5%) and O: Neither antigen A nor B is present. (45%) Also, blood may be Rh-positive (Rh factor is present on the surface of the red blood cells, 85% of people) or Rh-negative (Rh factor is absent, 15% of people).⁵

Normally, if people lack an A and/or a B antigen, they have naturally occurring antibodies against the antigen or antigens that they lack. For example, people with blood type A have naturally occurring anti-B antibody, and people with blood type O (who lack both A and B antigens) have naturally occurring anti-A and anti-B antibodies. In addition to A and B antigens, there are several other blood group antigens also present on red blood cells. However, people do not have naturally occurring antibodies against these antigens.⁶

To minimize the chance of an adverse reaction during a transfusion, health care practitioners take several precautions. Before starting the transfusion, usually a few hours or even a few days beforehand, the patient is cross-matched with the donor blood (not plasma or platelets).⁷

After double-checking labels on the bags of blood that are about to be given to ensure the units are intended for that recipient, the health care practitioner gives the blood to the recipient slowly, generally over 1 to 4 hours for each unit of blood. Because most adverse reactions occur during the first 15 minutes of the transfusion, the recipient is closely observed at first. After that, a nurse checks on the recipient periodically and must stop the transfusion if an adverse reaction occurs.⁸

Massive transfusion is transfusing a volume of blood equal to the person's total blood volume (about 10 units in an average adult) in a period of 24 hours or less. Such transfusion is sometimes necessary after a severe injury or during certain surgical procedures. The main complications of massive transfusion are poor blood clotting (coagulopathy) and a low body temperature (hypothermia).⁹

Sometimes, massive transfusion can cause hypocalcaemia (low calcium level in the blood) and/or hypokalemia (low potassium level in the blood). Very low calcium levels can cause symptoms such as muscle spasms (tetany) and abnormal heart rhythms. Very low potassium levels can cause muscle weakness and abnormal heart rhythms.¹⁰

OBJECTIVES OF THE STUDY

01. To assess the level of knowledge on safe practice of blood transfusion of registered nurses working at selected hospital at Jaipur.
02. To determine the association between the level of

knowledge on safe practice of blood transfusion of registered nurses and with their selected demographic variables.

03. To develop a protocol for nurses on 'Safe Practice of Blood Transfusion.

HYPOTHESIS

- H₁: There will be significant association between the level of Nurses' knowledge on safe practice of blood transfusion and their selected demographic variables.

MATERIALS & METHODS

Research Approach

Research Approach is a systematic, objective method of discovery with empirical evidence and rigorous control. Descriptive approach helped to explain the effect of independent variable on the dependent variable. It includes manipulation, control and randomization.

Research Design

The term 'research design' refers to the plan or organization of a scientific investigation. The research design provides an overall blue print to carry out the study. A non-experimental descriptive survey design with group test design was used to conduct study.

Variables

Research variable

In the present study, the variables were knowledge regarding safe practices on blood transfusion of registered nurses working at selected hospital at Jaipur.

Research Setting

It refers to the physical location and condition which data collection takes place in the study. This study had been conducted in selected hospital at Jaipur. The college is at a distance of 25 km from Jaipur Nursing College Jaipur.

Population

In the present study the target population comprised of staff nurses of in selected hospital at Jaipur.

Sample and Sample Size:

The samples selected for the present study comprised of staff nurses of in selected hospital at Jaipur. The sample size for present study consists of 100 staff nurses of hospital at Jaipur.

Sampling Technique

Sampling technique was used in research when it was not feasible to study the whole population from which it is drawn. In this study, samples were selected by using Non-probability convenient sampling method.

Sampling Criteria

Inclusion Criteria

Nurses who were;

1. Willing to participate in the study
2. Available at the time of data collection
3. Can read and write English

Exclusion Criteria

1. Nurses who were excluded
2. Nurses who were got training on safe practice of blood transfusion.

3. Nurses who were not be available at the time of data collection.
4. Nurses who were participated in the pilot study.

Ethical Consideration

After obtaining permission from research committee of Jaipur Nursing College Jaipur permission was obtained from hospital at Jaipur.

