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ORIGINAL RESEARCH

Demographic status and trends of blood donation among population of twin border districts of Northern India- a gap to be bridged for safer blood supply

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Abstract

Introduction: Blood transfusion services plays a pivotal role in reducing the mortality rate of a particular health facility. With the rise in life expectancy, traumatic accidents, blood diseases, cancers, and obstetrical complications, blood transfusion has become an essential management approach for numerous life-threatening conditions. However, level of awareness, attitude and beliefs towardsblood donation may affect the number of blood donations that can hamper the overall blood transfusion services in that region.

Aims and objectives: To assess the trends of blood donation over period of time and to investigate the impact of demographic factors on blood donation.

Material and methods: A retrospective, cross-sectional study of records was conducted over a period of five year with effect from April 2019 to March 2024. Blood donors included were those who had donated blood inthe blood centre of Government Medical College and Associated Hospital Rajouri, Jammu and Kashmir, India whether as outdoor or indoor voluntary blood donors or as replacement blood donors. Data was analysed and expressed as percentages and presented in diagrammatic and tabulated form.

Results: From April 2019 to March 2024, a total of 9277 blood units were collected. Out of these, 2085(22.4%)were voluntary blood donors and 7192(77.5%) were replacement blood donors. Majority were male donor(99.15%)and belongs to urban areas(83.88%).The maximum donors were in the age group of 31 to 40 years (46.88%). The trend demonstrates an increase in blood donation over these years in such a way that it has increased from 10.1% in 2019-20 to 32.8% in 2023-24. The major factors which led to increase in the number of blood donations were outdoor blood donation camps and awareness campaigns, counselling of patient attendantsin the hospital and awareness through social media. The proportion of voluntary regular and repeated donors was increased from 14.2% to 33.33% and replacement

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blood donors was increased from 8.99% to 32.64% and was considered clinically significant (p-value <0.05).

Conclusions: Majority of our area is hilly and rural area and many people still thought that blood donation hampers one's immunity or only males can donate blood. There should be campaigns, rallies, awareness through media etcto spread awareness about the benefits and need of regular voluntary blood donation.

Key words: Blood donation, Anxiety, Thalassemia, Haemoglobin

Introduction

Blood transfusion is an important concern for the society, as it is is the lifeline for trauma patients, patients undergoing major surgeries, patients of hematological malignancies and blood illnesses such as thalassemia , sickle cell anemia and hemoglobin deficiency due to other causes [1]. Blood donation and transfusion of blood are very crucial for the functioning of healthcare system[2]. Blood donation decision making has been investigated world-wide for decades to understand the process better to increase blood donation , safety, recruitment and retention and diversity of the donor pool[2]. Quality as well as quantity of blood depend first of all on the willingness to donate and the honesty of the donors about their health. An altruistic motivation alone, which is not triggered by some material incentive, does not in all systems guarantee a sufficient quantity of safe blood. Both the altruistic as well as the reimbursement-oriented donor's willingness and honesty have to be guarded by sound practice in bloodbanking and adequate public control within a legal framework which reflects the vital role of blood supply[3]. Blood donation anxiety is a major psychological obstacle for blood donation. However, it remains unclear what the mechanism underlying the relationship between anxiety and blood donation intention is and what factors will buffer the negative effects of anxiety[4].Anxiety can be in any form whether it was losing blood ,needle prick, low haemoglobin or weakness.

Blood donors are of three types, Replacement or family donors, voluntary non remunerated blood donors and paid donors. Voluntary blood donation by healthy donors has been promoted by the World Health Organization (WHO) to ensure the availability of safe blood. Difficulty in the recruitment of donors and their retention is a problem faced in most populations.

Blood cannot be manufactured in factories .The only source of blood is human beings and it is not stored for prolonged periods; neither could it be prepared synthetically . Regular blood donation by healthy citizens is essential to meet the demand for this life-saving element in any society. According to the World Health Organization, blood donation by 1.0% of the population is generally sufficient to meet the population's safe blood requirements [1].

