

## KNOWLEDGE OF BLOOD TRANSFUSION AMONG THE NURSING STAFF IN A TERTIARY MEDICAL COLLEGE, BANGALORE

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### ABSTRACT

#### BACKGROUND

The transfusion of blood products is essential for restoring the body's oxygen transport capacity or replenishing lost or depleted blood components. Whether to transfuse a blood or not will be decided by a physician and remaining activities of blood collection to immediate management of transfusion will be taken care by the nursing staff. This study is done to know the knowledge of nursing staff about blood transfusion.

#### MATERIALS AND METHODS

This study is conducted using the questionnaire. A modified routine blood transfusion questionnaire. All the nursing staffs working in a tertiary care hospital are included in the study. Nursing staffs are given the same questionnaire to answer both before and after a lecture on blood transfusion procedure and management. Their knowledge before and after lecture are compared.

#### RESULTS

Among the 100 participants, majority (77%) were in the age group of 20 to 24 years (Mean  $\pm$  SD: 23.69  $\pm$  3.25) and 88 were female participants. Majority had a work experience of 1 to 2 years (55%) mean  $\pm$  SD: 3.20  $\pm$  2.57 and only 42 of 100 participants had participated in blood transfusion training programme. The assessment of knowledge of the participants before and after giving the lecture on blood transfusion procedure and immediate management of blood transfusion related reactions showed significant improvement of their knowledge after the training lecture ( $p$  value  $<$ 0.05).

#### CONCLUSION

There is a need for improvement of nursing staff knowledge on blood transfusion procedure and immediate treatment of transfusion-related complications through training programmes in hospital setup where they are working.

#### KEYWORDS

Blood Transfusion, Nursing Staff, Knowledge, Training Lecture.

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#### BACKGROUND

Since its initiation in the early twentieth century, blood transfusion, whereby blood or its constituents are infused to individuals through intravenous administration has been one of the most common procedures administered to hospitalised individuals.<sup>1</sup> The transfusion of blood products is essential for restoring the body's oxygen transport capacity or replenishing lost or depleted blood components.<sup>2</sup> However, blood transfusion has certain risks to recipients, including transmission of transfusion transmitted infections, acute or delayed transfusion reactions, all immunisation and immunomodulation.<sup>3</sup>

Bishop (2008) indicates that transfusion process is composed of five interrelated phase. Those are-

1. Decision to transfuse blood by physician is a first phase. Other four phases are dependant and managed by nursing staff in the ward.
2. Patient preparation before collecting blood bag.
3. Collection of blood bag from blood bank.
4. Pre-transfusion patient preparation.
5. Patient monitoring and activities during and after blood transfusion.<sup>4</sup>

Nursing staffs are trained at various levels of their service regarding blood transfusion. But, the knowledge of each nursing staff varies with the type of training and local health facilities. Most transfusion errors are due to human factors, which are preventable through training and revision of transfusion protocols. This study is an attempt to identify the knowledge gap in blood transfusion process of the nursing staff, so that areas of improvisation can be identified and transfusion associated risks can be minimised.

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**Objectives**

1. To assess the knowledge of blood transfusion among the nursing staff.
2. To improve the knowledge of blood transfusion among the nursing staff.

**MATERIALS AND METHODS INCLUDING STATISTICAL ANALYSIS**

It is a descriptive study, which will be conducted in a tertiary care medical college, The Oxford Medical College Hospital and Research Centre, Attibele, Bangalore. A modified version of the "routine blood transfusion knowledge questionnaire" is the research tool in our study. It is prepared after literature review (Harrison's Principals of Internal Medicine and the clinical use of blood handbook. World Health Organisation Blood Transfusion Safety).<sup>5,6</sup> The questionnaire consists of 5 sections and 36 questions. It is a structured prevalidated questionnaire. All the nursing staff working in the hospital are included in our study after taking informed consent. Those who are not willing to participate are excluded from the study. Study will be conducted in the month of June and July 2017.

All nursing staffs were divided into 4 to 5 batches of 20 each and they will be given 35 mins. to answer the questionnaire. After that, they were given a lecture on blood transfusion procedure. Then, after the training lecture, the same questionnaire will be given to the staff and advised to answer them. Each correct answer was given 1 mark and wrong answer was given no mark. Their knowledge was graded as good if they have scored more than 75% marks, fair if they have scored 50% to 75% marks and poor knowledge if the score is less than 50%. Before and after the training lecture on blood transfusion procedure, knowledge of nursing staff was assessed and compared.

All data was entered in the excel sheet and compiled using SPSS software. Descriptive and inferential statistical analysis has been carried out in the present study. Results on continuous measurements are presented on mean ± SD (min. to max.) and results on categorical measurements are presented in number (%). Significance is assessed at 5% level of significance. The following assumptions on data is made.