Data Collection Tool

Selection and development of tool

A structured knowledge questionnaire was used to assess the knowledge regarding safe practices on blood transfusion of registered nurses. Objective of the study was considered the best and appropriate instruments to elicit the response from the literate subjects. The main strength behinds the tools were

Part–I Related review of literature.

Part–II Based on the opinion and suggestions of experts.

Part–III Discussion with colleagues and experience

All the above provided relevant data necessary to construct the tool on safe practices on blood transfusion. A blue print is prepared prior to the construction of the questionnaire.

Description of the Tool: The structured knowledge administered questionnaire consists of two parts;

Part – I: Consist of selected socio-demographic variables such as age (in years), gender, education qualification, experience, area of working previous information regarding safe practices on blood transfusion.

Part – II: Consist of structured knowledge questionnaire on of practices on blood transfusion consists of 30 items on selected aspects.

Questions regarding Introduction of blood and blood products

Questions regarding introduction, indications, points to be remembered, blood grouping, Rh factor, complications & contradiction of blood transfusion

Questions regarding safe practices of blood transfusion and self-assessment.

Reliability of the Tool

The final tool is tested for reliability. Reliability is established by split-half method for structured knowledge questionnaire. Formula is used to get the reliability ('r') and that is **0.8894** which showed that tool is strong reliable.

RESULTS

Table – 1: Description of Staff nurses by Age

Variable	Category	Staff nurses	
		Frequency	Percentage %
Age (in years)	21-25	38	38%
	26-30	18	18%
	31-35	21	21%
	36 and Above	23	23%
Total		100	100%

Table –2: Description of Staff nurses by Gender

Variable	Category	Staff nurses	
		Frequency	Percentage %
Gender	Male	46	46%
	Female	54	54%
Total		100	100%

Table – 3: Description of Staff nurses by Educational qualification

Variable	Category	Staff nurses	
		Frequency	Percentage %
Educational status	GNM	67	67%
	Bsc Nursing	16	16%
	PB Bsc Nursing	14	14%
	Msc Nursing	03	03%
Total		100	100%

Table – 4: Description of Staff nurses by Working Experience (in years)

Variable	Category	Staff nurses	
		Frequency	Percentage %
Experience (in years)	0-1 years	18	18%
	2-3 years	42	42%
	4-5 years	17	17%
	>5 years	23	23%
Total		100	100%

Table –5: Description of Staff nurses by Area of Working

Variable	Category	Staff nurses	
		Frequency	Percentage %
Area of Working	General Ward	56	56%
	ICU	24	24%
	OT	14	14%
	Netropnia	06	06%
Total		100	100%

Table – 6: Description of Staff nurses by Previous information

Variable	Category	Staff nurses	
		Frequency	Percentage
Previous information	TV/Radio/Media	59	59%
	In-service training/ continuing nursing education	20	20%
	Seminar / Conference / Workshop	14	14%
	Others	07	07%
Total		100	100%

Table -7: Knowledge level of Staff nurses on safe practices on blood transfusion.

No.	Aspects	Max. Score	Mean	SD
I	Overall mean Knowledge scores of Staff nurses	30	17.48	2.9444

Table -8: Aspect wise mean Knowledge scores of Staff nurses on safe practices on blood transfusion

No.	Aspects	Max. Score	Mean	SD
I	Introduction of blood and blood products	9	4.25	1.3518
II	Introduction, indications, points to be remembered, blood grouping, Rh factor, complications & contradiction of blood transfusion	7	3.86	0.2179
III	Safe practices of blood transfusion and self assessment	14	9.37	1.1047

Table –9: Knowledge level of Staff nurses on safe practices on blood transfusion N=100

	Category	Staff nurses	
		Frequency	Percentage %
Inadequate	0-15 Score	18	18%
Moderate	15-23 Score	78	79%
Adequate	24 and Above Score	04	04%
Total		100	100%

Table – 10: Association between Gender and Knowledge level of Staff nurses on safe practices on blood transfusion

Gender	Knowledge level of Staff nurses						Calculated X ² Value	Tabled X ² value	Inference
	Inadequate		Moderate		Adequate				
	N	%	N	%	N	%			
Male	08	17. 39	36	78. 26	02	04.35	0.044043	5.991	Not significant
Female	10	18. 52	42	77. 78	02	03.70			
Total	18		78		04				

0.05 Level of Significance

,X² (0.05, 2df) = 2

H₁: There will be significant association between the level of Nurses' knowledge on safe practice of blood transfusion and their selected demographic variables.