Blood centers are facing rise in the demand of the blood along with assurance of quality of donated blood [5]. This problem can only be solved through donations by voluntary, unpaid sources. WHO policy was to achieve 100% non-paid donations by the year 2020 [6].

Although the trend of voluntary blood donation’s has increased considerably in last decade but many previous reports have shown that people have insufficient knowledge, diverse attitude and many misconceptions about the blood donation [7]. Increase in the level of awareness and positive attitude towards blood donation is the highest priority of all blood transfusion centers. Recruitment and retention of donors to sustain and increase the donor base are critical for blood banks [8].The present study was conducted to assess the trends of blood donation over period of time and to investigate the impact of demographic factors on blood donation.

Material and methods

A retrospective, cross-sectional study of records was conducted over a period of five year with effect from April 2019 to March 2024. Blood donors included were those who had

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donated blood in the blood centre of Government Medical College and Associated Hospital Rajouri, Jammu and Kashmir, India whether as outdoor or indoor voluntary blood donors or as replacement blood donors.Donors who fulfills the inclusion criteria specified by Drugs and Cosmetics Act, 1940, rules 1945 were screened and selected and written informed consent was taken from them[9]. Data was analysed and expressed as percentages and presented in diagrammatic and tabulated form.

Results

From April 2019 to March 2024, a total of 9277 blood units were collected. Out of these, 2085(22.4%) were voluntary blood donors and 7192(77.5%) were replacement blood donors. Majority were male donor(99.15%) and belongs to urban areas(83.88%). The maximum donors were in the age group of 31 to 40 years (46.88%). The trend demonstrates an increase in blood donation over these years in such a way that it has increased from 10.1% in 2019-20 to 32.8% in 2023-24. The major factors which led to increase in the number of blood donations wereto help the family or relatives , outdoor blood donation camps and awareness campaigns, counselling of patient attendants in the hospital and awareness through social media. The proportion of voluntary regular donors was increased from 14.2% to 33.33% and replacement blood donors was increased from 8.99% to 32.64% and there was increasing trends of overall blood donation. The association between the donation and factors impacting blood donation was considered clinically significant as p-value was less than 0.05. Out of 9277 blood donors, 7192 were replacement blood donors who has donated blood for their relatives(77.5%) and 2085(22.4%) were voluntary non remunerated blood donors. Table 1 and figure 1 and 2 shows the year wise trends of blood donation over the years.

Table 1: Year wise trends of blood donation.

Years	Voluntary blood donation	Replacement blood donation	Total
2019-2020	298(14.2%)	647(8.99%)	945(10.1%)
2020-2021	133(6.37%)	1010(14.04%)	1143(12.3%)
2021-2022	608(29.16%)	1292(17.96%)	1900(20.4%)
2022-2023	351(16.83%)	1895(26.34%)	2246(24.6%)
2023-2024	695(33.33%)	2348(32.64%)	3043(32.8%)
Total	2085(22.4%)	7192(77.5%)	9277(100%)

