



Original Article

# Role of training session in improving the knowledge of blood transfusion practices among undergraduates: a hospital-based study

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## ABSTRACT

### Keywords:

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knowledge;  
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**Background:** Blood is a vital and limited resource with a lifesaving therapeutic benefit. Knowledge of standard transfusion practices to be followed is important in delivering quality transfusion services. The present study aims at assessing the knowledge of transfusion practices among undergraduate medical students, train them, and to assess the impact of this type of training sessions in improving the outcome.

**Materials and methods:** 82 undergraduate MBBS students participated in the study. The students were asked to attempt a pre-test and a post-test questionnaire before and after the training program. The training session comprised of audiovisual lecture and handout material given to the participants. The mean scores, percentage of both the tests, and percentage of improvement in scores from pre to post-test were analyzed.

**Results:** The mean score in the pre-test was 8.3 with a minimum score of 3 and a maximum of 13 out of 15. The post-test mean score was 10.7 with a minimum score of 6 and a maximum score of 14 out of 15, which was significantly high. The training program helped in the overall improvement of the knowledge in various aspects of blood transfusion like indications, cross-matching, shelf life, transfusion practices, and management of adverse reactions. The p-value obtained was 0.003 (<0.05) which was significant.

**Conclusions:** Knowledge of blood transfusion practices among the undergraduates was low. Training sessions helped improve the immediate knowledge and overall orientation toward the practices. Hence, the blood transfusion syllabus should be included in the undergraduates' competency curriculum.

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## INTRODUCTION

The knowledge of transfusion practices along with the availability of safe blood and blood products minimizes the transfusion-related adverse effects.<sup>1</sup> Medical school in most of the places do not have a mandatory training of transfusion practices in their curriculum.<sup>2</sup> The poor documentation of adverse reactions in the developing countries has made the need for good transfusion practices to be underrated.<sup>3</sup> Various studies conducted globally show similar situation<sup>4,5</sup> and thus the need for undertaking training programs to

**Table 1: Questions about component choice in different situations and cross-matching**

Questions	Pre-test		Post-test	
	Correct	Incorrect	Correct	Incorrect
Indication for FFP	15	67	28	54
Packed red cells indication	42	40	6	17
Alternate choice for FFP	33	49	42	40
Blood product of choice in coronary syndrome	45	37	59	23
Duration of cross matching	35	47	43	39

**Table 2: Questions about shelf life and storage and bedside transfusion practices**

Questions	Pre-test		Post-test	
	Correct	Incorrect	Correct	Incorrect
the storage temperature of packed cells	54	28	56	26
shelf life of platelets	50	32	73	9
warming of blood products	44	38	68	14
time within which transfusion is to be started	48	34	70	12
course of action if blood not transfused	64	18	65	17
timing of platelets transfusion	58	24	57	25
use of 0.9 % NaCl with Transfusion	51	31	69	13
blood bag disposal	29	53	63	19
plan of action in transfusion reaction	51	31	68	14
sign of haemolytic reaction	49	33	63	19

improve the knowledge of medical undergraduates. Hence, the study was focused on assessing the knowledge of blood transfusion practice among undergraduate medical students and to provide the training and appropriate orientation in developing safe transfusion practices.<sup>6</sup> The study also assessed the impact of such training sessions on improving knowledge among the medical undergraduates.

**MATERIALS AND METHODS**

A cross-sectional study involving the second-year medical undergraduates was conducted during an academic meet at a tertiary care hospital and teaching institute. Students were informed priorly about the details of the training program (date, time, venue) and those who were willing to participate were included in the study by taking verbal consent. The training session comprised of audiovisual lecture and printed material of the same content given to the participants. A total of 82 undergraduate medical students were included in the study. The students were asked to fill in the personal details like name, gender, designation, and pre/post-test status in both the pre-test and the post-test forms. The questions were from various aspects of the blood transfusion chain like the ideal choice of components, shelf life, cross-matching, and transfusion reactions. The answers were evaluated with 1 mark for each correct and zero marks for wrong and unattempted questions. On a total score of 15, the mean score, percentage of both the tests, percentage of improvement in scores from pre to post-test were analyzed using a Microsoft Excel spreadsheet. Questionnaire forms

with incomplete personal details were excluded from the study. P-value was calculated using a data analysis formula on an Excel spreadsheet and a value of less than 0.05 was considered to be significant.

