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"To Donate or Not to Donate": A Multi-center Comparative Analysis of Donor Attitudes on Blood Donation in COVID versus post COVID Era

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ABSTRACT

Background: The COVID-19 pandemic severely impacted blood donation services worldwide, including in India. Travel restrictions, fear of infection, and new deferral guidelines contributed to a significant drop in voluntary blood donations. Understanding the attitudes and motivations of repeat blood donors (RBDs) during such a crisis is essential to maintain a stable blood supply.
Aim: To assess the attitudes and motivations of repeat blood donors during the COVID-19 pandemic in India and compare them with their behavior during the pre-COVID period.
Materials and Methods: A cross-sectional study was conducted using an online questionnaire distributed across India via email, instant messaging, and social media platforms. The survey collected demographic data and assessed donor attitudes in three categories: positive, negative, and neutral—both during the COVID-19 and pre-COVID periods. A total of 596 eligible RBDs were included in the final analysis. Chi-square tests were used to compare responses based on age, gender, residence, education, donation frequency, and history of COVID-19 infection.
Results: Of the 596 RBDs, 82.21% were aged 18–35 years, 88.42% were male, and 52.35% resided in urban areas. Education level, residence, donation frequency, and prior COVID-19 infection were significantly associated with changes in donor attitudes across various questions. Education level showed a strong influence on both positive and negative attitudes ($p < 0.01$). Urban donors exhibited more positive attitudes and fewer negative perceptions compared to their rural counterparts during the pandemic. Donors with previous COVID-19 infection showed increased willingness to donate again.
Conclusion: The COVID-19 pandemic altered donor attitudes and motivations, with educational status, residence, and prior infection playing significant roles. Targeted awareness strategies and donor engagement based on these factors may help sustain blood donation during future health emergencies.

Keywords: COVID-19, blood donation, repeat blood donors, donor motivation, donor attitude, India, pandemic impact

INTRODUCTION

The World Health Organization (WHO) reported the novel coronavirus (COVID-19) outbreak as a public health emergency of international concern on January 30, 2020, and it was declared a global pandemic on March 11, 2020.[1] It has significantly affected blood transfusion and collection activities, leading to widespread disruption in both the supply and demand for blood and its components. Initial observations indicate that many European countries and regions worldwide have witnessed declines in whole blood donations, despite the implementation of enhanced safety protocols and extensive public outreach efforts aimed at sustaining donation rates. [2-8] Studies conducted in Hong Kong and China have indicated that anxiety and concerns about contracting COVID-19 served as barriers to blood donation. [7,9] This aligns with the results of previous studies conducted during the outbreaks of SARS and avian flu [10,11] It has resulted in the collapse of the healthcare system in many countries including India and has created a worldwide blood crisis [12]. A lockdown was imposed to decrease the infection rate, adding to the decreased blood component supply [13,14].

NGOs (Non-Government Organizations) require proactive social actions by individuals–especially during a crisis. Indeed, in countries like India individuals are usually willing to help each other during a crisis. However, a pandemic like COVID-19 is remarkably different to other crises. First, contrary to other crises, it has the potential to affect every individual, second their sense of personal moral obligation to help others might decrease when they are affected by said crisis. Third, COVID-19 is extremely transmissible and a risk to one's own, and other's health which poses exceptional challenges to governments.[15]

To ensure recipients' and donors' safety, new guidelines relating to blood donation during COVID-19 were issued by various governing bodies like WHO, the Association for the Advancement of Blood & Biotherapies (AABB), and FDA (Food &Drug Administration). [16] Similarly, in India, a stringent donor screening procedure with new donor deferral guidelines came into effect by the National Blood Transfusion Council (NBTC), State Blood Transfusion Council (SBTC), Ministry of Health and Family Welfare, Government of India, which increased the donor deferral period from 7 to 28 days for donors with flu-like symptoms.[17] This further decreased the donor pool. Due to a lack of blood donors and a shortage of healthcare workers to collect the blood, blood transfusion services were severely affected. Large interruptions to donation activity may have harsh consequences for healthcare systems and should be avoided by careful tracking of the supply and demand of blood during these uncertain times. [18] It is therefore essential to gain an initial perspective on the impact of COVID-19 on blood donors and an understanding of the key aspects of their motivation to donate (or not donate) during this crisis. This study aimed to provide early insight into blood donation activity across India and the motivation of blood donors to donate or not to donate during COVID-19. We do so to understand what is driving changes in donation behavior and which policies might help to restore donation levels, and to compare donor attitudes related to blood donation in COVID and post-COVID times.

MATERIALS & METHODS

The Institutional Ethics Committee (IEC) at a tertiary care teaching hospital from western India provided ethical permission for this study, and blood donors from different parts of India provided written (electronic) informed consent before it could be carried out.

Study design:

This study used an online survey-based questionnaire to conduct a cross-sectional study of blood donors.

