



Original Article

Quality of Blood Transfusion Services of Sir Salimullah Medical College and Mitford Hospital in 2018

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ABSTRACT

Background: In order to identify the shortcomings of blood transfusion process, this study has been designed to assess the current status of the transfusion medicine department services in one of the tertiary level hospital in Dhaka city.

Methods: This study was conducted in the Transfusion Medicine department, Sir Salimullah Medical College and Mitford Hospital, Dhaka in 2018. The study population was a total of 275 participants including 14 Service Providers who was purposively interviewed and 261 blood donors who was taken by convenience sampling.

Results: The findings revealed that all basic tests and mandatory screening tests were conducted in the unit except Bone Marrow examination and Apheresis. Important record registers (Donor care, Donor deferral register, etc.) were present but not updated. Few standard Operating Procedures that were available but were not kept at work stations. No screening curtains were provided for donors' privacy and no technicians used gloves at work. Only 1.5% of donors were Voluntary. About 36% were first time donors. About 19% of donors mentioned a delay of nearly an hour for completion of donation process, though 80.5% of donors were still satisfied with staff behavior. WHO criteria were followed for Donor selection in the unit. Pre and post donation counselling was extremely dissatisfying. In spite of no stocks, the unit organized mere Voluntary Blood donation activities.

Conclusion: A huge number of patients rely on tertiary hospitals for blood transfusions, as it is a life-saving procedure. Voluntary blood donation can be increased by encouraging Government-NGO collaboration along with use of software for holding details of regular donors.

Keywords: Blood transfusion, Services, Tertiary hospitals

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Introduction

A robust, sustainable blood system is a crucial component of a healthcare system (1). Blood transfusion refers to the therapeutic infusion of blood, blood components and blood products, a process involving donor recruitment, selection and collection, donor testing, handling/administering blood, risk of infectious disease transmission, product manufacture, and therapeutic apheresis. An effective Blood Transfusion Service is an integral component in the provision of an adequate health care service that aims to ensure the safety, adequacy, accessibility and efficiency of blood supply at all levels (2). World Health Organization (WHO) recommends

that all blood transfusion activities must be coordinated at the national level through effective organization and integrated blood supply networks, governed by national blood policy (3). Implementation of Safe Blood transfusion started in 1997 in Bangladesh. The National Safe Blood Transfusion Program, supported by WHO, under Ministry of Health and Welfare developed and formulated the National Blood Policy and the National Strategy for Voluntary Blood Donation (4). In Bangladesh there is no centralized blood collection system at national level and no organization has been delineated to support voluntary blood donation in the country. A few philanthropic organizations

(Sandhani, Medicine Club, Bangladesh red crescent society, Quantum, SpandanB) promote voluntary blood donation (5). Globally, about 117.4 million blood donations are collected annually. The highest voluntary blood donations since 2015 (83% donations) had been reported in the South-East Asian Region (3). Compiled reports from blood centers under public and private sectors in Bangladesh, revealed that over 600,000 units of blood were collected in 2016 against an estimated demand of 800,000. From an assessment conducted by WHO in 20 districts hospitals of Bangladesh, it was found that only half of the public blood centers were engaged in blood donor recruitment. Only half of the district health facilities kept blood stocks but 41.4% faced shortage of supply in the reporting period, indicating a general gap between blood demand and supply (6). Blood is a scarce and a costly resource with no substitute. Blood usage is highest in Medical College Hospitals that might be not rational in usage amount (5). Patients requiring transfusion should have reliable access to safe blood products without delay. This study aimed to assess the current status of the services provided in a transfusion medicine department which will help to identify the gaps in the department thereby helping to create a foundation for long-term planning, implementation and sustainable result.

