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Research Article

Blood Donor Deferral Pattern in Rural Teaching Hospital: An Institutional Study

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ABSTRACT

Introduction: The scarcity of blood donors has always been a major concern for blood banks. Blood Transfusion Services is an important and fundamental part of National Health Services. This study was conducted to identify the donors who are deferred temporarily and what are the reasons to be corrected, to inform them and recruit them later as voluntary, regular non remunerative blood donors.

Objectives: To analyse the incidence of deferral and its pattern among the blood donors in a teaching hospital of rural India.

Materials and Methods: This study includes all the voluntary donors and replacement donors. After measuring the weight of donor 350 ml or 450 ml of blood was collected. Standard Operating Procedures (SOPs) based on the National guidelines were used for donor deferral and selection. A Medical Officer asked their medical history then examined briefly the temperature, blood pressure, Haemoglobin, heart rate and its regularity.

Results: Anemia was the major reason responsible for the deferral among females. Hypertension being the commonest reason for permanent deferral among both genders followed by cardiac disorders.

Conclusion: Blood banking is the backbone of modern medicine but it carries the potential risk of infectious disease transmission. Well planned donor education programmes are needed to protect the loyalty of voluntary blood donors and to dispel any superstitions and myths about blood donation.

Keywords: Blood donation, Donor recruitment, Donor deferral, Deferral criteria, Donor rejection

INTRODUCTION

The scarcity of blood donors has always been a major concern for blood banks. There are many reasons for deferral of donors which are related directly to the safety of donors as well as major threat to the recipients. Whether a donor is suitable or not is based on medical opinion, regulatory rules and also based on science. For health care services, Blood Transfusion services (BTS) plays an important role. To ensure the quality of blood to be transfused it is necessary to enforce measures which is governed mainly by the advancement in technology and in the field of transfusion medicine. BTS is an important and essential part of National Health Services [1]. Blood transfusion is needed in the management of severe haemorrhage due to trauma, major surgeries and obstetric complications. To meet the demand for blood and blood components, continuous efforts and motivation is needed for achieving targets successfully. Various studies done in past three decades have taken into account of the motivation and attitude of blood donors in an article published recently, that reviewed factors which influence the retention of donors, has identified a range of organizational, socio-demographic, physiological and psychological factors [2]. The BTS in rural India has and always been unsatisfactory and is poorly regulated. So it basically depends on hospital based blood banks which are responsible for all the services namely recruitment of donors, performing serological tests to preparation and storage of blood and blood components. As there is no stringent donor deferral system the reporting of untoward events is not satisfactory. In India, the criteria for donor selection and deferral are provided by Drug and Cosmetic act 1940 supplemented by the manual (Director General of Health Services, MOH and FW, Govt. of India) [3]. This study analyse the incidence of deferral and its pattern among the blood donors in a

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teaching hospital of rural India. This was conducted to identify the donors who are deferred temporarily and what are the reasons to be corrected, to inform them and recruit them later as voluntary, regular non remunerative blood donors.

METHODS

This study includes all the voluntary donors who had donated blood between January 2017 to December 2018 in our 900 bedded tertiary care hospital with attached blood bank. Our blood bank has facilities for collection, preparation, storage and distribution of blood and blood components for routine hospital demand as well as caters to the requirement of neighbouring districts.

We collected blood from outdoor camps also which includes only voluntary donors. Most of the donors are from nearby areas of from Kolar within radius of 80 Km from Kolar. After measuring the weight of donor 350 ml or 450 ml of blood was collected. Donors weighing 45-60 Kg donated 350 mml and those weighing more than 60 Kg donated 450 ml of blood [4].

First a Medical Officer asked their medical history then examined briefly the temperature, blood pressure, Haemoglobin, heart rate and its regularity. We maintain a donor deferral register to write detailed information of donor deferral including the cause of the deferral. The deferred donors were classified according to their age group and sex and whether the deferral was permanent or temporary. The criteria of Director of General Health Services and Drug Controller of India was followed. From our institution an ethical clearance was obtained and data were compared with similar studies.

Standard Operating Procedures (SOPs) based on the National guidelines were used for donor deferral and selection [5]. Hemoglobin cut off was 12.5 gm/dl by finger prick method. Blood pressure was monitored by automatic machine (Accupen, Morepen Laboratories) and systolic blood pressure between 100 mm Hg and 180 mm Hg and diastolic pressure between 50 mmHg and 100 mmHg were selected for donation [6]. Total three times blood pressure was taken for those who didn't fall in between this range of systolic and disastolic blood pressure. As there was no obligation to donate blood, so relative of donors were not labelled as "replacement" donors [7]. The qualitative data were analysed as total number of cases and percentages. Similarly, quantitative data were analysed as number of cases, mean, median, range and standard OD deviation. Chi square test was used to determine statistical significance and the significance limit was 0.05.

RESULTS

Table 1 shows the distribution of the donor deferral according to the voluntary and replacement donors in both the genders with 62.1% in the voluntary category and 16.9% in the replacement donors among the males while only 10% and 5.9% in the females.