Study Population:
A Voluntary non-remunerated Repeat Blood Donor (RBD) who has donated blood either in the blood centre or blood donation camps from all over India was included in the study. An RBD is an individual who willingly contributes blood, plasma, or cellular components without receiving monetary compensation or any form of remuneration that could serve as a substitute for currency.[19] The written or electronic informed consent was obtained from all the donors who participated in the study. The inclusion criteria for participants were RBD with an age of more than 18 years and were willing to give written consent. The exclusion criteria for the participants were suspected Professional/Paid donors.

Survey mode:
The questionnaire was launched online after obtaining approval from the Institutional Ethics Committee. The following were the modes of circulation used:

a) E-mails
b) Instant messaging services like WhatsApp, telegram
c) social networking sites. (viz. Facebook; LinkedIn; Twitter, etc.)

Duration of the survey:
From the day of its online launch on the aforementioned platforms, the survey remained open for participation and submission of replies until the required sample size was reached. After that, the survey was blocked and no more answers were taken. The link to "Submit another response" at the end of the questionnaire was disabled to prevent repetitive responses to the questionnaire from being submitted by anyone.

Questionnaire flow:
The survey was painstakingly created from scratch and validated for the RBD. Donor informed consent was signed before the start of the questionnaire. The questionnaire was broken up into two sections. Demographic data and past blood donations were included in the first section, the second section questionnaire includes COVID-19 donors' attitudes about blood donation. Donor attitude questions are divided into three parts, the first five questions are related to positive attitudes the next four questions are about negative attitudes and the last three questions are about neutral attitudes toward blood donation as depicted in Table 1 Responses from another cohort were recorded parallelly where the responders would answer as if they were asked the same questions in the pre-covid era.

Data storage, management & security:
The data management was done remotely and stored in a cloud storage facility owned by the principal investigator in a secure manner with limited access and password protection.

STATISTICAL ANALYSIS

The statistical analysis was done by using MS Excel with Statistical Package for the Social Sciences (SPSS) version 23.0 (SPSS, Inc., Chicago.IL, USA). Categorical variables were represented as frequencies and percentages. The chi-square analysis was performed for qualitative comparison among different donor deferral categories during the COVID period with the pre-COVID time. A p-value less than 0.05 was considered significant at a confidence interval (CI) of 95%.

RESULT

During the study period from 20th December 2021 to 20th March 2022, the survey questionnaire was sent to approximately 7800 whole blood donors electronically. Out of 7800, only 1616 donors responded to the donor Questionnaire survey. Out of 1616, 45were suspected to be professional donors and 975 were first-time blood donors, which were excluded from the study. The remaining 596 repeat blood donors were included in the study and were assessed for fear factors and attitude factors related to blood donation

during the COVID-19 pandemic and the pre-covid era.

Donor attitudes based on different age groups, gender, residence, educational status and donation status, are depicted in Table 2. Out of 596 participants, 490(83.21%) donors were from the 18-35 years of age group, and 106(17.79%) were in the more than 35 years of age group. 527(88.8%) were males and 69(11.2%) were females. Furthermore, 284(47.65%) participants were from the rural population and 312(52.35%) were from the urban background. Based on education, the majority of the participants were categorized as graduate and postgraduate391(65.6%), while below graduates were 205(34.4%) in number. As far as donation frequency is concerned, 366(61.4%) donors were those who donated blood 2-5 times in their lifetime, and 230(31.6%) of the donors were those who donated blood more than 5 times (Table 2).

Table 3A indicates the association between the demographic parameters and positive attitude questions 1 to 5 and Table 3B indicates the association of the demographic parameters with negative and neutral attitude questions 6 to 12.

Positive Attitude Factors (Questions 1 To 3):

For all the questions about positive attitude, the differences between responses of all the blood donors of all age groups were not statistically significant (p-value>0.05). The difference in the responses of urban and rural populations was statistically significant for question 2 only in COVID time (p-value<0.05).The difference in responses of donors for all the questions was statistically significant irrespective of their educational status in both COVID as well as post COVID times (p value<0.01).The same was true for the frequency of blood donation in COVID and post- COVID times (p value<0.05).In donors who have had the infection, the difference in responses for question1 was statistically significant only in post COVID time (p value<0.05) whereas it was significant for question2 only in COVID time (p value<0.05) and it was significant for question 3 in both eras.

Negative Attitude Factors (Questions 4 To 7):

For all the questions related to negative attitude, the differences between responses of all the blood donors of all age groups were not statistically significant (p-value>0.05). The difference in the responses of urban and rural populations was statistically significant for questions 5 and 7 in post-COVID time (p-value<0.05). In contrast, this difference was statistically significant only for question 4 in COVID time (p-value<0.05). The difference in responses of donors for all the questions was highly statistically significant irrespective of their educational status in post-COVID time (p value<0.01). However, this difference was statistically significant only for questions 5 and 6 in COVID times (p value<0.01). The difference in the responses regarding the frequency of blood donation was statistically significant for question 4 in both COVID and post-COVID times and for questions 5 and 6 only in COVID time (p-value<0.05). In donors who have had the infection, the difference in responses for questions5 and 7 was statistically significant only in post -COVID time (p value<0.05). However, this difference was statistically significant for question 4 in both times (p value<0.05).

