ORIGINAL ARTICLE

Effectiveness of Combined Verbal Screening and Uniform Donor Questionnaire in Blood Donor Deferral; Evaluation at a Regional Blood Bank

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ABSTRACT

Introduction: Blood transfusion is a potentially life-saving procedure that replaces the blood lost either during surgery or after injury. It also serves as a mean of replacing blood in the patients who cannot replenish enough blood for their own body. Donors come from all walks of life with established lifestyle. A detailed questionnaire along with verbal screening and general physical examination should be performed in all blood donors before labeling them unsuitable for donation.

Objective: To evaluate the effectiveness of verbal screening in addition to uniform donor questionnaire as a routine pre-donation protocol for donor selection and deferral.

Material and Methods: This cross-sectional study was conducted at a regional blood bank in Northern Pakistan over a period of six months from January 2021 to June 2021. The blood donors who were deferred after assessment by uniform donor questionnaire (UDQ), verbal screening and general physical examination were critically analyzed. The causes of deferral were noted. The data was analyzed by using SPSS Version 23.

Results: A total of 400 blood donors were deferred during the study period. Their ages ranged from 25 to 40 years with a median age of 29 years. Majority of them were males (97.5%). Among these, 332 were deferred on uniform donor questionnaire, 48 on verbal screening and 20 on general physical examination.

Conclusion: Assessment of blood donors by verbal interview as an adjunct to donor questionnaire is very effective in donor selection and deferral process and should be made a mandatory part of pre-donation blood donor selection protocol.

Keywords: Transfusion, uniform donor questionnaire, verbal screening

INTRODUCTION

Blood transfusion is an important life-saving procedure in medical and surgical practices worldwide[1,2]. World Health Organization recommends ensuring accurate measures to meet the transfusion needs of a population with a supply of safe blood and blood components[3]. The task of providing safe and sufficient blood timely to the patient is dependent solely on blood transfusion centers. Therefore, donor recruitment is critical in smooth functioning of blood banks. Primary goal of blood transfusion services is achieved through the blood supply chain comprising of volunteer donors, effective inventory management and appropriate use of blood and its alternative by the concerned clinician. In this regard appropriate pre-donation protocol should be implemented involving uniform donor questionnaire, verbal screening about medical and surgical history and general physical examination by experienced healthcare professional.[4] There is a decreasing trend in voluntary donations nowadays which is attributable to a number of factors. These include adoption of modern living standards, lack of time, inadequate opportunities to donate, fear of needle pricks etc.[5] Voluntary blood donors get motivation from family tradition of donation as well as from personal experiences of donation.[6] World Health Organization mandates implementation of stringent donor selection criteria which includes assessment through uniform donor questionnaire followed by verbal screening in the form of donor's interview in order to ensure safety of both donors and recipients.[5] In developing countries like Pakistan, due to fragmented blood transfusion services as well as lack of adequate resources and manpower, employment of efficient blood donor selection protocol is very challenging. Moreover, majority of donations are obtained from directed donors who tend to conceal their medical and personal histories in order to facilitate their patients. Therefore, we conducted this study to evaluate the efficacy of verbal screening in addition to a comprehensive uniform donor questionnaire (UDQ) in donor deferral process being practiced in our blood bank.

MATERIALS AND METHODS

This cross-sectional study was conducted at a regional blood bank of Northern Pakistan over a period of 6 months from January 2021 to June 2021 under institutional review board-approved protocol. Random blood donors deferred during the study period after initial assessment by uniform donor questionnaire, verbal interview and general physical examination were included in the study after obtaining informed consent. Sample size was calculated using single proportion formula. These deferred individuals were categorized according to their modes of deferral and further segregated on the basis of underlying cause of deferral and the distribution pattern was probed. The data was analyzed using statistical package for social sciences software version 23.0. Quantitative variables were presented as numbers and percentages.

RESULTS

A total of 400 blood donors were deferred during the study period. Among these 390 (97.5%) were males and 10 were females. Their ages ranged from 25 to 40 years with a median age of 29 years. The donors were categorized into three groups according to the mode of deferrals as shown in table 1. Notably, 12% of these individuals were deferred by assessment through verbal interview after being selected on basis of uniform donor questionnaire.

Table-1: Distribution of Donors According to Mode of Deferral

Mode of Deferral	No. of Donors (n)	Percentage (%)
Uniform donor questionnaire	332	83
Verbal screening	48	12
General physical examination	20	5
Total	400	100

The most common cause of donor deferral reported on basis of UDQ was previous history of blood donation within last three months found in 25.9% of study participants followed by history of acute infections as seen in 23.7% of individuals. The distribution

pattern of these deferred donors on basis of UDQ is summarized in table 2.

