



AN EVALUATION OF THE BLOOD DONOR PROFILE IN THE POPULATION OF DURGAPUR WITH INITIATIVES TO IMPROVE THE VOLUNTARY BLOOD DONOR POOL

Pathology

Dr. Sananda Koley Assistant Professor, Department of Pathology, IQ City Medical College and Narayana Multispeciality Hospital, Durgapur, West Bengal

***Dr. Asitava Deb Roy** Associate Professor, Department of Pathology, IQ City Medical College and Narayana Multispeciality Hospital, Durgapur, West Bengal, *Corresponding Author

Dr. Nikhil Kumar Assistant Professor, Department of Pathology, IQ City Medical College and Narayana Multispeciality Hospital, Durgapur, West Bengal

Dr. Debarshi Saha Associate Professor, Department of Pathology, IQ City Medical College and Narayana Multispeciality Hospital, Durgapur, West Bengal

ABSTRACT

The modern health care system depends on an efficient and dedicated blood transfusion service. Proper selection of healthy donors is the first step to ensure delivery of healthy blood products to the health care system. However, healthy donor recruitment and retention is a real challenge that faces the health industry today keeping in mind the various socio-economic and environmental factors. It has been noted that the health care system in the private sector predominantly depends on blood collection from replacement donors.

This study was done to evaluate the blood donor profile in the population of Durgapur with initiatives to improve the voluntary blood donor pool.

KEYWORDS

INTRODUCTION

Blood transfusion services are a vital part of an efficient and modern health care system. Proper selection of healthy donors is the first step to ensure delivery of healthy blood products to the health care system.

Voluntary blood donation (VBD) is the donation of whole blood or plasma voluntarily without any inducement or reward [1]. A replacement donor is a person who donates blood upon the request of a specific patient or patient's family or acquaintance which, in principle, is intended to be used specifically for the treatment of that patient [2]. In the year 2006-07, VBD constituted only 54.4% of the total blood collected in blood banks. Over the years, it has increased steadily to 59.1% in 2007-08, 61.7% in 2008-09, 74.1% in 2009-10, 79.4% in 2010-11 and 83.1% in 2011-12. The total annual collection has also shown an absolute increase from 4.4 million blood units in 2007-08 to 9.3 million units in 2012-13[3].

Over 81 million units of blood are collected annually but it has been noted that only 39% are collected in developing countries which have 82% of the world's population [4].

To ensure collection of safe blood we need to have standard donor deferral criteria [5] and stringent screening of collected blood for possible transfusion transmitted infections (TTI) [6].

Therefore, donor screening is very important which includes registration, medical history, physical examination and laboratory tests as per NACO guidelines [7].

However, given the ever changing socio-economic environment and human factors involved, healthy donor recruitment and retention is a challenge that faces the health industry today [8]. Therefore, avenues to increase VBD are certainly looked forward to. Keeping this in mind, the aims and objectives of this study were:

1. To study the characteristics of the blood donor population.
2. To ascertain the reasons for donor deferral.
3. To identify ways to improve the voluntary donor pool.

MATERIALS & METHODS:

The present hospital-based retrospective study was carried out in the blood bank of a tertiary care private teaching hospital in Durgapur. Data was collected from the records maintained by the blood bank. Study participants included all those who came to donate blood between 1st May 2014 to 30th April, 2016. The data was collected using a pre-tested, semi-structured proforma. The protocol was approved by

the institutional ethics committee. The characteristics of 2175 donors who attended blood bank during this period to donate blood were collected for statistical purpose. The various parameters studied were age, sex, haemoglobin percentage, weight, blood group and type of blood donor, reasons for deferral along with fears and misconceptions surrounding blood donation particularly among replacement donors.

RESULT ANALYSIS:

Table 1: Age group distribution of the donors

Age group(yrs.)	18-27	28-37	38-47	48-57	>58
No. of donors	826	870	370	109	00

Most common age group in our study was in the range of 28-37 years and all of the donors screened during the study period were male.

Fig 1: Diagram showing haemoglobin values distribution among the donors

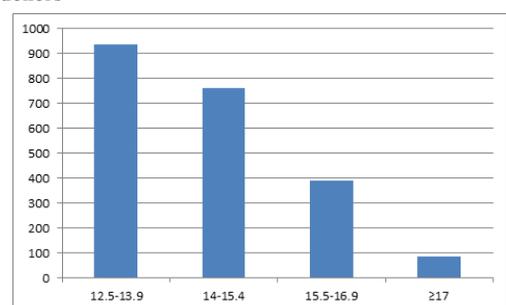


Figure 1 shows haemoglobin percentage among donors, majority of who are in the range of 12.5-13.9gm %.

Table 2: Weight distribution of the donors

Weight (kg)	45-59	60-74	75-89	90-104	105-119
No. of donors	522	1087	261	283	22

Table 2 shows donors' body weights that mainly belong to the range of 60-74 kgs.

Table 3: Distribution of blood groups among the donors

Blood group distribution among the donors	Number of donors
A(+)	606
A(-)	12
B(+)	803

B(-)	22
AB(+)	150
AB(-)	06
O(+)	77
O(-)	8
Bombay blood group	1

Table 3 shows most common blood group in our donor population was B positive (36.9%), followed by A positive (27.86%) and AB positive (6.9%) respectively.

In our study, we found 2023 (93%) donors out of 2175 blood donors as replacement donors and rest as voluntary. Out of 2175 donors, 60% donors were found to be interested for voluntary blood donation, whereas 40% i.e. 809 donors were found to be reluctant.

Table no 4: Showing causes of reticence to donate blood voluntarily.