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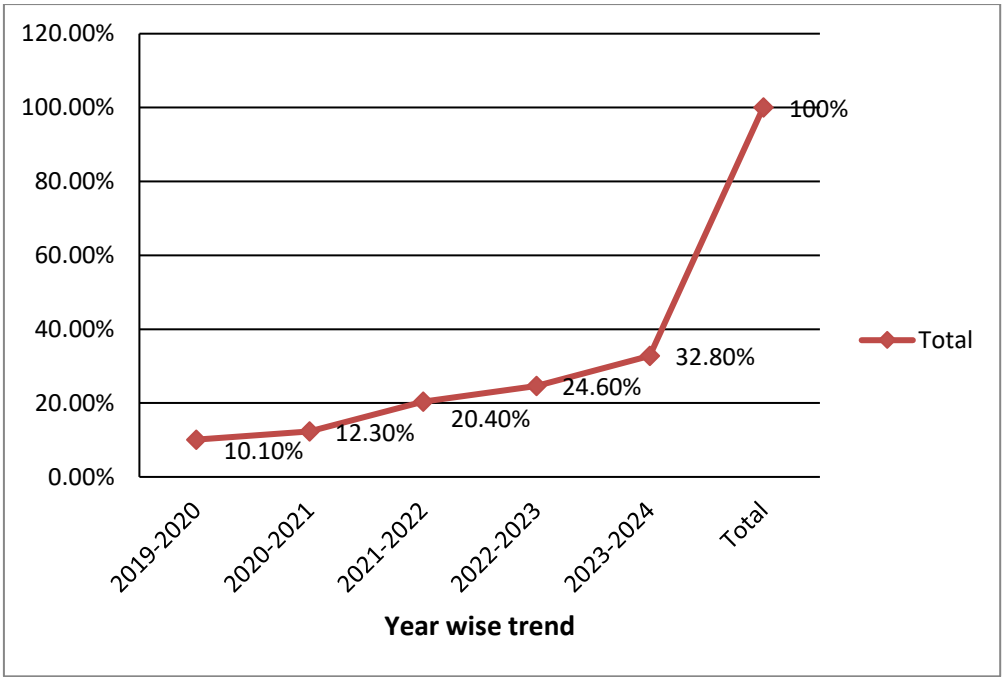