Table 2: Distribution Pattern of Donors Deferred on The Basis Of Uniform Donor Questionnaire

Causes of Deferral	Number of Donors (n)	Percentage (%)
Blood donation during last three months	86	25.9
Acute Infections	79	23.7
Malaria	15	4.5
Other Infections	64	19.2
Medications	62	18.6
Chronic diseases	58	17.4
HBV & HCV Infections	19	5.4
Recent dental treatment	18	4.8
Vaccinations	6	1.8
Previous transfusions	4	1.2
Total	332	100

The donors who cleared assessment by UDQ were further interviewed by blood bank healthcare professional and 12% of donors were deferred by this screening process. The distribution pattern of these deferred individuals is given in table 3.

Table 3: Distribution Pattern of Donors Deferred on The Basis of Verbal Screening

Causes of Deferral	Number of Donors (n)	Percentage (%)
Surgical procedure	14	29.1
Multiparity	10	20.8
Unwilling for donation	6	12.5
Family history of contact with Hep B & C	5	10.4
Cosmetic procedure	4	8.3
Other causes	9	18.7
Total	48	100

DISCUSSION

Donor selection by uniform donor questionnaire based on individual's detailed history in accordance with specified selection criteria plays a key role in scrutinizing blood donors particularly in developing countries like Pakistan If there is an abundance of unscreened donors, low rates of voluntary donations and non-availability of suitable screening tests for transfusion transmissible infections are reported[6,7,8]. It provides an easy access to all the relevant information of the potential donor which supports decisions of the acceptance or deferral of the donors. The value of questionnaires is pronounced in the context of avoiding transfusion-transmitted diseases caused by newly discovered or reemerging pathogens for which diagnostic tools are not yet in place.[9] American Red Cross blood services reported increase in donor deferral rate after implementation of UDQ[10]. However, as the majority of donations in our region are primarily directed or replacement ones, therefore a number of donor related factors provide hinderance in their proper evaluation and screening by questionnaire. These include low literacy level, language barriers, social factors including reluctance to reveal history of high-risk lifestyles and transfusion transmissible infections. According to data compiled by the World Health Organization, each year more than 92 million units of blood are donated from 164 countries around the world. However, 1.6 million of these units are thrown away due to the presence of transfusion-transmitted infections like hepatitis B and C, HIV, herpes, and syphilis.[6,11,12] The incidence of both hepatitis B and C viruses is very high in Pakistan (5 and 10 million respectively) and unsafe blood transfusion practices is an important risk factor fueling this epidemic.[6,13] Therefore a strict surveillance system for screening of blood donors in low-resource countries with the help of UDQ in conjunction with verbal interview by trained healthcare professionals is inevitable. We reported additional 12% of donor deferral with the help of verbal interviews done by our trained blood bank staff. This has a significant impact

in ensuring the safe supply of blood to its recipients. Furthermore, it indicates the need of further improvisation and simplification of UDQ being utilized. The UDQ has been designed in the light of WHO guidelines with modifications as per our regional requirements and practices. However, it has been limited to major important questions keeping in view the lack of interest of directed donors while filling it. The questions pertaining to detailed medical and surgical histories of donors along with their potential of being at risk for transfusion transmissible infections are included. Still there is a room for improvisation. For instance, a substantial number of donors were deferred after interview on history of surgical procedure during their previous one year. Even though the question about surgical history has been included in the questionnaire, further elaboration by including the name of surgical procedure can be an option. A more feasible option is further screening in the form of interview as highlighted in our study. In addition, cosmetic procedures like hair transplant, tattooing, cupping, ear and nose piercing and Botox injections carry risk of blood borne infections.[8] Queries related to these cosmetic procedures are not part of routine UDQ and hence these can be included. These deficiencies have partly been overcome by training the staff to enquire the donor about these additional procedures and lifestyle behaviors during verbal screening. Due to religious, cultural and social norms followed in our society, not only the number of female donors who come to donation centers is very low but they are reluctant to reveal any personal history on verbal screening particularly to male health care professionals making it quite challenging. In these scenarios a questionnaire including gynecological and obstetrical history and employment of trained female healthcare staff will not only encourage this stratum of individuals but will also be beneficial in screening of female donors for factors specific to them. An important risk factor in development of transfusion related acute lung injury (TRALI) in multiparous female donors. Reports from the United Kingdom, France, Germany, Netherlands and United States have documented that providing plasma and platelet concentrates from male donors and unmarried or nulliparous female donors as risk alleviation strategy has reduced the occurrence of TRALI[13]. In our study 10 females were deferred on interview conducted by female staff due to multiparity who were initially screened and selected by UDQ. This finding highlights the fact that in transfusion centers like ours where screening of female multiparous donors for HLA and HNA is not possible, an adequate history pertaining to their parity and previous transfusion needs to be made part of UDQ with addition of interview by female staff to avoid any untoward adverse transfusion reactions. We were also able to segregate the donors who were forced to donate blood without their consent on verbal screening. A Canadian study evaluated the UDQ that has been in use there after being developed over years and still reported it to be not fully effective in screening of donors.[14] Therefore, we derived from our study that inclusion of verbal screening as an augmentation to UDQ enhances the efficacy of donor selection and rejection process which is extremely crucial for resource constraint blood banks in order to ensure safe blood supply chain.

