

## A STUDY OF THE KNOWLEDGE OF BLOOD TRANSFUSION PROCESS AMONGST PATIENTS RECEIVING BLOOD

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### Summary

*An observational study conducted by reviewing the knowledge of blood transfusion process amongst blood recipients. Total 126 patients who required blood transfusion were entered in this cross-sectional study conducted at The National Institute of Trauma & Orthopedic Rehabilitation (NITOR) having full technical support from the Department of Transfusion Medicine, Bangabandhu Sheikh Mujib Medical University (BSMMU) between the period 01 April 2008 and 31 August 2009. The study results showed that 74.1% male and 73.3% female blood recipients are aware of different stages of blood transfusion process that carried out during the treatment. In literate group, 91.4% showed some sort of knowledge on blood grouping, cross-matching, transfusion reactions and donor blood screening tests for HIV/AIDS and other transfusion transmissible infections, whereas, in illiterate group it was observed in 8.6%. Significance of difference was observed in two groups ( $p=0.001$ ). In both groups misconception about risks and benefits of blood transfusion, panic and lack of knowledge about safety issues of transfusion were observed. Illiterate group have poor understanding on blood transfusion process as expected. The level of education of literate group in this study population is minimum primary education. The findings indicate that in clinical setting there is need to educate the patients on the basic knowledge about the process of blood collection, importance of blood screening, safe use of blood, blood grouping, cross matching and the immediate and delayed complications of blood transfusion including the benefits associated with blood transfusion. This education is equally necessary for general people.*

### Key words

Blood transfusion process; blood recipients; safe blood transfusion; knowledge of transfusion; risks and benefits

### Introduction

Blood transfusion is one of the vital management modalities for saving patient's life by correcting anemia and increasing oxygen carrying ability in acute or chronic blood loss. The blood transfusion process is a complicated one and generally requires systematic approaches for blood collection, laboratory process and blood administration to the recipient. A successful transfusion for achieving therapeutic goal requires, timely arrangement of blood from blood donor and performing blood grouping, cross matching and screening tests. A team work between the attending physicians and blood transfusion department and monitoring of the patients during and after transfusion are very much relevant to the patient management. However, the whole process not only involves the physicians and transfusion expert but also cooperation of the patients and compliance during transfusion that depends on the experience and knowledge of the patients. More than 40% of any geographical residents require blood transfusion at any end of his or her life time [1]. In spite of extensive research since many years, scientists are yet to find a true substitute of blood or its products (red blood cells, platelets, various blood clotting factors etc) [2]. In Bangladesh, yearly about 600,000 units of blood is required. Due to lack of voluntary donors and awareness in general people the required supply is almost not met [3].

Around 100,000 Bangladeshi people are being infected with HBV in each year and which is attributed to post transfusion hepatitis occurred during use of untested or not completely screened blood by some blood centres at private level as reported by Bangladesh Health Watch in 2009 (3). According to WHO Blood Safety Safe blood transfusion means justified and rational use of blood that are cross matched and screened for at least five transfusion transmitted infectious diseases which includes human immunodeficiency virus (HIV), hepatitis C virus (HCV), hepatitis B virus (HBV), syphilis and malarial parasite [4].

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So, to ensure safe blood awareness and knowledge of blood transfusion among the patient are equally important. In this study we evaluate and examine the knowledge in patients who received blood transfusion using structured questionnaires on knowledge of blood groupings, cross matching, idea of transfusion transmissible diseases, transfusion reactions, blood storage facilities, and the socio-demographic conditions of the blood recipients.