Methods

A cross-sectional study was conducted in the Transfusion Medicine department of Sir Salimullah Medical College and Mitford Hospital in Dhaka 2018. The study population were 14 Service Providers (Doctors, Medical Technologists, Clerks and Cleaners) purposively interviewed and 261 blood donors, taken through convenience sampling, with a sample size of 275. The method of approach for data collection was mixed. Qualitative data was collected via observational checklists. Face to face interview by semi-structured questionnaire and key informant interview (Head of the Department) by an open-ended questionnaire was conducted among the respondents. Pre-tested semi-structured questionnaire was drafted and translated to Bengali. Data were collected on the services available and the activities performed prior/after in the department in regard to blood donation. Key Informant Interview included information regarding Apheresis, the screening test status per month, screening methods used, Standard Operating Procedures (SOPs) in the department, donor cards, blood products temperature regulation details, donor criteria followed in the department, and voluntary donation promotions. Observational checklist was made to assess the Screening tests, Immunological tests, Donor selection, Safety precautions, donor Evaluations and Documentation maintenance. Routine and special tests availability, protocols for proper service delivery activities, and document and record maintenance were identified to assess the services of the department. Data were entered, cleaned and re-coded using Statistical Package for Social Sciences (SPSS) version 23 and the descriptive indices were calculated.

Results

Services in the department

Available tests: The department conducted all routine tests,

cross matching and screening tests related with blood transfusion except Hemolysin tests, Red cell reagent preparation, Autoantibody, Bone Marrow examinations, and Apheresis. They prepared all blood components except Cryoprecipitate. All screening tests were conducted in the unit except HIV Nucliec Acid Testing, HCV NAT, Human T-cell lymphotropic virus – anti HTLV I and II.

Document and records: Process flowcharts, instrument operation manuals, copies of SOPs, Donor care register, Donor deferral register and waste management registers were present yet not administered properly. Except the SOP for blood grouping, cross matching and screening, no other SOPs were available.

Blood stocks: The department kept no blood stocks. Blood collection were manually upgraded on a daily basis. Unused Blood were discarded after storing for maximum of 32-35 days. No Quality Control program was present in the department to monitor the quality of blood components.

Performance of routine activities associated with proper service delivery: Inventory maintenance and monitoring of the validation of kits, reagents and blood bags were properly done. About 91.7% of staffs admitted to supply the blood within one hour of donor waiting time, though about 19% of donors mentioned that it took nearly an hour or more from screening to completion of donation process. Cross checking of blood bag with patient details before handover was conducted by 91.7% of staffs.

Satisfaction of the respondents regarding the behavior of the staffs: Nearly 20.7% of the donors had to wait for more than an hour for blood testing and donation process. Almost 80.5% of donors were satisfied with the staff behavior. (Figure 1).

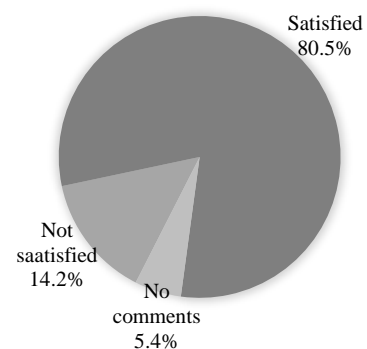


Figure 1. Satisfaction Percentage of Blood Donors about the Behavior of Staffs (n = 261)

Blood donation activities in the transfusion medicine department

Donor Recruitment activities in the department: No activities were conducted for recruitment of voluntary donors. Table 1 shows the Donor criteria being followed by the department.

Pre and Post donation activities in the department

No screening curtains were provided for donors' privacy. None of the technicians used gloves while donation. Only 41% of donors were told about the venipuncture process and 22.6% were informed about the duration of the process

before donation. None of the Donors were counseled on the post donation complications and their management (according to standard guidelines) prior to donation. About 74.3% of them did not receive any post donation advice. None of the donors received any motivation from the staffs regarding voluntary blood donation. There was no arrangement for any refreshment except water for the donors post donation.