Anemia was the major reason responsible for the deferral among females with $p<0.001$. Whereas URTI was the commonest on in males with $p<0.001$. Distribution of permanent deferral across various age groups is shown in Table 2. Hypertension being the commonest reason for permanent deferral among both genders followed by cardia disorders.

DISCUSSION

Deferral of blood donors is a very bad experience for the blood donation centres as well as for blood donors because of the negative impact and feeling about themselves amongst the prospective donors.

But the criteria for these deferrals and their implementation have a major influential role in the quality of blood supply in a population. Hence there is a requirement of a proper weighing balance at every blood centre for acceptable quality and desirable blood quality [8]. The blood donor suitability criteria based on informed medical opinion, scientific and regulatory rules are leading for the specific donor deferral patterns. These criteria are necessary to prevent the detrimental impacts on the donor as well as the recipient.

Nodal agencies like National AIDS control organisation (NACO) and State Blood Transfusion council (SBTCS) are inefficient in collecting data of the deferred cases because of their restricted criteria for deferral based solely on infectious diseases in the donated blood units [9]. Hence analysing the combined reasons for

Table 1: Distribution of donor deferral according to voluntary and relative categories in both categories.

Donor criteria	Male	Female	Total
Voluntary	7936 (62.1)	1187 (10)	9123 (72.2)
Relative	2013 (16.9)	710 (5.9)	2723 (22.8)
Total	9662	2184	11846 (100)

Table 2: Distribution of permanent deferral across various age group in both genders.

Causes	18-25 years		26 -35 years		36 -50 years		51 years and above		Total		Grand Total
	M	F	M	F	M	F	M	F	M	F	
Hypertension	10	0	10	0	60	4	20	6	100	10	110
Cardiac disorders	8	0	6	3	0	1	0	2	14	6	20
Diabetes	9	0	2	3	2	0	0	0	13	3	16
Asthma	4	2	3	4	1	0	0	0	8	6	14
Skin disorders	2	0	4	0	0	4	0	0	6	4	10
Epilepsy	1	0	1	0	0	0	0	0	2	0	2
Thyroid disease	0	0	0	0	0	0	0	0	0	10	10
Renal (nephric syndrome)	0	1	0	4	0	0	0	0	0	1	1
Thalassemia minor	1	0	0	2	0	0	0	0	1	0	1
Total									144	40	184

these deferrals will only help to address the issue appropriately by ameliorating the causes responsible for deferral wherever possible. There is a considerable difference for the reasons responsible for deferral with voluntarily non remuneration of the donors being the major cause in developed countries, decline in the blood supply while shortage of blood being the serious problem in developing countries. In both the scenarios, there is a need for the proper analysis of donor behaviours and attitude for the sustained supply of blood by recruitment of new donors and retention of the voluntary donors who have already donated blood. Two theories have been given to explain the social behaviour "The theory of reasoned action and the extension and the theory of planned behaviour" [10]. Theory of reasoned action explained volitional control determined by the attitude towards the action while "the theory of planned behaviour" explains the brainwashing effect of others influence on people who do not have volitional control on their behaviour. These two theories have stood by testing period and surrogated the understanding of repeated donations of blood in some individuals while deferral in others [11]. The significance and appreciation of beliefs, attitude and positive motivations is vital, not only for those who have donated blood to continue the donation process. This information carries equal importance for non-donors with hope to change and modify this attitude and motivating them to start donation process. One of the other major influential factor in blood donation is education [12]. In a report from USA, education videotape on blood donation shown to high school children proved out to be a good motivation tool for recruitment of high school blood donors, with a total increase in donations by 18.7% [13]. To improve the standard of the country, The National AIDS control Organisation NACO through the technical resource group on blood safety has formulated comprehensive standards for better collection, storage and distribution of blood and its components.

Donor deferral rate in blood donation centres varies from 5-24% leading to huge loss in terms of the available blood units for transfusion. But there is a significant variation in the whole blood donor eligibility criteria internationally reflected in the regional diversity [14]. Low haemoglobin was found to be the most common reason for deferral in both the genders, but significantly higher number of deferrals in females because of low haemoglobin concentration.

Study done by Madan et al has shown that an association can be established with the Indian programmes for decreasing the problem of iron deficiency anemia like the 'National Anemia Control Programme' which focuses on anemia eradication in younger age group like adolescents, for further increase in pool of potential donor [15]. Second and third reason for deferred cases in our study were abnormal blood pressure and those who are on medication respectively which is similar to the study done by Halperin et al. [16].

As the sudden removal of 350- 450 ml of blood may lead to cerebral catastrophe could be tragic for donors as well as for blood centres. There is a requirement to find a cut off after doing careful studies in Indian population so that in future we don't lose any of the donors either ways. The available cut off data has to be confirmed in the light of other recent studies as more and more donors can be presumed to be reaching this cut off soon.

CONCLUSION

A significant number of potential blood donors are deferred for various preventable and treatable reasons. The deferred donors need to be actively pursued, so that they can contribute by donating blood and saving lives as they may get demotivated, when they are deferred from donating blood.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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