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Spectrum of Reasons for Predonation Deferral of Voluntary Blood Donors in Central Karnataka, India

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Abstract

Introudction: Blood transfusion is a life saving procedure, which saves million of lives every year. It requires adequate supply of safe blood, which can be achieved by proper predonation donor screening. Donors are deferred from donation for several health reasons. The rate and reasons of deferral vary from region to region. *Aim:* To study the deferral rate and reasons for deferral in potentially healthy voluntary blood donors at various voluntary blood donation camps organized in Gadag, Karnataka, India. *Materials and Methods:* Analysis of data obtained from voluntary blood donors in various voluntary blood donation camps held around Gadag district, Karnataka was done at Blood bank, attached to Gadag Institute Medical Sciences, Gadag. Analysis of deferral rate and various causes for deferral were done in both male and female blood donors. *Results:* Total of 469 voluntary blood donors were registered at blood donation camps and 61 were deferred from donation, which constitutes deferral rate of 13%. Overall deferral was mainly due to low hemoglobin (36.1%). Common reasons for deferral in males were hypotension (41.9%) and low hemoglobin (25.8%), whereas in females low hemoglobin, hypotension and underweight constituted 46.6%, 16.7% and 16.7% respectively. Return rate after temporary deferral was zero in our study.

Keywords: Voluntary; Deferral; Donation; Low Hemoglobin.

Introduction

Blood transfusion is a life saving essential therapeutic procedure, as there is no substitute for human blood [1]. Hence, blood banking constitutes one of the pillar of the modern medicine. Proper stringent predonation screening of blood donors ensures the quality of blood and may reduce the chances of donation by high risk individuals, which will in turn decreases the burden on post donation screening for transfusion transmissible infections. Hence, deferring the donors from donation ensure donor and recipient safety [2].

Large numbers of blood donors are not able to donate for various temporary and permanent reasons. Individuals who are disqualified from donating blood are known as 'deferred' donors. Deferring a donor is painful and sad experience for the donors as well as the blood bank. Donor's deferral can leave them with negative feeling, about themselves and about the process of donation. These donors are less likely to return in future for blood donation [3]. The rate and reasons for deferral may vary among different regions and centers. Studies focusing on varying deferral rates and deferral reasons highlight the differing demographic profile in different regions and may hint solutions to rectify modifiable deferral reasons.

Aims

To study the deferral rate and reasons for deferral in potentially healthy voluntary blood donors at various voluntary blood donation camps in Gadag, Karnataka, India.

Materials and Methods

This study is conducted at Blood bank, Gadag

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Institute Medical Sciences, Gadag , from August 2015 to April 2016. The study involved the voluntary blood donors who willingly came for donation at multiple voluntary blood donation camps organized at Gadag district. The data was collected using structured standard donor confidential questionnaire, followed by physical examination which included weight, blood pressure, pulse rate, temperature. Blood investigations like ABO and Rh grouping and hemoglobin estimation using specific gravity method were done.

The eligibility criteria included hemoglobin not less than 12.5 g/dL, pulse rate between 80 to 100/minute and regular, Systolic blood pressure 100-180 mm Hg and diastolic blood Pressure 50 - 100 mm Hg, afebrile body temperature and body weight 45 Kg and more for 350 ml donation, 60 kg and more for 450 ml donation [4]. Deferral rate with respect to sex of donor and deferral reasons were statistically estimated by analysis of donor data.

Results

Our study included only voluntary donors who had willingly come for donation at multiple blood donation camps held in Gadag district. Majority of the camps were conducted in colleges, others by organizations. A total of 469 voluntary blood donors were registered at blood donation camps out of which 61 were deferred from donation, which constitutes deferral rate of 13%. Male donors were 410(87.4%) and females were 59(12.6%) (Table 1). Out of 410 voluntary male donors, only 31(7.5%) were deferred from donation, and out of females 30 (50.8%) were deferred.

Most common cause for overall deferral was low hemoglobin (36.1%) followed by hypotension (29.5%) (Figure 1). Majority of males were deferred because of hypotension (41.9%) and low hemoglobin (25.8%) and other reasons for deferral in males were hypertension, underweight, jaundice, age and medical history like fever, sore throat, cough.

In female donors, low hemoglobin (46.6%), hypotension (16.7%), underweight (16.7%), both low hemoglobin +underweight (10%), menstruation (1.6%) and unsuccessful phlebotomy (3.3%) constituted reasons for deferral in females (Table 2) The return rate after temporary deferrals in both males and females was zero.

