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ORIGINAL ARTICLE

BLOOD PRODUCTS TRANSFUSION DURING 2012-13 IN PESHAWAR, PAKISTAN

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ABSTRACT

Background: Blood products transfusion has been a major treatment modality especially in critical care settings. The objectives of this study were to determine frequency and distribution of blood products transfusion in public and private health care facilities during 2012-2013 in Peshawar, Pakistan.

Materials & Methods: This cross-sectional, study was conducted in the Department of Pathology, Northwest School of Medicine, Peshawar, Pakistan from 1st January 2012 to 31st December 2013. Sample size was 2,04,942 blood products transfusion, selected through consecutive non probability technique. All allogeneic cases of transfusions in inpatient and emergency were included. A total of six public, one private and two stand-alone blood banks were enrolled into the study. Demographic variable were name of the health care facility, sex and age groups of donors. Research variables were type of blood products transfusion (whole blood, packed red blood cell, fresh frozen plasma, platelets). All variables being categorical were described as count and percentages. Data was analyzed using software SPSS version 23.

Results: Out of 2,04,942 units, 1,33,212 (65%) were men and 71,730 (35%) women. Packed red blood cells were the most commonly used component with 80227 units (39.1%), whole blood 77655 units (37.8%), Fresh frozen plasma 35932 units (17.5%) and platelets 11128 units (5.6%). Blood products transfusion was 46927 units (22.89%) in <12 years, 20847 units (10.17%) in 12-17 years, 55492 units (27.07%) in 18-40 years, 51516 units (25.13%) in 41-64 years and 30160 units (14.71%) in >65 years.

Conclusion: Modal group was men. Packed red blood cells were the most frequently transfused blood component in hospitals of Peshawar especially Lady reading hospital. Most common age group was 18-40 years. Whole blood still comprises a significant fraction of transfusions which is alarming.

KEY WORDS: Utilization; Blood; Components.

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INTRODUCTION

Blood transfusion is a vital lifesaving procedure. Blood transfusion is a potential vector for transfusion transmitted diseases as well as for allergic or serious anaphylactic reactions.[1] In most developed countries, 75-100% of blood is transfused as components while in developing countries like Pakistan there is still trend of usage of whole blood more as compared to components. Promoting blood component therapy would not only decrease the usage of whole blood but also ensures the optimal use of all resources invested in facility of blood component separation facility.[1] Therefore there is aggressive need to develop blood management program focusing on implementation of evidence based transfusion guidelines, thereby reducing unnecessary transfusions and costs to hospital and patients.[2]

There is shortage of 40% of blood supply in Pakistan.[3] The problem is increasing day by day due to inappropriate use of blood and its products.[4] Clinical transfusion audit helps to determine trends of utilization and areas of improvement.[5] Inappropriate documentation remains problematic and is highly associated with unnecessary transfusions.[6] Accurate documentation is very useful in assessment of transfusion justification within established guidelines.[7] Efforts to better understand blood utilization through studies help to identify differences between countries and inform assessment of best transfusion practices based on recipient outcomes.[8]

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It is particularly challenging to keep a balance between supply and demand especially when products are perishable.[9]

Rational use of blood implies that right blood product should be given to patient at right time and amount. Study conducted in Pakistan showed neither the public nor the private hospitals were rational in use.[10] Implementation of evidence based guidelines for transfusion of blood and its products is crucial to optimize transfusions and reduce wastage.[11] Limited data is available on audit of blood and its products from our country. The present study was conducted to see the trends of utilization of blood and its products in public and private sector blood banks which will help to determine future demands and help to develop strategies in blood transfusion policy in hospitals resulting in optimal utilization of blood and its products.

Pattern of blood utilization varies among institutions, specialties and age composition of the population.[12] Many regional and national surveys on the trends of utilization of blood and its products have been reported from the Western nations.[13-14] The objectives of this study were to determine frequency and distribution of blood products transfusion in public and private health care facilities during 2012-2013 in Peshawar, Pakistan.

MATERIAL AND METHODS

This cross-sectional study was conducted in the Department of Pathology, Northwest School of Medicine, Peshawar, Pakistan from 1st January 2012 to 31st December 2013. Sample size was 2,04,942 blood products transfusion, selected through consecutive, non probability technique using online sample size calculator, Raosoft.[20] All allogeneic cases of transfusion in inpatient and emergency were included. Cases with ambiguous or incomplete record of recipient or blood component were excluded. Hospitals in charges/administrators were contacted for permission. Demographic variable were name of the health care facility, sex and age groups of donors (<12, 12-17, 18-40, 41-64, >65). Research variable was type of blood products transfusion (whole blood, packed red blood cell, fresh frozen plasma, platelets). All variables being categorical were described as count and percentages. Data was analyzed using software SPSS version 23.

RESULTS

Out of 2,04,942 units, 1,33,212 (65%) were men and 71,730 (35%) women. Packed red blood cells were the most commonly used component with 80227 units (39.1%), whole blood 77655 units (37.8%), Fresh frozen plasma 35932 units (17.5%) and platelets 11128 units (5.6%). (Figure1)

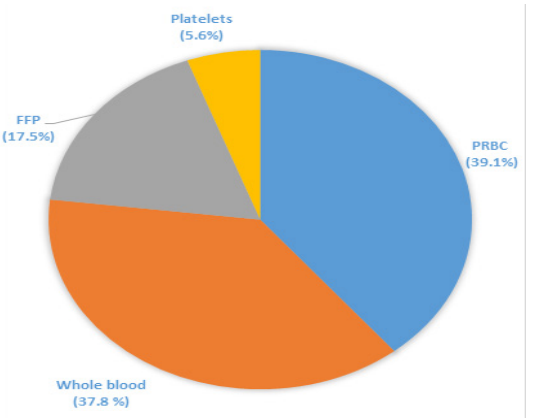

Figure 1: Distribution of blood products transfusion by type during 2012-2013 in Peshawar, Pakistan (n=2,04,942).

