International Journal of Science and Research (IJSR)
ISSN: 2319-7064
Impact Factor 2024: 7.101

Analysis of Blood Donor Deferral Patterns and their Underlying Causes in a Multispeciality Hospital in Guwahati, Assam

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Abstract: ***Introduction: Blood and blood components play an indispensable role in the healthcare sector. But one of the major challenges is the appropriate selection of a healthy blood donor. A standard and stringent selection criterion ensures that only healthy blood donors are allowed for donation to prevent transfusion of any transfusion transmitted infections into the recipient. Identification of the various reasons behind donor deferral will help the healthcare workers in spreading awareness among the general population regarding safe blood donation practices. Methodology: The current study was a Descriptive study that was conducted in a tertiary care hospital in Guwahati, Assam. Data was collected from all the prospective donors who came in the blood centre of our 155 bedded super speciality hospital. The period of study was from May to Oct 2024. Census sampling was done to collect data. Results: In total of 944 people registered for blood donation. 46 interested donors were disqualified from blood donation. In our study, majority of the registered donors belonged to Male gender (902/944; 95.5%). The rate of deferral rate among all the registered donors was 4.87%. the most common reason during the study came out to be due to low haemoglobin (Hb<12.5g/dl) consisting of 60.8%. Conclusion: From the current study it can be concluded that it is very essential to devise effective strategies which will help to increase the awareness regarding voluntary blood donation. Identification of various causes behind donor deferrals will help in preparation of effective strategies for voluntary donation drives. Working against the reasons behind temporary deferral will significantly improve the donor pool.***

Keywords: Apheresis, Voluntary and Replacement donor, suspected professional donor, Transfusion transmitted infections

1. Introduction

In the human body, blood and blood components play a very major role. It can be easily said that blood is a major component necessary for human survival. On an average annually transfusion of red blood cells(RBCs) totalling around 85 million units are safely completed globally. [1] In any hospital setup, one of the important clinical procedures is transfusion of blood and various blood products. It is an indispensable component of modern treatment protocols. It has proved to be a life-saving intervention. Whether it is for patients undergoing any surgery or receiving treatment to compensate massive blood loss, transfusion of blood and blood products have been a lifesaving process in the modern healthcare. Ensuring adequate supply of blood and blood components is still a challenge for the healthcare industry. Shortage of quality blood and blood components is a common problem across the healthcare sector.

It is wonderful fact that one unit of blood donation can be beneficial for three different patients as one unit of whole blood can be processed into three different units of blood components. To ensure constant availability, the whole blood donor selection and donation process plays a major role. All actively functional blood centres has to assure the eligible donors that blood establishments care for their health and wellbeing. For selection of a clinically healthy donor, a medical screening procedure set by national guidelines is followed which comprises of multiple questionnaire and a standard physical examination. By focussing on voluntary blood donors can help in meeting the ever growing demand of donations despite decrease in the plethora of donors. [5,6] It is imperative to ensure that the collection procedures do not raise any risk factors for neither the recipient nor the donor. [9]

Good health care delivery demands presence of an efficient blood transfusion service. To achieve this a standard, follow up of donor deferral criteria's [13] , strictly following the screening of prospective donors to rule out any possible transfusion transmissible infections [14,15] and any other dangerous habits. Anyone who comes for donation is known as donor. All the donors can be categorized into either replacement donors or voluntary donors. WHO recommends that as much as possible, voluntary blood donation should be the preferred way of blood collection. The challenge in front of healthcare society is to solve or minimise donor deferrals as much as possible. Deferrals can be divided based on the duration of deferral into temporary or permanent. [16]. The causes behind temporary deferrals might be low haemoglobin, low haematocrit, intake of antibiotics, recent alcohol intake etc, while the term permanent deferral means that the donor is barred from future donations forever.

By this study the aim is to determine the commonly seen rate of deferral and also the reasons of deferral in a NABH accredited Multispecialty hospital in Guwahati, Assam. The current study was carried out with the objective to determine the pattern of donor deferrals and the various types of donor deferrals in one of largest tertiary care healthcare facility in North East India & its comparison with comparative studies from India & abroad. It will help us in devising region specific strategies to tackle and prevent the loss of such an important human resource.