Table 1: Distribution of male and female donors in our study

Donor category	Male	Female	Total
Accepted	379(92.4%)	29(49.2%)	408(87%)
Deferred	31(7.6%)	30(50.8%)	61(13%)
Total	410(100%)	59(100%)	469(100%)

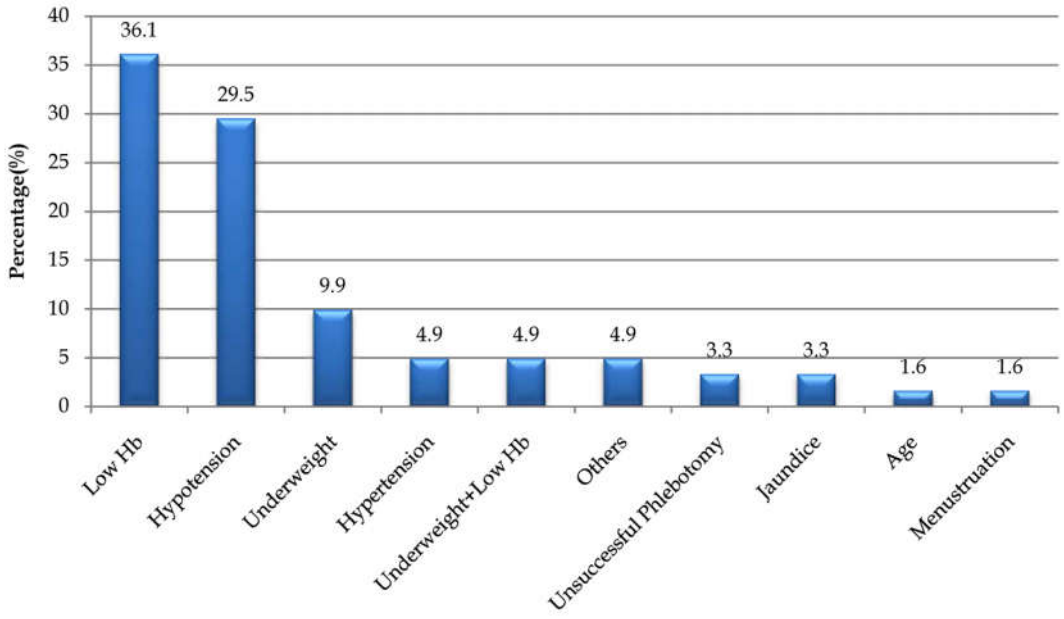

Fig. 1: Distribution of deferral causes among donors

Table 2: Deferral causes in donors according to sex

Deferral causes	Male	Female	Overall
Age	1(3.2%)	0	1(1.6%)
Hypotension	13(41.9%)	5(16.7%)	18(29.5%)
Hypertension	3(9.7%)	0	3(4.9%)
Jaundice	2(6.5%)	0	2(3.3%)
Low Hb	8(25.8%)	14(46.6%)	22(36.1%)
Menustruation	0	1(3.3%)	1(1.6%)
Unsuccessful Phlebotomy	0	2(6.7%)	2(3.3%)
Underweight	1(3.2%)	5(16.7%)	6(9.9%)
Underweight+low Hb	0	3(10%)	3(4.9%)
Others	3(9.7%)	0	3(4.9%)
Total	31(100%)	30(100%)	61(100%)

Table 3: Comparison of donor deferral rates in various studies

Study	Place	Year	Type of donors	Deferral Rates
Arun et al[9]	Tamilnadu	2007-2009	Voluntary	11.16%
Radhiga et al[10]	Chennai	2006-2011	Voluntary	10.49%
Gupta et al[15]	Dehli	2014	Voluntary	57%
Gujjar et al[11]	Ahmedabad	2011-2013	Voluntary+replacement	11.16%
Kulkarni et al[12]	Bellary	2011	Voluntary+ replacement	4.27%
Unnikrishnan et al[13]	Mangalore	2008	Voluntary+ replacement	5.2%
Sundar et al[14]	Bangalore	2005-2007	Voluntary+ replacement	5.84%
Our study	Gadag	2015-2016	Voluntary	13%

Discussion

Voluntary non-remunerated blood donor is defined as a person who gives blood, plasma or other blood 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. Voluntary blood donors are the cornerstone for the safe and adequate blood supply. For good quality blood supply, the donations must be by voluntary donors[5]. Therefore accepting a voluntary donor depends on satisfying eligibility criteria which have been designed for both donor and recipient protection [6]. The rate and reasons of deferral differ from region to region and from one centre to another. Donor deferral rates vary from 5%- 24% in blood centers, reducing huge number of blood units available for transfusion every year [7]. Deferring a volunteer can leave him with negative feeling about his health fitness. Donor deferral will also have negative impact on donor return rates and subsequent blood donations [8].