Figure 1:- Year wise trend of blood donations

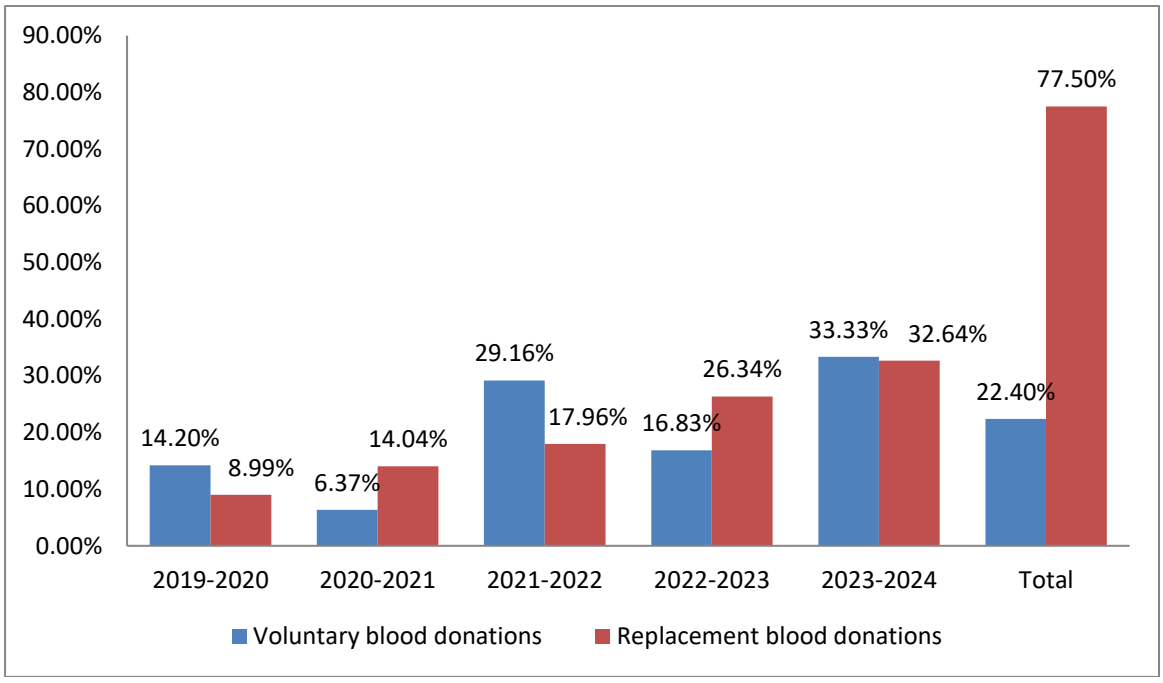

Figure 2:-Year wise Voluntary blood donations and Replacement blood donations

Male blood donors was more than the female donors and their number was 9198(99.14%) and the female donors were only 79 (0.85%) and maximum donors were in the age group of 31 to 40 years 4349 (46.88%) followed by 18-30 years 3180(34.27%) and 41-65 years 1748(18.84%). People residing in urban and rural areas were 7781(83.88%) and 1496(16.12%)respectively. With reference to economic status, based on the occupation of blood donors 5301(57.1%) had per month family income of 25000 or more.

3721(40.10%) donor population didn't know their blood groups and about the screening of their blood. Study results showed that practice of unpaid voluntary donation was very limited as maximum donors were replacement donors either from family members or friends/relatives as shown in Figure 1.

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Main motivational factors behind donation were to help family or friend (70.1%) and blood donation awarenesscampaigns (15.0%)(Figure 3). There was significant relation of residential area with motivational factors to donate blood; people belonging to urban and rural areas donate blood to help family and friends ($p < 0.005$)

Table 2: Motivation factors behind blood donations

Parameters	Numbers of blood donors	Percentage (%)
To help family and friends	6510	(70.1%)
Blood donation awareness campaign	1392	(15.0%)
Spiritual satisfaction	537	(5.78%)
1 day casual leave to government employees	431	(4.64%)
In hospital councelling	221	(2.38%)
Personal history	93	(1.00%)
Free screening	80	(0.86%)
Financial benefits	13	(0.14%)

