

Transfusion Medicine Department Services in One of the Tertiary Level

Kazi Mariam Naher^{1*}, Shafia Shaheen² and Baizid Koorshid Riaz³

¹Department of Public Health and Hospital Administration, National Institute of Preventive and Social Medicine (NIPSOM), Dhaka, Bangladesh

²Department of Epidemiology, National Institute of Preventive and Social Medicine (NIPSOM), Dhaka, Bangladesh

³Department of Public Health and Hospital Administration, National Institute of Preventive and Social Medicine (NIPSOM), Bangladesh (NIPSOM), Dhaka, Bangladesh

*Corresponding author: Naher KM, Department of Public Health and Hospital Administration, National Institute of Preventive and Social Medicine (NIPSOM), Dhaka, Bangladesh, E-mail: dr.kazimariam@gmail.com

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Abstract

Background: Blood, is a scarce non substitute, which necessitates it for patients to have a reliable safe access to blood products at all levels. In order to identify the shortcomings in this 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.

Subjects and method: This cross-sectional study was conducted in the Transfusion Medicine department of Sir Salimullah Medical College and Mitford Hospital, Dhaka in 2018. The study population was a total of 275(14 Service Providers purposively interviewed and 261 blood donors taken as per convenience). Data was collected by using semi structured questionnaire, open- ended questionnaire from the Head of the Department and check list.

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 SOPs were available but were not kept at work stations. No screening curtains were provided for donor privacy and no technicians used gloves at work. Only 1.5% 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% donors were still satisfied with staff behavior. WHO criteria was followed for Donor selection in the unit. Pre and post donation counselling was extremely dissatisfying. Despite 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 hospital; Dhaka

Background

A robust, sustainable blood system is a crucial component of a healthcare system. 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 World Health Organization (WHO). The national blood system should be governed by national blood policy and legislative framework to promote uniform implementation of standards and consistency in the quality and safety of blood and blood products. Implementation of Safe Blood transfusion started in 1997 in Bangladesh. The National Safe Blood Transfusion Program supported by World Health Organization (WHO), under Ministry of Health and Welfare developed and the formulated the National Blood Policy and the National Strategy for Voluntary Blood Donation. ["World Blood Donor Day 2018: An Action of Solidarity"] Safe blood Transfusion Programme, 2009 was sponsored by United Nations Development Programme (UNDP) in 2000-2004 and from 2004-onwards is supporting by WORLD BANK, Development for International Development (DFID), World Health Organization (WHO) and Health, Nutrition and Population Sector Programme (HNPS).

World Health Organization (WHO), Country Office for Bangladesh, has supported the National Safe Blood Transfusion Program, under Ministry of Health and Welfare to develop blood donor recruitment guidelines and the formulation of the National Blood Policy. Furthermore, WHO provided technical assistance in the development of the National Strategy for Voluntary Blood Donation an important component for an increased blood donation. (South-East Asia Regional Office, 2018). 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. Globally, about 118.5 million blood

donations are collected annually. An increase of 7.8 million blood donations from voluntary unpaid donors from 2013 to 2018 has been reported by 156 countries. An increase in absolute numbers of 2.37 million was reported in South-East Asia.

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 [WHO Bangladesh and Government of Bangladesh, 2012]. Blood is a scarce and a costly resource with no substitute. Blood usage is highest in Medical College Hospitals using approximately 56% of total blood collections. Patients requiring transfusion should have reliable access to safe blood products without delay. This study aims 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.

Subjects and Methods

Study design

A cross-sectional study was conducted in the Transfusion Medicine department of Sir Salimullah Medical College and Mitford Hospital in Dhaka 2018.

Population and sample

The study population was 14 Service Providers (Doctors, Medical Technologists, MLSS, Clerks and Cleaners) purposively interviewed and 261 blood donors, taken as per convenience, with a sample size of 275. The method of approach for data collection were mixed. Qualitative data was collected via observational checklists.

Study variables

Data were collected on the services available and the activities performed prior/after in the department in regard to blood donation which was the dependent variables. Key Informant Interview included the independent variables with 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 and were the independent variables.

Operational definitions of variables

Blood: Blood is a body fluid in humans and other animals that delivers necessary substances such as nutrients and oxygen to the cells and transports metabolic waste products away from those same cells.

Blood transfusion: A blood transfusion is the transfer of blood or blood products from one person (donor) into another person's bloodstream (recipient), usually done as a lifesaving maneuver to replace lost blood components.

Apheresis: Procedure whereby whole blood is separated by physical means into components and one or more of them is returned to the donor.

Standard operating procedure: An SOP is a written document of instruction to perform various operations in a testing site which provides step-by-step instructions to ensure consistency, accuracy, quality of a laboratory process.

Donor: A person who gives whole blood or one of its components for transfusion.

Blood component: Any therapeutic constituent of blood that is separated by physical or mechanical means (e.g. red cells, platelets, plasma).

Donor selection: The process of assessing the suitability of an individual to donate blood or blood components against defined selection criteria.

Voluntary donor: A person who donates blood (and plasma or cellular components) of his/her own free will and receives no payment for it, either in the form of cash, or in kind which could be considered a substitute for money.

Donor deferral: The non-acceptance of a potential blood donor to donate blood or blood components, either temporarily or permanently, based on general health or medical condition, or the risk of exposure to pathogens.