Table 1 Donor Criteria Followed in the Department

Vitals	Criteria
Age range	18-60 years
Minimum Hemoglobin level (Male and Female)	11 g/dl
Minimum weight	50 kg
Pulse Rate	80-120 beats/min
Blood pressure	Systolic: 100-130 mm/Hg Diastolic: 60-90 mm/Hg

Purpose of donation of the respondents

From Figure 2, it is seen that 70.1% came to donate blood to their relatives, 28.4% of the donors came to help a friend and only 1.5% were Voluntary donors. About 63.6% and 36.4% of them were old and new donors respectively.

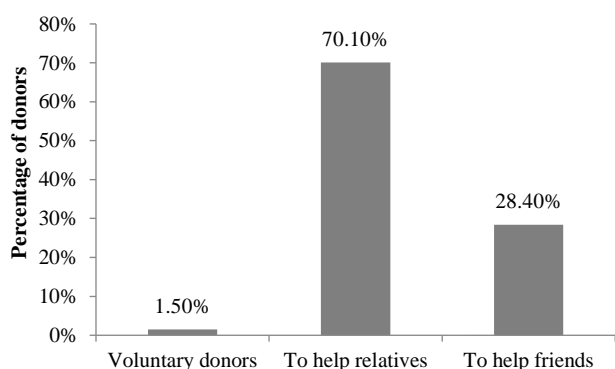


Figure 2. Purpose of Donation Percentage among Respondent (n = 261)

Discussion

Services in the transfusion medicine department

This study revealed that the blood transfusion unit conducted the screening tests for the mandatory diseases according to Safe Blood Transfusion Program, except for HIV AT, HCV NAT and Human T-cell lymphotropic virus – anti HTLV I and II and bone marrow examinations. Rapid testing method was used for screening. Since ELISA was not done in the department, slides were sent to the Microbiology departments when needed, in which case the tests were done free of cost. Apheresis was unavailable in the department. Besides, patients who could afford it would prefer to perform it in Dhaka Medical College and Hospital. Screening of all donated blood for markers of five Transfusions Transmissible Infections (HIV, HBV, HCV, syphilis and malaria) is mandatory in Bangladesh and 100% of donations are screened in all centers except for 20% of district hospitals, and 55% of Upazila health complexes. In 98% of the centers, blood screening was carried out using rapid tests. Out of 109 centers surveyed in a study, only one public institute had records of blood collection for platelet

components collected by apheresis (7).

During the study period that was conducted in a month, 1317 screening tests were conducted in total, out of which 7 HBV positive and 1 VDRL positive were found. On observation, the patient details of deferred cases were not noted. In previous study in Sir Salimullah Medical College and Hospital in 2010, the prevalence of HBV, HCV, HIV and Syphilis were found to be 2.19, 0.25, 0.06 and 0.15% respectively (8).

The checklist for Transfusion in a hospital must include a number of protocols- from proper collection, accurate blood samples labelling, correct blood units handling, safe blood administration, patient monitoring before, during and after transfusion to adverse transfusion events management (9). Contrarily, in the current study, it was noticed that 16.9% of the donors were not examined properly by the physicians, missing out either their weight measurement or BP. No screening curtain was available for privacy of the donors. Less than 8% of the staffs admitted to skip cross checking of the blood bag label with patient details. No health personnel used gloves while performing any activities, thereby hindering the protocol.

Every Blood bank must have SOPs on Donor Issues, Component Separation, Immunohematology, Screening of transfusion transmissible infections, Labelling, preservation and storage of blood and components and Quality Assurance (10). Obsolete versions of SOPs of all procedures written by the performing technologist and verified by supervisor of the area, Quality Assurance Manager and authorized by medical officer in- charge must be archived (11). From the WHO assessment in private and public blood centers, there were no national guidelines developed for Maximum Blood Ordering Schedules (MSBOS) in any center (7). This study showed that Process flowcharts, Instrument operation manuals, Donor care, Donor deferral and waste management registers were not maintained in the department. Records were manually maintained. Standard Operating Procedure for Blood Transfusion were not available at respective work stations. SOPs for blood grouping and collection, donor selection, Rh D typing, cross matching and screening tests were available but not kept at workstation. In a similar study conducted among the public and private hospitals in Bangladesh, SOPs were found and reported to be implemented only in one private hospital and one private medical college. No center kept records of the whole range of documents as required. The donor blood grouping registers were available but incomplete in most of the public hospitals (7). Compared to another study in Nepal, records in the donor database were maintained by 87% of the centers and manual entry was most frequently practiced (12).