### Materials and methods

Total 126 patients who received blood transfusion on various clinical background and of which 81 male (mean age: 33.0 + 15.0 years) and 45 female (mean age: 37.9+17.1 years) entered in this study. The cross sectional observation was conducted at National Institute of Trauma & Orthopedic Rehabilitation (NITOR) with full technical support from the Department of Transfusion Medicine Bangabandhu Sheikh Mujib Medical University (BSMMU) from 01 April 2008 to 31 August 2009. A pre set questionnaire was developed and used as instrument for study which was validated after field testing. Level of education of this study population, knowledge and information of different stages of transfusion processes, level of knowledge about blood groupings & cross-matching, screening donor blood unit for infectious diseases, quality of blood, fitness of blood donor, adverse events of transfusion and socio- demographic conditions of blood recipients were collected. The level of education of the literate group in this study population is minimum primary education.

### Statistical analysis

Statistical analysis was performed with the help of Computer. The two groups of data was compared with each other by using non-paired student "t" test. Age related data mentioned here is expressed as mean + SD. Significance of difference observed when P value was <0.05.

### Results

Out of 126, only 20% of the patients are illiterate whose education was below primary level. Monthly income of more than 50% of patients is between 5,000 and 10,000 Bangladeshi Taka. Of the total 126 patients, 40% are not married during study period. 74.1% of male and 73.3% of female patients found having knowledge of blood donation and adverse events of blood transfusion is shown in Table-I and difference between male and female is not significant. Table-II shows that in literate group 91.4% has an idea about blood transfusion process whereas only 8.6% in literate group shows some extent of knowledge and interestingly difference

between the groups is noteworthy as expected. 21% of male and 35.5% of female patients has a history of receiving blood transfusion is shown in Table-III. Furthermore, 95% of literate and 69.9% of illiterate patients has no history of receiving blood transfusion is shown in Table-IV. Table-V shows that 85.7% of patients thought that place of blood storage is ordinary fridge whereas 12% of the patients are unable to respond in which place a blood unit should be storied.

**Table I :** Shows Responses by Blood Recipients about Basic Knowledge on Blood Transfusion Processes

Responses	Male	Female	Total	P value
Basic Knowledge of Blood Transfusion Processes	60 (74.1%)	33 (73.3%)	93 (73.8%)	
No Knowledge of Blood Transfusion Processes	21 (25.9%)	12 (26.7%)	33 (26.2%)	0.927
Total	81 (64.29%)	45 (35.71%)	126 (100%)	

**Table II :** Shows Differences of literacy level between literate and illiterate group.

Literacy Level	Have Idea	Have No Idea about Blood Transfusion Processes	Total about Blood Transfusion Processes	P value
Illiterate	8 (8.6%)	12 (36.4%)	20 (15.9%)	
Literate (Minimum Primary Education)	85 (91.4%)	21 (63.6%)	106 (84.1%)	0.000
Total	93 (73.8%)	20 (26.2%)	126 (100%)	

**Table III :** Shows comparison of responses on history of blood transfusion between male, female Group.

Responses	History of Blood Transfusion	No History of Blood Transfusion	Total	P value
Male	17 (20.9%)	64 (79.1%)	81 (64.3%)	
Female	16 (35.5%)	29 (64.5%)	45 (35.7%)	0.074
Total	33 (26.2%)	93 (78.2%)	126 (100.0%)	

**Table IV :** Shows comparison of responses on history of blood transfusion between literate and illiterate Group.

Literacy Status	History of Blood Transfusion	No History of Blood Transfusion	Total	P value
Literate	1 (5.0%)	19 (95%)	20 (15.9%)	
Illiterate	32 (30.1%)	74 (69.9%)	106 (84.1%)	
Total	33 (26.2%)	93 (78.2%)	126 (100.0%)	

**Table V :** Shows knowledge about place of storage of blood.

Knowledge about Storage of Blood	Gender			Literacy Status		
	Male	Female	Total			
Shelves	1 (1.2%)	0 (0%)	1 (0.8%)	0(0.0%)	1 (0.9%)	1 (0.8)
Ordinary container	0	2 (4.4%)	2 (1.6%)	0.0	2 (1.9%)	2 (1.6%)
Normal Fridge	69 (85.2%)	39 (86.7%)	108(85.7%)	14(70.0%)	94(88.7%)	108(85.7%)
Does not Know	11 (13.6%)	4 (8.9%)	15(11.9%)	6(30.0%)	9 (8.5%)	15 (11.9%)
Total	81(64.2%)	45(35.8%)	126(100%)	20(150%)	106(84.1%)	126(100%)