CONCLUSION

Assessment of blood donors by verbal interview as an adjunct to donor questionnaire is very effective in donor selection and deferral process and should be made a mandatory part of pre-donation blood donor selection protocol.

REFERENCES

1. Rabeya Y, Rapiaah M, Rosline H, Ahmed SA, Zaidah WA, Roshan TM. Blood pre-donation deferrals—a teaching hospital experience. Southeast Asian J Trop Med Public Health, 2008;39:571–4.
2. Abdelaal M, Anwar F. Analysis of blood donor deferral in Jeddah, Saudi Arabia: characteristics and causes. J Pak Med Assoc. 2016;66(11):1392–1395.
3. World Health Organization. Screening donated blood for transfusion-transmissible infections: recommendations. World Health Organization; 2010.

4. Ehsan H, Wahab A, Shafqat MA, Sana MK, Khalid F, Tayyeb M, Muneeb A, Khan AY, Ehsan S, Ehsan A, Iftikhar R. A Systematic Review of Transfusion Transmissible Infections Among Blood Donors and Associated Safety Challenges in Pakistan. Blood. 2020 Nov 5;136:26-8.
5. World Health Organization. Blood donor selection: guidelines on assessing donor suitability for blood donation. World Health Organization; 2012.
6. Lucky TT, Seed CR, Waller D, Lee JF, McDonald A, Wand H, Wroth S, Shuttleworth G, Keller AJ, Pink J, Wilson DP. Understanding noncompliance with selective donor deferral criteria for high-risk behaviors in Australian blood donors. Transfusion. 2014 Jul;54(7):1739-49.
7. Bronowicki JP, Venard V, Botté C, Monhoven N, Gastin I, Choné L, Hudziak H, Rhin B, Delanoë C, LeFaou A, Bigard MA. Patient-to-patient transmission of hepatitis C virus during colonoscopy. New England Journal of Medicine. 1997 Jul 24;337(4):237-40.
8. Crampin AC, Lamagni TL, Hope VD, Newham JA, Lewis KM, Parry JV, Gill ON. The risk of infection with HIV and hepatitis B in individuals who inject steroids in England and Wales. Epidemiology & Infection. 1998 Oct;121(2):381-6.
9. Offergeld R, Heiden M. Selecting the right donors-still a challenge: development of a uniform donor questionnaire in Germany. Transfusion Medicine and Hemotherapy. 2017;44(4):255-62.
10. Zou S, Eder AF, Musavi F, Notari Iv EP, Fang CT, Dodd RY, ARCNET Study Group. Implementation of the Uniform Donor History Questionnaire across the American Red Cross Blood Services: increased deferral among repeat presenters but no measurable impact on blood safety. Transfusion. 2007 Nov;47(11):1990-8.
11. World Health Organization, World Health Organization. Global database on blood safety: summary report 2011. Geneva: WHO. 2011.
12. Eder AF, Herron R, Strupp A, Dy B, Notari EP, Chambers LA, Dodd RY, Benjamin RJ. Transfusion-related acute lung injury surveillance (2003-2005) and the potential impact of the selective use of plasma from male donors in the American Red Cross. Transfusion. 2007 Apr;47(4):599-607.
13. Funk MB, Guenay S, Lohmann A, Henseler O, Heiden M, Hanschmann KM, Keller-Stanislawski B. Benefit of transfusion-related acute lung injury risk-minimization measures–German haemovigilance data (2006–2010). Vox sanguinis. 2012 May;102(4):317-23.
14. Goldman M, Ram SS, Yi QL, O'Brien SF. The Canadian donor health assessment questionnaire: can it be improved? Transfusion. 2006 Dec;46(12):2169-75.