Blood donation activities in the transfusion medicine department

More than three-fourth of the donors came to donate for relatives and less than 2 percent were Voluntary donors which indicated a rare Voluntary blood donation in the department. On the other hand, SANDHANI unit, a voluntary institution governed by Medical and Dental students of SSMC, was banned by academic council. Based on previous study (6), 85% of blood were collected from relatives/family and only 15% of blood were donated by voluntary non-remunerated blood donors in all centers.

None of the donors received any motivational message from the staffs regarding Voluntary Blood donation. According to WHO (14), the selection of blood donors should be based on regularly reviewed selection criteria, without discrimination of any kind including gender, race, nationality or religion. The BTS has a duty of care to provide counselling to all deferred donors and referral for their further management. The counselling status did not assess in the study as counselling was poorly practiced here in the department. In Bangladesh, donors are selected according to the following important eligibility criteria: Donor Age: between 18 to 60 years, Haemoglobin: not < 12.5 g/dL for males and 11.5 g/dL for females, minimum 45 kg weight, Blood pressure: systolic: 100-140 mm Hg and diastolic: 60-90 mm Hg is recommended without anti-hypertensive, Oral temperature shall not exceed 37.5°C, Pulse: 60 to 100 regular beats per minute, Donation interval: 3 to 4 months (13). In contrary to the Stages of Blood donor counselling in WHO guidelines (13) none of the staffs counseled on the complications following the donation. Only two-fifth of the donors were briefed on the venipuncture process. More than three-fourth of the donors did not receive any post donation advice. According to a study in Bangladesh, only 36% of public medical colleges, reported to hold pre donation counseling and interviews routinely before blood donation (14). Among Service Receivers, more than half of the donors belonged to the age group 18-27 years. This estimate is different from report by WHO where the global findings indicated an estimate of 40% between 25–44 years, and age group of 45–84 years and 18–24 years contributed to 28% and 23% of the total donations, respectively (15). In another study in Denmark, the highest age-specific prevalence of blood donation among men and women was at 30 and 25 years of age, respectively (16).

Voluntary Blood Donation camps: World Blood Donation day June 14th was poorly observed in the department. Voluntary blood donation camps were only held on National Mourning Days. In another survey (14) conducted by WHO, except 2 NGOs, no centers observed World Blood Donor Day. In a previous study (17), it was suggested that voluntary blood donation could be encouraged on

celebrating days like International Cancer Day (4th February), International Haemophilia Day (17th April), International Thalassemia Day (8th May) and World Voluntary blood donors Day (17th June) which can motivate and educate our society in Bangladesh.

Limitations of the study

Due to the inadequate manpower, the study had to include staffs like MLSS, with limited experience and skill. Their knowledge wasn't helpful to fill in with information regarding the services of the department. Since the practice of documentation and recording was not up to the standard, there was some degree of variability in response rates to few specific questions (Example: deferral register, waste register) making analysis difficult.

Conclusion

This study revealed that the standard protocol for blood transfusion were not observed appropriately. Technicians did not use gloves while handling the donors. SOPs for Blood Transfusion were not maintained. Data maintenance was still done manually. Due to lack of motivational programs Voluntary donation was negligible in the department. There were positive screening tests during the study period which were not recorded. The study revealed that there was very weak pre and post counselling of donors which did not fulfill WHO guidelines. More than three-fourth of the donors did not receive any post donation advice. Voluntary blood donation camps were only held only on selective days. The findings of this study can be used to bring improvement in the management of the department.

Ethical consideration

The study protocol was approved by Bangladesh Medical Research Council.

Conflicts of interests

Authors declared no conflict of interest.

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None.

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