### Discussion

Safe blood transfusion practice is a vital constituent in modern health care settings. Right blood to right patient in the right time and right place can save life. On the other hand, like other therapeutic interventions blood transfusion is not absolutely risk free. Rarely, it may cause acute (transfusion reactions) or delayed type complications or transmit infectious diseases [5,6]. In Bangladesh almost 20% blood unit collected from paid donors for transfusion due to lack of blood screening facilities [5]. The number of voluntary donor pool is not adequate in Bangladesh as a good number of them are replacement (patients relatives or friends), directed or paid blood donors. Even with careful donor screening, the incidence and prevalence of transfusion transmissible infection is high in blood recipients from directed donors and higher when collected from paid donors [7,8]. In Bangladesh, like other developing countries, 52% donated blood the sources are relative and /or friends of the patients, only 28% from voluntary donors and 20% from paid donors [9]. According to Health watch report in Bangladesh, staff members of 42 blood centres are not fully aware of various stages of blood transfusion process [9]. Even in USA only 5% of eligible people use to donate blood each year and upto 50% of first time donors may never return for the second time donation [10,11].

In this study, no significant difference observed about the knowledge of blood transfusion process among literate and illiterate group of patients. The level of education of literate group in this study population is minimum primary education. Literate group can read and write but illiterate group cannot read & write [12]. 18.3% of urban and 32.5% of the rural people have shown basic knowledge of blood transfusion process and they are aware of the fact that infectious diseases can be transmitted through blood. With respect to the knowledge of necessities of pre-transfusion tests, 69.0% of the patients responded are familiar with blood groupings, 15.9% knows about cross-matching whereas only 0.8%

knows about Rhesus blood typing. Surprisingly 27.0% patients are not aware that tests are required prior to blood transfusion therapy. 50% of patients said AIDS, 14.1% said jaundice and 7.8% mentioned syphilis to be tested prior to give blood. 37.5% patients of literate group do not know about infectious diseases need to be tested or checked before transfusions of blood to patient whereas 100% patients of illiterate group know nothing about blood donor screening tests for infectious diseases. 67.5% of the total 126, have knowledge of possible transfusion reactions, 12.5% mentioned allergic reactions, 10.0% vertigo, 5.0% fear of death and 15.0% not aware at all of any adverse reactions that can occur due to blood transfusion. This study shows that 54.3% patients decline to receive blood from paid donors, of them 39.7% declined because of potential risk of transfusion transmissible diseases, 8.6% for high price and only 6% mentioned other causes.

### Conclusions

The risks of transfusion transmissible diseases remain a major threat of blood to recipients. Benefits and risks of blood transfusion need to be balanced before justifying a blood transfusion therapy. It is important that blood recipients and even general healthy people should have basic knowledge of different stages of transfusion process. This will give opportunity to patients requiring blood to choose other alternatives to homologues blood like that of autologous blood, iron therapy etc. It has been observed that illiterate persons have poor level of knowledge of blood transfusion process. Therefore, it is important to pass on information of blood transfusion process to blood recipients, medical practitioners, nursing staff, and laboratory technologists to attain better transfusion practice environment. One way or another this attempt will facilitate to increase voluntary donor panel and will also diminish the number of paid donors. Here, we recommend building up an educational programme amongst blood recipients and general population through various multi-media sources: television, radio, newspapers, web page, SMS services, distributing posters and leaflets etc. This programme will raise basic awareness of blood transfusion process which is one of the vital mechanisms to set up safe blood transfusion environment in modern health care services.

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### Disclosure

All the authors declared no competing interest.

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