The chi square value indicates that there is not significant association between Age, Gender, Education qualification, Experience, Area of working and previous information and Knowledge level of Staff nurses regarding on safe practices on blood transfusion. **So H₁ is rejected.**

DISCUSSION

The findings showed that most staff nurses were young females, predominantly GNM qualified, with 2–3 years of experience and working in general wards. The majority had previously received information through TV/radio/media. Regarding safe blood transfusion practices, most staff nurses (78%) had moderate knowledge, while 18% had inadequate and only 4% had adequate knowledge. The findings indicate a need for regular training and continuing nursing education to strengthen safe blood transfusion practices. No significant association was found between knowledge level and selected demographic variables such as age, gender, educational qualification, experience, area of working, and previous information.

CONCLUSION

The study concluded that most staff nurses were aged 21–25 years, female, GNM qualified, had 2–3 years of experience, and worked in general wards. Most had received previous information through TV/radio/media. Regarding safe blood transfusion practices, 78% had moderate knowledge, 18% inadequate knowledge, and only 4% adequate knowledge. No significant association was found between knowledge level and age, gender, educational qualification, experience, area of working, or previous information.

RECOMMENDATIONS

- ✓ A similar study can be replicated on a large sample for wider generalization
- ✓ A pre- experimental study can be done to find out the knowledge of on safe practices on blood transfusion among staff nurses.
- ✓ A similar study may be conducted to assess the knowledge, practice and awareness of care of on safe practices on blood transfusion among Doctors.

FINANCIAL SUPPORT AND SPONSORSHIP: Nil

CONFLICTS OF INTERESTS: There is no conflict of

interest

REFERENCES

1. Odham J et al. Right patient, Right Blood, Right Care: Safe transfusion practice. British Journal of Nursing. 2009; Vol-18(5): Page 312,314,316-320.
2. Bharathi H Scott MD. Blood Transfusion in Cardiac surgery. Annals of Cardiac Anesthesia. 2007; Vol-10: Page 108-112.
3. American society of anesthesiologist task for blood component therapy, Anesthesiology.1996: vol-84:page no.732-747.
4. Mancini ME. Performance improvement in transfusion medicine. Arch Pathol Lab Med. 1999; Vol-123(6): Page 496-502.
5. Ali Reza Piri et al. Evaluation of knowledge of health care workers in Hospital of Zabol City on method of blood and components transfusion. Asian journal of transfusion.2009; vol-3: page 78-81
6. Abdul Majeed Al-Drees. Attitude, belief and knowledge about blood donation and transfusion in Saudi population. Palestine journal of medical sciences. 2008; vol-24: page 74-79.
7. Naveen Manchal, S Jayaran. A prospective cohort study on anemia and blood transfusion in critically ill patients. Indian journal of critical Care medicine. 2007; vol-11 (4): Page 182-185.
8. Diaz M Q et al. result of a National survey on transfusion Practice in intensive care units. Medicina intensive. 2009; Vol-33(1); Page 8-15.
9. Howard Let al. Anemia and blood transfusion in the critically ill current clinical practice in the United State. 2004; Vol-3(1): Page 39-52.
10. JD de Graff et al. Bed side practice of blood transfusion in a large teaching hospital in Uganda. Asian journal of transfusion section. 2009; Vol 3(2): Page 60-65.
11. Pirie ES, Gray MA. Exploring the assessors and nurses experience of formal assessments of clinical competency in the administration of blood component. Nurses education practice. 2007; Vol 7(4): Page 215-227
12. Pirie E, Green J. Should nurses prescribe blood components. Nurses standard. 2007; Vol 21(39): Page 35-41