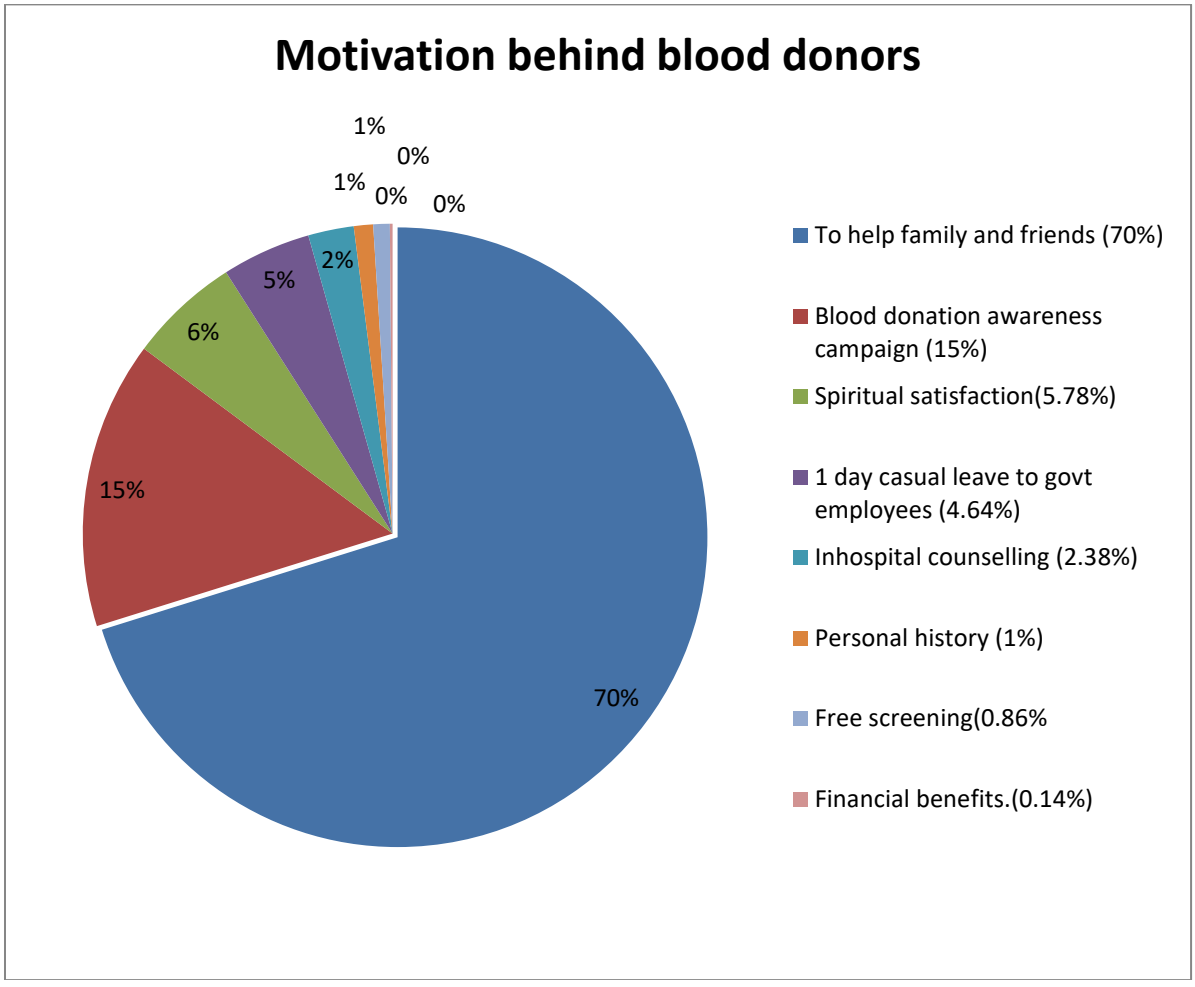

Figure3:- Motivation factors behind blood donations.

Discussion

The present study conducted on the blood donors revealed that with the passage of time there was upward trend of blood donation with the slight decline in voluntary blood donation in 2020-21(6.37%) and 2022-23(16.83%). The inclination towards donation was significantly less in females as compared to males. This might be because of weakness, low haemoglobin,

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fear of needle prick, medically unfit etc. Similarly the place of residence,and economic status of the family had strong impact on donation practices. The results of the current study are comparable with other national and international studies conducted in Iran which showed an increasing trends of blood donation over the time[10]. The study conducted in Karachi and Malaysia showed that most of the blood donors were the males [11,12] comparable with our study. Another interesting finding of the study that people residing in urban areas were more likely to donate blood was also comparable with a study conducted in North India where maximum blood donors resided in urban areas (75%) [13]. The findings of present study that less than half of the donors were not aware about their blood groups were found similar with another study where only 46% participants had high knowledge score [14].

The results of our study showed that people were motivated by blood donation campaign through social media and helping the friend or family were the main motivational factors for donation. The results are comparable with cross sectional surveys conducted in China and India where main purpose of donation was to help the needy ones [15,16]. A Tanzanian study revealed that major factors inclining the university students for donation were voluntarism and opportunity of HIV screening [17].

The major obstacles in the way of blood donation in our area are socio-cultural obligation with additional fears of weakness, anemia, contracting infection, infertility, not having enough blood, needle prick, medically unfit, family constraints, and sometimes even unknown fears associated with blood donation. These barriers can be overcome by doing proper counselling and screening, awareness through social media, counselling of women regarding the preventive care associated with blood donation so that they can make aware their families, television displays regarding benefits of blood donation in hospitals etc. These steps must be initiated to promote the voluntary blood donation for safer blood supply so that the gap can be bridged and blood will wait for the patient not the patient will wait for the blood.

Conclusion

Lacunae were identified in thestudied population regarding blood donation. Specific awareness drives may help overcome these barriers to blood donation. Blood donation campaigns should be done to increase the awareness of the populations regarding the life-saving potential of safe blood and its need for various blood disorders like thalassemia, haemophilia, sickle cell anemia etc and acute emergency conditions.

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