2. Materials & Methods

A Descriptive study was done from the state of the art transfusion centre in a NABH accredited Multispecialty hospital in North East India among all the donors (both Voluntary & Replacement donors) who were deferred during the study period from May 2024 – Oct 2024. Being one of the foremost multispecialty hospital in the Northeast region, this setup caters to patients from all over the Northeast region and provides a diversity in the types of potential blood donors it provides its services. Census sampling technique was employed for the sample selection. All potential donors who came for blood donation and were deferred from blood donation due to any physical or clinical shortcoming were included in the study. These were only voluntary and replacement donors.

Under exclusion criteria's, all Suspected Professional donors & Apheresis donors were not included in the study. Suspected professional donors carries the risk of leading high risk behaviours so they were not included in the study.

All potential donors filed up a NACO (National AIDS Control Organization) standard questionnaire during the pre-donation medical screening. The questionnaire form was used to collect the data sets. This form was filled both by the potential donor and also remarked by the clinical team about the pre donation clinical parameters of the registered donor. All donors coming to Blood centre of our tertiary care hospital were counselled before donation, informing them about blood safety and acceptable blood donation criteria. Once they registered for donation, they were screened by Blood centre Medical Officers. Donors were also assessed on some clinical parameters like haemoglobin, blood pressure, weight etc. Donors were assured of the confidentiality of information.

Haemoglobin (Hb) of all donors were checked by the HemoCue Machine. The minimum level of Haemoglobin for accepting any donor was 12.5g/dl. All those with haemoglobin less than 12.5g/dl were termed as anaemic and were deferred from blood donation.

Some Rules were also followed to determine eligibility –

1) Age group should be between 18-65years
2) Weight should not be less than 45kgs
3) Haemoglobin should be minimum 12.5g/dl.
4) Temperature and pulse should be normal
5) Blood pressure should be within the acceptable range.
6) Donor should be informed everything in detail and a written informed consent has to be taken from the donor.
7) No alcohol in the prior 72hours
8) There should not be history of ongoing infections or any ongoing medications for any pathological condition.
9) There must not be any exchange of monetary benefit or any kind of gift items to the donor from the recipient for donating blood.
10) Any donor who was suspected to be professional donor were immediately rejected from donation.
11) Any of the female donors should not be having their menstrual cycle on or immediately before the donation day.
12) All the deferred cases would be subjected to further tests to ascertain any underlying cause. The deferred donors' data would be analysed statistically.

Microsoft excel software was used for data analysis. Descriptive statistics was being used for explanation and getting an overview of the data. P-value less than 0.05 was kept as level of significance. Microsoft excel and word were used for preparing the tables and graph**s.**

3. Results

In total of 944 people registered for blood donation. 46 interested donors were disqualified from blood donation (Table 1). In our study, majority of the registered donors belonged to Male gender totalling 902/944; 95.5% (Table 2). The rate of deferral rate among all the registered donors was 4.87%. the most common reason during the study came out to be due to low haemoglobin (Hb<12.5g/dl) consisting of 60.8% (Table 3).

Table 1: Incidence rate of blood donor deferrals

	Number	Percentage (%)
Total registration	944	100
Deferral	46	4.87

From the study It was also observed that majority of the deferrals occurred in the age group 31-40 years around 36.9% whereas second most common age group which showed deferrals was in the age group 18-30 years amounting to 30.43%.(Table 4)

Table 2: Gender based classification of Registered donors

Gender	Number	Percentage
Male	902	95.56%
Female	42	4.44%
Total	944	100

Table 3: Classification of deferrals based on Reason behind deferrals

Reason of Deferral	Number of deferral	Percentage (%)
Low Haemoglobin	28	60.8%
Hypertension	04	8.69%
Low Blood pressure	03	6.52%
High Haemoglobin	03	6.52%
Low weight	02	4.35%
Skin Disorder	03	6.52%
Menstrual cycle	02	4.35%
Allergy(Asthma)	01	2.17%

Table 4: Age wise classification of deferrals

Age Group	Deferrals	Percentage (%) of total deferrals
18-30 years	14	30.43%
31-40 years	17	36.9%
41-50	12	26.08%
51-60	03	6.52%
Total	46	100 %

4. Discussion

The present study was a hospital based descriptive study and was undertaken to find the incidence of donor deferral and also to find the reasons behind the donor deferrals among all the registered donors who were found clinically ineligible to

donate in a tertiary hospital in Northeast India. During the study it was observed that a total of 944 people registered for blood donation. Out of these, 627 (66.45%) were voluntary donors and 315 (33.5%) were registered as replacement donors. Dr. Tanya Sharma et al. (2013) in North India, Sneha Patel et al. (2015) in South Gujrat & Surendra Kaju et al. (2022) in Nepal had also reported similar findings where majority of the donors where voluntary donors at 72.7%, 97.5% and 58.8% respectively. The presence of 33.5% of all the donors as replacement donors may be attributed to the lack of motivation and awareness among the general population to turn up as voluntary donors. It also points towards the need to increase the motivation among the people towards blood donation and which requires greater involvement of both government and non- government players.