Table 3 shows deferral rates among various studies conducted at different regions. Overall deferral rate in our study is 13%, which was similar to observations made in various studies [9-11], whereas studies conducted by other authors have showed low [12-14] to high [15] deferral rates.

The most common cause of overall deferral in our study was low hemoglobin (36.1%), followed by hypotension (29.5%), underweight (9.9%). Arun et al [9] reported low hemoglobin, hypertension, medications being most common causes, whereas anemia, hypertension, alcohol consumption were mentioned by Awasthi et al [2]. Hence, studies on donor deferral in different regions show that each region will have different set of reasons, varying according to demographic profile.

Majority of deferrals in our study were due to temporary reasons like low hemoglobin (36.1%), hypotension (29.5%) and underweight (9.9%). Among permanent deferrals, hypertension without any past history constituted only 4.9% of deferrals. This may be due to anxiety or fear of phlebotomy. These were referred to physician for further evaluation. Whereas studies by Arun et al [9] and Unnikrishan et al [13] showed hypertension as one of the common cause.

In our study hypotension (41.9%) was the most common cause of deferral in males, followed by low hemoglobin (25.8%). Other studies by Arun et al [9], Gujjar et al [11], Kulkarni et al [12] have shown different reasons such as hypertension, anemia, underweight respectively as most common cause among male donor deferral. These observations can be due demographic variations seen among donor populations.

Female deferral rate was high (50.8%) in our study as compared to males (7.5%), similar observations were made by Sundar et al [14] and Gupta et al [15]. The finding of low hemoglobin (46.6%) was most common cause for deferral among females and similar finding was observed in various other studies

reflecting poor nutrition leading high prevalence of anemia [9,11,12]. Female donor population was low in our study, similar to studies done in Tamilnadu [9], Mangalore [13], Bangalore [14]. This can be due to lack of education, motivation and ignorance. Ten percent of the deferred female donors in our study had both low hemoglobin and underweight.

Unsuccessful phlebotomy due to poor veins was observed in two female donors (3.3%) in our study, whereas Sunder et al [14] had one case of unsuccessful phlebotomy (0.006%). History of menstruation led to 1.6% deferrals in our study, similar finding was noticed in various other studies [16,17].

In present study age group deferral was least (1.6%), as majority of the camps were conducted in colleges, where students were older than 18 years. Similar observation was made by Gupta et al [15]. History of jaundice was reason for deferral in only 3.3% deferred donors in our study. Past history of jaundice was leading cause for deferral on medical interview in studies at Lucknow [18].To assess the eligibility on returning back for next donation, these donors were advised to have the proper medical records. Medical history like fever, cough, sore throat giving the feeling of unwell to the donor constituted 4.9% of deferrals, which was similar to Awasthi et al [2].

Zou *et al* have reported potential donor loss after a deferral [19]. Donor deferral even though temporary, makes sizable percentage of donors to never attempt donation in future. Halperin et al [8] showed that nondeferred donors were 29 percent more likely to return for future donation than deferred donors. Tomasulo et al [7] suggested that less restrictive criteria can be used for donor selection without safety compromise and if all blood centers reduce their deferral rates to 7%, blood supply would be increased by more than 500,000 units annually.

As anemia is one of the major cause of deferral [9,11], these individuals should be referred for further investigations and treated accordingly. Donor return rate was zero in our study, whereas Alok et al [20] showed return of 39.8% of temporarily deferred donors. Clearly educating the donors regarding reason and duration of deferral may return these donors for donation in future. Practices like motivating and re contacting the deferred donors will help to maintain the adequate donor pool.

Conclusion

Our study showed that majority of deferrals were due to low hemoglobin and ratio of female deferral was more compared to male deferral. Donor deferrals can be reduced educating donors regarding eligibility criteria well before blood donation. Studying the profile of donor deferral helps in identifying common temporary deferral reasons in that region, which should be targeted to improve the precious donor pool.

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