**Assumptions**

1. Dependent variables should be normally distributed.
2. Samples drawn from the population should be random, cases of the samples should be independent data. Paired proportion test has been used to find the significance of proportion in paired data.

**RESULTS**

The data is collected from the nursing staff working in emergency ward, general wards, MICU, SICU and ICCU of The Oxford Medical College Hospital and Research Centre. A total of 152 nursing staff are working in the hospital. It is a tertiary healthcare centre. Those who are not willing to participate are excluded from the study. 100 nursing staff participated in the study.

Among the 100 participants, majority (77%) were in the age group of 20 to 24 years (mean ± SD:23.69 ± 3.25) and 88 were female participants. Education level was different for all the participants like BSc. (65%), diploma (22%), midwifery (9%) and Masters in nursing (4%). Majority had a work experience of 1 to 2 years (55%), mean ± SD:3.20 ± 2.57 and only 42 of 100 participants had participated in blood transfusion training programme.

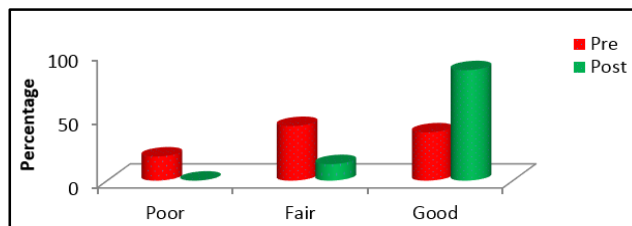
The assessment of knowledge of the participants before and after giving the lecture on blood transfusion procedure and immediate management of blood transfusion related reactions showed significant improvement of their knowledge after the training lecture (p value <0.05).

Knowledge on Blood Bag Collection	Before	After	Percentage Change
Poor	19 (19%)	0 (0%)	-19.0%
Fair	43 (43%)	13 (13%)	-30.0%
Good	38 (38%)	87 (87%)	49.0%
<b>Total</b>	<b>100 (100%)</b>	<b>100 (100%)</b>	-

**Table 1. Knowledge about Blood Bag Collection from the Blood Bank- An Assessment between Before and After the Training Lecture**

Significant improvement about knowledge on blood bag collection after training lecture.

P<0.001\*\*, improvement (good-49.0%) is significant, paired proportion test.



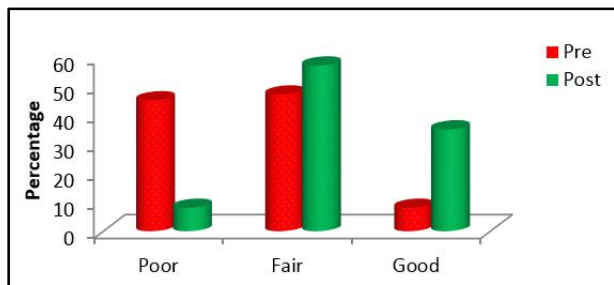
**Figure 1. Knowledge on Blood Bag Collection**

Patient Preparation before Blood Bag Collection	Before	After	Percentage Change
Poor	45 (45%)	8 (8%)	-37.0%
Fair	47 (47%)	57 (57%)	10.0%
Good	8 (8%)	35 (35%)	27.0%
<b>Total</b>	<b>100 (100%)</b>	<b>100 (100%)</b>	-

**Table 2. Patient Preparation Before Blood Bag Collection- An Assessment between Before and After the Training Lecture**

P<0.001\*\*, improvement (good-27.0%) is significant, paired proportion test.

The improvement of knowledge on patient preparation before blood bag collection after training lecture has shown statically significant improvement.



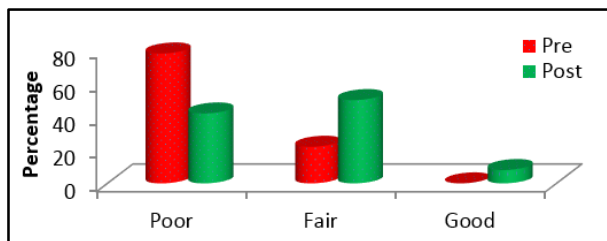
**Figure 2. Patient Preparation Before Blood Bag Collection**

Pre-transfusion Nursing Responsibilities	Before	After	Percentage Change
Poor	78 (78%)	42 (42%)	-36.0%
Fair	22 (22%)	50 (50%)	28.0%
Good	0 (0%)	8 (8%)	8.0%
<b>Total</b>	<b>100 (100%)</b>	<b>100 (100%)</b>	-

**Table 3. Pre-Transfusion Nursing Responsibilities- An Assessment between Before and After the Training Lecture**

P=0.002\*\*, improvement (good-8.0%) is significant paired proportion test.

Most of them had poor knowledge about pre-transfusion nursing responsibilities before training lecture. But, after lecture, there is significant improvement in their knowledge.