Causes for refusal of voluntary blood donation	No. of donors
Fear of pain during donation	206
Fear of future weakness, possible ill effects	240
Medical excuses	103
Ignorance and illiteracy	137
Fear of infection in hospital	68
Lack of motivation	55

231 donors were deferred among 2406 donors. Anemia was the most common cause for deferral followed by hypertension.

Table 5: Causes of donor deferral

Cause of deferral	No of donors	Type of deferral
Anaemia	73	Temporary
Hypertension	43	Permanent
Alcoholic	31	Temporary
Tattooing	24	Temporary
Blood donation <3 months	24	Temporary
Weight <44 kg	12	Temporary
H/o multiple exposure	12	Permanent
Low BP	12	Temporary

DISCUSSION:-

This study attempted to analyse the pattern of blood donation in a tertiary care private teaching hospital between May 2014 and April 2016.

We found most of our donors to be in the 28-37 (40%) year age group followed by the 18-27 year-age group (38%) (Table 1) in contrast to that found in the study conducted by U U Unnikrishnan B et al [9] where majority of the donors were under the age of 25 (42.92%), followed by those aged 26-35(37.20%). Only 0.48% of the donors were above 55 years [9] while we found no donors above the age of 58 in the current study. Males dominated the donor population (95.13%) with females making up the rest 4.87%. [9] while we in our study found no female donors at all.

Haemoglobin assessment is an important criterion for blood donor selection. The minimal haemoglobin cut-off is set at 12.5 gm%, which is done to ensure both donor safety and appropriate haemoglobin content in the donated unit [10].

Most of the donors show haemoglobin values in the range of 12.5-13.9% and body weight of 60-74 kg. (Figure 1, Table 2)

The most common blood group in the index study was found to be B (+) (36.9%) followed by A+ (27.86%) and then by AB+ (6.9%) (Table 3). Agarwal et al in 2014, found O to be the most common blood group (37.12%) in the country closely followed by B at 32.26%, and then by A at 22.88% while AB was the least prevalent group at 7.74% among 10,000 healthy blood donors in five different geographical regions of the country [11]. In a study by Gadwalkar Srikant R, blood group 'B' formed the most common (35.48%) followed by 'O' blood group with 34.33%. 'AB' blood group was the least common with 8.49%. [12].

This particular distribution obtained in our study is unexpected since the prevalence rates of blood groups found in our study varies widely

from that mentioned in previous studies performed in this region [13].

Major types of blood donors were found to be replacement donors. It was however noted that 60% of these replacement donors were interested to donate blood voluntarily if given a chance. But rest 40% were found to be reluctant. Socio-religious taboo relating to blood donation (23.73%) and a perpetual fear of potential weakness from blood loss (29.66%) contributed largely to the reticence of these donors. Many donors resented the pain arising out of introduction of a large bore (18G) needle in the ante-cubital fossa (Table 4).

Shakeri et al in his study showed that most important factors contributing to inability to donate blood were related to the lack of information about physical condition (67%), anemia (66.85%), the probability of imbalanced blood pressure (59.4%), physical weakness (59.3%), diseases (52.3%), malnutrition (51.5%) and inaccessibility to blood donation bases (51%).[14]

If all the different causes of inability to donate blood found in our study are re-classified into fewer categories, the lack of information about physical condition would contribute to 50.8% of the reasons of unwillingness to donate blood, somewhat comparable to that borne out in the study by Shakeri et al.

Therefore, it was decided to start a pre donation motivation and counselling programme in our blood bank as per NABH guidelines [15]. As per this programme, every replacement donor is counselled prior to blood donation regarding the benefits of blood donation and thereby motivated to come up as voluntary donors in the future. It was encouraging to note that in a period of 1 year time from May 2016 to April 2017, twenty eight (28) replacement donors before had turned up to donate blood voluntarily.

It is encouraging to note that the blood bank in this study has functioned in accordance with guidelines issued by NACO [7] regarding banning professional donors as none were identified in the period of study.

Whole blood donors are deferred due to several reasons, either temporarily or permanently. Deferrals can be characterized as temporary short term (1-56 days), long term (57-365 days), and multiple years/permanent (more than 365 days) [16]. A large majority of the donor population in a developing country, like India, is deferred due to temporary but easily correctable cause—Anemia.[17] The causes of anemia could be nutritional deficiency, anemia due to blood loss, anemia of chronic disease, and so on. Nutritional anemia is a worldwide problem with the highest prevalence in developing countries like India.

Three tests that are commonly used for primary screening are Copper sulphate method, Hemocue, and Microhematocrit, which uses a capillary tube and high speed centrifuge. Although these tests are quick, easy, and relatively inexpensive, their sensitivity, specificity, and accuracy are lower than that of an automated hematology analyzer.[18] That is why at our centre results were ultimately confirmed by running the EDTA venous sample of the subject on an automated analyzer.

In our study we found that the main cause for deferral is anemia (31.6%), followed by hypertension (18.6%). This is in accordance to the study by Shalini Bahadur et al [19]. In a study Fred John et al showed that the leading cause of permanent deferral was hypertension 30.3%, where as the leading cause among temporary deferral was anemia 15.66%. One of the major cause of deferral among males were hypertension whereas anemia was the major cause of deferral among females [20].

CONCLUSION:

The index study showed that most of the donors were young. The blood group profile of the donors found in our study differs from previous studies done in our country and also this region of the country. However, majority of donations were from the replacement pool which may be a cause for this disparity, though given the number of donations, chances of bias should have been negligible. In order to increase the number of voluntary, non-remunerated donors every replacement donor is counselled prior to blood donation regarding its benefits and thereby motivated to come up as voluntary donors in the future. These efforts have resulted in miniscule improvement in

voluntary donation. We hope this trend continues to show better numbers in voluntary blood donation.

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