Blood Transfusion Service (BTS): A generic term to describe an organization(s) that is involved in the provision of blood for transfusion; its activities may be carried out by a single blood centre or through a network of blood centres and hospital blood banks.

Blood collection: A procedure whereby a single donation of blood is collected in an anticoagulant solution.

Study Instruments

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 analysis

Data were entered, cleaned and re-coded using Statistical Package for Social Sciences (SPSS) version 23 and the descriptive analysis were represented in tables, graphs and pie charts.

Research ethics

Ethical permission for the study was taken from Ethical Review Committee of National Institute of Preventive and Social Medicine (NIPSOM) on May 08, 2018. All ethical issues related to the research involving human subject was addressed according to the guidelines imposed by BMRC (Bangladesh Medical Research council) and the ethical review committee of WHO. A consent form was supplied & written consent obtained before the actual interview. Related forms & questionnaire were attached. Permission from the hospital authority was taken.

Results

Sample characteristics

The respondents were the service providers and service receivers.

Service providers: The department had 18 assigned posts as per the departmental organogram. The posts for Biochemist, Chief Technician and one cleaner were vacant. The department did not have Lab assistants (**Table 1**).

Service receivers: These were the donors who came in to donate blood and who were willing to participate in the process. About 56.7% of the Service receivers were between 18 to 27 years, 37.5% of them were between 28-37 years, 5% of them were between 38-47 years, 0.4% were between 48 to 57 years and 0.4% only above 57 years. The mean age of the respondents was found to be 27.38 years, median was 26, mode 24, SD (± 6.168), minimum age was 18 years and maximum was 60 years (**Table 2**).

Designations	Post Available	Current staffs	Post vacant
Professor	1	1	
Associate Professor	1	1	
Assistant Professor	NA	0	
Medical Officer	3	3	-
Emergency MO	2	2	-
Biochemist	1	0	1
Chief Technician	1	0	1
Medical Technologist	3	3	-
Lab Assistant	NA	0	-
Clerk	1	1	-
MLSS	3	4	-
Cleaner	2	1	1

Transfusion Committee	9 members
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Table 1: Manpower scenario of the department.

Age group (in years)	Frequency	Percentage (%)
18-27	148	56.7
28-37	98	37.5
38-47	13	5
48-57	1	0.4
>58	1	0.4
TOTAL	261	100

Table 2: Distribution of respondents according to age (n=261).

Services in the department

Available tests: The department conducted all the 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 NAT, 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 maintained. Except the SOP for blood grouping, cross matching and screening, no other SOPs were available.

Blood stocks: The department kept no blood stocks. Blood collected are manually upgraded on a daily basis. Unused Blood are discarded after storing for maximum of 32-35 days.

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%) donors were satisfied with the staff behavior (**Figure 1**).

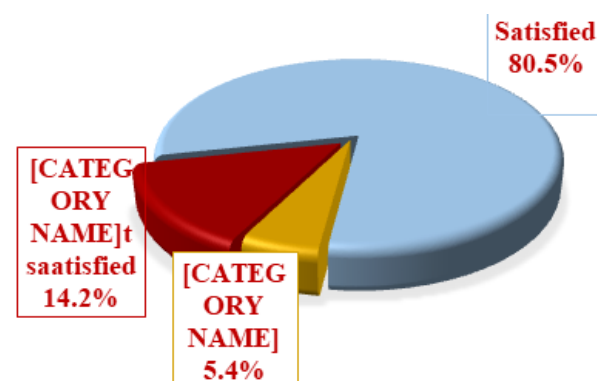


Figure 1: Pie diagram showing the Opinions of the respondents on the behavior of the staffs (n=261).

Discussion

Services in the transfusion medicine department

Screening and Serological tests and Special tests: From the study, the unit conducted the screening tests for the mandatory diseases according to Safe Blood Transfusion Program, except screening tests 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. This was in contrast to the study. 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 TTI (HIV, HBV, HCV, syphilis and malaria) is mandatory in Bangladesh and 100% donations are screened in all centres except for 20% of district hospitals, 55% of Upazila health complexes. In 98% of the centres, blood screening was carried out using rapid tests. Out of 109 centres surveyed in a study, only one public institute had record of blood collection for platelet components collected by apheresis.

Screening test scenario in a month of the study period: From the data of the Key informant, in a month, it was found that 1,317 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. From a study (Article, 2010) held 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.

Donor deferral: An estimated 1.6 million units are discarded due to the presence of infectious markers for TTI, including HIV, hepatitis B, hepatitis C and syphilis in Bangladesh. At least 13 million prospective donors are deferred (Donation, no date). In this study, deferred patients were not properly recorded in the department.

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

As per the findings, 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.

Recommendations

Periodic revision of SOPs and guidelines should be done and made available at the work station. Standardized documentation and a data management system should be developed for systematic record keeping. Registers for blood donation, blood deferrals and laboratory procedures must be uniformly maintained. Electronic database must be introduced. Voluntary donations must be encouraged along with promotion by campaigning by GOVT-NGO collaboration. Since there is negligible voluntary donation in the unit, with no blood stocks, there must be a register/software for holding details of regular donors, who can be communicated with in case of lack of needed blood. Pre and post-donation counselling must be made a core activity, with trained personnel. Efforts can be made in order to re start the Platelet Apheresis service.

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