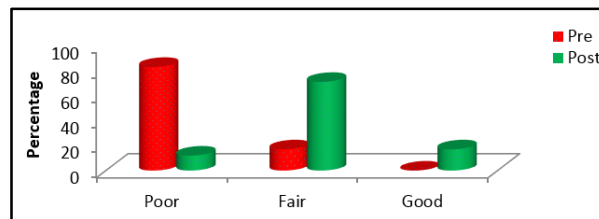
**Figure 3. Pre-Transfusion Nursing Responsibilities**

Post Transfusion Initiation Nursing Activities	Before	After	Percentage Change
Poor	83 (83%)	12 (12%)	-71.0%
Fair	17 (17%)	71 (71%)	54.0%
Good	0 (0%)	17 (17%)	17.0%
<b>Total</b>	<b>100 (100%)</b>	<b>100 (100%)</b>	-

**Table 4. Post-Transfusion Initiation Nursing Activities- An Assessment between Before and After the Training Lecture**

P<0.001\*\*, improvement (good-17.0%) is significant, paired proportion test.

The knowledge on post-transfusion initiation nursing activities was poor for most of them (83%) before training lecture, but after the lecture knowledge improved from poor to fair (71%).



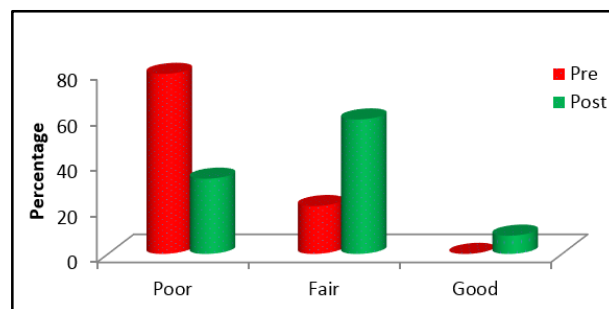
**Figure 4. Post-Transfusion Initiation Nursing Activities**

Complications Related to BT	Pre	Post	Percentage Change
Poor	79 (79%)	33 (33%)	-46%
Fair	21 (21%)	59 (59%)	38%
Good	0 (0%)	8 (8%)	8%
<b>Total</b>	<b>100 (100%)</b>	<b>100 (100%)</b>	-

**Table 5. Complications Related to Blood Transfusion- An Assessment between Before and After the Training Lecture**

P=0.002\*\*, improvement (good-8.0%) is significant, paired proportion test.

Nursing knowledge was poor about identification of some of the signs and symptoms of blood transfusion reaction and their management before the training lecture. But, it improved significantly after the lecture.



**Figure 5. Complications Related to BT**

**DISCUSSION**

Nursing staffs play a very important role throughout the blood transfusion procedure. After a physician’s decision to transfuse blood, nursing staff will come into picture from patient preparation before blood bag collection to immediate management of blood transfusion reaction in the ward. The current study showed the majority of studied sample were female, most of them have B.Sc. in nursing qualification, which is consistent with the results of the study of Silva et al and E A H Asmaa et al.<sup>7,8</sup>

In this study, more than half of the nursing staff had poor knowledge on almost all the steps of blood transfusion procedure before giving the training lecture, which is similar to what has been stated in the studies of E A H Asmaa et al and Tavares et al<sup>8,9</sup> and also study by Diakit , Diawara and Tchogang<sup>10</sup> showed that about half of participants had insufficient knowledge related to blood transfusion.

Majority had the fair and good knowledge about the blood bag collection from the blood bank, which is consistent with the study of E A H Asmaa et al.<sup>10</sup> The present study illustrated that most of studied sample had poor knowledge

regarding pre-transfusion nursing activities such as patient identification, indications for blood warming, best time to start the transfusion, steps for patient identification, suitable filter size of transfusion set, etc. this result was consistent with Hijji et al<sup>4</sup> and Saillour-Glenisson et al. It has been shown in many literatures and also WHO has told that most common error in blood transfusion is error in identifying patient details.<sup>5,6</sup> It is very important to improve the nursing knowledge on blood transfusion procedure.

In present study, the post training knowledge of nursing staff has improved significantly at all the stages of blood transfusion. Kabinda et al have clarified that because of lack of continuous and regular training in blood transfusion result in insufficient knowledge among nursing staff about principle of blood safety. Researchers explained that inadequate educational program provided to nurse to refresh nurse's knowledge lead to these result. Our study is unique in providing blood transfusion training lecture and procuring post-lecture knowledge with statistically significant improvement in nursing staff knowledge.

### CONCLUSION

There is a need for improvement of nursing staff knowledge on blood transfusion procedure and immediate treatment of transfusion-related complications through training programmes in a hospital setup where they are working, as well as, these training programmes should be conducted regularly to reinforce their knowledge. This is in order to minimise the maximum human errors occurring at the time of blood transfusion.

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