**RESULTS**

A total of 97 students appeared for the program, of which 82 had filled the questionnaire forms of pre and post-test. There were 58 (70.7%) female and 24 male (29.3%) students. The mean score in the pre-test was 8.3 with a minimum score of 3 and the maximum score of 13. The mean score of the post-test was 10.7 with a minimum of 6 and a maximum of 14.

**Table 3: Average scores and mean percentages under each category of the questionnaire in pre and post-test comparison (n=82)**

Categories of questionnaire	Average of scores in each category	
	Pre-test n (%)	Post-test n (%)
choice of blood component	56	26
cross matching	73	9
warming of blood products	68	14
storage and shelf life	70	12
bedside transfusion practices	65	17
transfusion reaction and management	57	25
mean	69	13

The questionnaire had a total of 15 multiple choice questions, four from components of choice in different situations, one from cross-matching, three from shelf life, five from bedside practices, and two questions from transfusion reactions. In the series of questions related to the choice of blood products, cross-matching, shelf life and storage, bedside transfusion practices, and transfusion reactions and management the pre-test scores were lower than the post-test scores. The p-value obtained on statistical calculations was 0.003 (<0.05) which was significant. The responses are tabulated question-wise under each category for both pre-test and post-test respectively (Table 1 and 2). The average scores and mean percentages in each category in the pre-test were compared to the post-test and the change in scores is shown in Table 3.

## DISCUSSION

Blood transfusion services are routinely provided in many of the tertiary care hospitals due to the latest advancement in surgical procedures and thereby increasing the demand. Despite this fact, there is a lack of knowledge and awareness among clinicians and medical undergraduates. Periodic training sessions under the guidance of the blood transfusion committee (if present) given to the medical undergraduates will help in the improvement of their knowledge and thus can minimize the unforeseen events.<sup>7</sup>

There are various studies on knowledge assessment among clinicians, interns, and nurses.<sup>8</sup> However, studies on the knowledge of undergraduates and the impact of training on blood transfusion practices are few. These studies indicate the need for the introduction of the topic of blood transfusion in the undergraduate competency curriculum.

Only 53.1% of the undergraduates were aware of the blood transfusion practices, which was consistent with Reza et al in which the scores of blood transfusion knowledge were less than 30%.<sup>9</sup> In a study by Mohammad I Vaghar evaluating the impact of educational programs in blood transfusion practices among nurses, the minimum pre-test score was 4 as compared to 3 and the post-test score was 7 as compared to 6 of the present study. The maximum pre-test score was 12 compared to 13 and the maximum post-test score was 14 in both the studies.<sup>10</sup>

A study by Paramjit K et al<sup>11</sup> on the impact of training on improving the knowledge of blood transfusion practices among clinicians showed there was a significant improvement in the post-training scores in the areas of choice of blood products, cross-matching process, bedside transfusion practices (from 36% in the pre-test to 96% in post-test scores) and transfusion reaction management. However, there was not much difference in the storage and shelf life questionnaire. In the present study the mean scores for the choice of blood products were 41.1% in the pre-test

and 59.1% in the post-test, for cross-matching mean score in the pre-test was 42.6% and the post-test was 52.4%. The mean scores related to storage and shelf life in the pre-test was 60.1%, and the post-test was 80.0%, bedside transfusion practices mean score was 60.9% in the pre-test and 79.0% in the post-test, and transfusion reaction and management mean score was 60.9% in pre-test and 79.8% in post-test. The p-value of the test obtained was 0.003 (<0.05) which was significant.

A similar study by Talati et al<sup>12</sup> showed a mean pre-test score of 53% and a post-test score of 77% respectively as compared to the present study with a pre-test mean of 53.1% and post mean 70.0%. In the present study, a significant immediate improvement in the knowledge of blood transfusion practices was achieved by the training session. However, periodic training is recommended for long term effects.

## CONCLUSIONS

Knowledge of blood transfusion practices was low in medical undergraduates thus making training sessions need of the hour. The training session had an immediate improvement in the knowledge of the students. We recommend multiple such training sessions for a better long term outcome. Also, blood transfusion topics should be included in the undergraduates' competency curriculum to improve the knowledge and practices of blood transfusion and provide better delivery of transfusion services.

**Conflict of interest:** None

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