It observed that of all the 944 registered donors, most of the donors were of Male gender,902(95.56%). Only 42(4.44%) donors were of female gender. Previous studies like those done by E. Sabari Priya (2019) in South India, S. Mohammed (2018) , Henshaw Ucchechi okoroiwu et al. (2019), Nisha Attri et al. (2019) in Mumbai, Nehal Ahmed et al. (2020) in Delhi, Surendra Kaju et al. (2022) in Nepal had also reported similar findings in their studies where majority of the donors were from Male gender. This high portion of donors being of male gender shows the lack of awareness among the female population to come forward for blood donation. it points towards increasing the awareness among the female population about the benefits of blood donation and motivating them to come forward for voluntary donations.

During the study it was observed that out of the total 46 deferred donors, most of the deferrals, 44 (95.6%) were temporary deferrals and only 2 (4.34%) were deferred on a permanent basis. Similar findings were observed in studies done by M.Vimal et al.(2016) in South India, Nisha Attri et al. (2019) in Mumbai, E.Sabari Priya (2019) in South India, Nehal Ahmed et al. (2020) in Delhi & found in their studies that majority of the deferrals to be Temporary deferrals. Majority of donors being temporary deferrals give us an opportunity to educate and regularly follow up as temporary deferrals so that they can be converted into voluntary donor population.

During the study, all the reason of deferrals was noted and it was observed that the most common reason of deferral was instances of low haemoglobin among the deferred population, 28 cases (60.8%) followed by cases of hypertension in the second place, 04 cases (8.7%) and closely followed by cases of Low blood pressure and High Haemoglobin, 03cases (6.5%) both. Studies done by Jitendra Patel (2015) in South Gujrat, M.Vimal et al.(2016) in South India, Asha Purohit et al.(2016) in Gujrat, Nehal Ahmed et al. (2020) in Delhi and Dr.Ankur Sharma et al. (2022) in Uttar Pradesh similarly found that among the reasons of deferrals, the most common reason was Low haemoglobin. The presence of anaemia among majority of the deferrals undermines anaemia's presence (majority iron deficiency) among the population. The multiple probable causes might be the lack of balanced nutrition among the general population, presence of worm infestation and frequent blood donations and points towards the need to increase the awareness of the general population towards the need of balanced nutrition and prevention measures towards worm infestation.

5. Conclusion

Blood donation is the best gift we can give to someone in dire need. In a large country like ours where the Health system is still evolving, if the healthy population of our great nation becomes aware and sensible towards the vast benefits of blood donation, we can easily tackle the issue of shortage of supply of blood or blood components for those who are in need. But lack of awareness about safe blood donation practices is a challenge in front of the medical community. Deferral of blood donors result in potential donors losing their motivation which ultimately affects the availability of blood and blood products. In our study we came to men were more in number when it comes to blood donation. The motivation level among the male population is higher. Women are still lagging behind when it comes about blood donation. Many factors can be behind this and a study can be done to know the reasons behind the less turnout of female donors in the society

This study has helped in gaining knowledge about the commonly occurring reasons of deferral. We came to know from the study that low haemoglobin, clinically known as anaemia came out to be the most common reason of deferral during the study. Many of the reasons can be resolved with proper corrective action against the underlying cause. When the people are made aware about the various possible reasons which can contribute to the prospective blood donor being deferred from blood donation, it can help in many ways. This knowledge can be used to plan safer blood donation practices and to increase the awareness among the general population. The inputs from the study can be used to motivate the young and eligible generation to come forward and donate blood by avoiding the common deferral reasons. From the current study it can be concluded that it is very essential to devise effective strategies which will help to increase the awareness regarding voluntary blood donation and also decrease the donor deferrals among the potential blood donors, identification of various causes behind donor deferrals and motivating the general public about the importance of voluntary blood donation towards achieving a healthy society is very important.

Effective and efficient strategies will make sure that valuable blood donors are kept aware of the precautions they must maintain which will help in ensuring that recipients receive safe and quality blood and blood components. By having a knowledge of the various causes behind temporary donor deferrals will also help in generating awareness among the public so that such causes can be avoided.

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