Legend; PRBC (Packed red blood cell), FFP (Fresh frozen plasma).

Blood products transfusion was 46927 units (22.89%) in <12 years, 20847 units (10.17%) in 12-17 years, 55492 units (27.07%) in 18-40 years, 51516 units (25.13%) in 41-64 years and 30160 units (14.71%) in >65 years. (Figure 2)

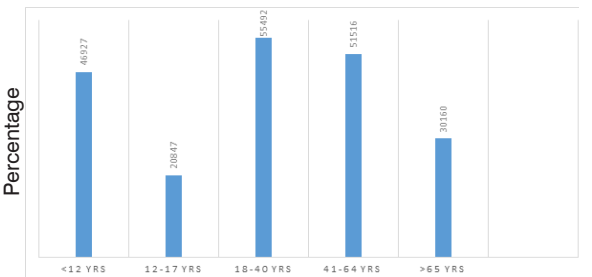

Figure 2: Blood products transfusion by Age groups during 2012-2013 in Peshawar, Pakistan (n=2,04,942).

In LRH, blood products transfusion was 84,690 units (41.32%), HMC 33092 units (16.14 %), Fatimid Foundation 24000 units (11.71%), KTH 22500 units (10.97%), Hamza 20000 units (9.75%), IKD 10966 units (5.35%), PIMS 7728 units (3.77%), Civil Hospital 1166 units (0.56%) and Government Maternity Hospital 800 units (0.39%). (Figure 3)

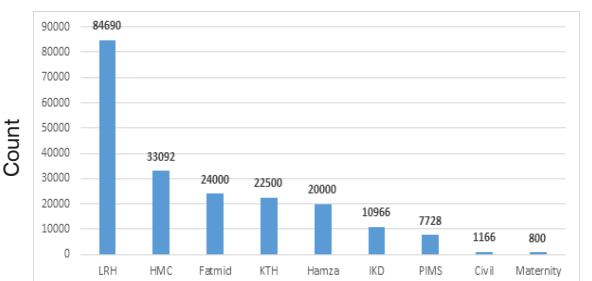

Figure 3: Blood products transfusion by Health care facility during 2012-2013 in Peshawar, Pakistan (n=2,04,942).

Legend; HMC (Hayatabad Medical Complex), KTH (Khyber Teaching Hospital), LRH (Lady Reading Hospital), IKD (Institute of Kidney Diseases), Maternity (Government Maternity Hospital), Civil (Civil Hospital), PIMS (Peshawar Institute of Medical Sciences), Hamza (Hamza Foundation) and Fatimid (Fatimid foundation).

DISCUSSION

The goal of modern transfusion therapy is moving from whole blood to specific blood components therapy for specific hematologic deficiencies.[15] In our study the frequency of whole blood and packed red blood cell (PRBC) issued were 37.8% and 39.1% respectively. Preference of PRBC over whole blood in seen in our study which can be further increased by effective transfusion audits and initiation of better blood transfusion policies supported by guidelines. Study conducted in India[16] showed 47.15% for PRBCs and 43.06 % for whole blood utilization use showing preference of PRBCs to whole blood in their center. PRBCs usage is also seen higher in United States (48.75%) and Denmark (54.08%).[17]

Our study showed Platelet utilization of 5.6% which is more or less similar to published data from western countries such as United States (5.96%), England (2.03%) and Denmark (4.6%).[17] It is also comparable with platelet utilization seen in India (4.1%).[16] The present study showed platelet utilization is comparable to published data showing that current transfusion practices regarding platelet transfusions are appropriate.

Fresh frozen plasma is a component that contains plasma proteins and all the coagulation factors including labile factors V and VIII.[18] The present study showed fresh frozen plasma (FFP) utilization of 17.5% which is higher as compared to other countries such as India (5.3%)[16], England (5.95%), Australia (5.3%) and Denmark (5.16%).[17] There is high rate of utilization of FFPs seen in our study to identify areas of high rate of utilization of FFPs and then find whether it is appropriate or inappropriate usage. Transfusion strategies should also be modified with respect to FFP and educational programs about transfusion guidelines should be started in form of seminars and training programs for clinicians and postgraduate students. Improvement in usage of FFP has been seen after use of self-educating transfusion request form.[19]

CONCLUSION

Modal group was men. Packed red blood cells were the most frequently transfused blood component in hospitals of Peshawar especially Lady reading hospital. Most common age group was 18-40 years. Whole blood still comprises a significant fraction of transfusions which is alarming. This warrants implementation of blood audit in clinical setting and judicious use of blood and its products.

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CONFLICT OF INTEREST
Authors declare no conflict of interest.
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AUTHORS' CONTRIBUTION

The following authors have made substantial contributions to the manuscript as under:

Conception or Design:	RA, NA
Acquisition, Analysis or Interpretation of Data:	RA, NA, SHS, NK, MTMK
Manuscript Writing & Approval:	RA, NK, MT

All the authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.