Neutral Attitude Factors (Questions 8 To 10):

For all the questions related to neutral attitude, the differences between responses of all the blood donors of all age groups were not statistically significant (p-value>0.05). The difference in the responses of urban and rural populations was statistically significant for all the questions (8 to 10) in post-COVID time (p-value<0.05). In contrast, this difference was statistically significant only for question 8 in COVID time (p-value<0.05).The difference in responses of donors for all the questions was statistically significant irrespective of

their educational status in both post-COVID as well as COVID times (p value<0.01).The same was true for the frequency of blood donation in post-COVID and COVID times (p value<0.05).In donors who have had the infection, the difference in responses for questions 8 and 9 was statistically significant in post-COVID time (p value<0.05). However, this difference was statistically significant only for question 8 in COVID time (p value<0.05).

Table 1: Donors' Attitude towards blood donation during COVID-19

S.N.	Attitude factors	Agree	Disagree	Not sure
POSITIVE ATTITUDE FACTORS				
1	I am available for blood donation anytime	389(65.2%)	167(28.0%)	40(6.8%)
2	I would encourage people around me to donate blood	380(63.8%)	154(25.8%)	62(10.4%)
3	I would donate blood in the blood Centre where masks and sanitizer are available for all staff and blood donor	566(94.9%)	30(5.1%)	0(0%)
	NEGATIVE ATTITUDE FACTORS			
4	I have been in close contact with patients having respiratory problems, still, I can donate blood	492 (82.6%)	89(14.9%)	15(2.5%)
5	I will donate blood only for my relatives	218(36.6%)	349(58.5%)	29(4.9%)
6	I believe that blood donation is not safer in hospitals as compared to outdoor blood donation camps	279(46.8%)	297(49.8%)	20(3.4%)
7	I can go to a blood bank without a facemask to donate blood	91 (15.2%)	500(83.9%)	5(0.9%)
NEUTRAL ATTITUDE FACTORS				
8	If I am having mild breathing problems and I had to donate blood because of peer pressure e I would later call and inform the blood Centre	500(83.9%)	86(14.5%)	10(1.8%)
9	I had breathing related issue 1 month back and I am fine now so I can donate blood	231(38.8%)	346(58.0%)	19(3.2%)
10	I should disclose fever or any respiratory problem correctly before blood donation	541(90.8%)	46(7.6%)	9(1.6%)

Table 2: Descriptive presentation of demographic variables

Characteristics		**n = 596**	**In %**
Age	≤ 35	490	82.21%
	> 35	106	17.79%
Gender	Male	527	88.42%
	Female	69	11.58%
Resident	Urban	312	47.65%
	Rural	284	52.35%
Educational status	Graduate & Above	391	65.60%
	Graduate & below	205	34.40%
Donation frequency	≤ 5	366	61.40%
	> 5	230	38.60%

Table 3A: Association between demographic parameters and positive donor attitude questions

Characteristics			**Q.1**	**Q.2**	**Q.3**
Age	During covid	≤ 35	0.2488	0.5405	0.6512
		> 35			
	Post covid	≤ 35	0.9304	0.3822	0.7451
		> 35			
Resident	During covid	Urban	0.3474	0.0127	0.1324
		Rural			
	Post covid	Urban	0.145	0.8565	0.0836
		Rural			
Educational status	During covid	Graduate & below	0	0	0.0117
		Above graduate			
	Post covid	Graduate & below	0	0	0
		Above graduate			

Donation frequency	During covid	≤ 5	0	0.0056	0.0001
		> 5			
	post covid	≤ 5	0	0.0019	0
		> 5			
Donor Covid	During covid	Yes	0.3389	0.0098	0.0086
		No			
	Post covid	Yes	0.0155	0.0553	0.0057

Table 3B: Association between demographic parameters and Negative and neutral donor attitude question

Characteristics			**Q.4**	**Q.5**	**Q.6**	**Q.7**	**Q.8**	**Q.9**	**Q.10**
Age	During covid	≤ 35	0.1588	0.0629	0.427	0.9321	0.4745	0.9825	0.5822
		> 35							
	Post covid	≤ 35	0.6204	0.5374	0.8511	0.3633	0.1041	0.4214	0.486
		> 35							
Resident	During covid	Urban	0.0336	0.9079	0.1978	0.9272	0.0233	0.077	0.4889
		Rural							
	Post covid	Urban	0.4497	0.0342	0.3202	0.0315	0.0022	0.0223	0.0094
		Rural							
Educational status	During covid	Graduate & below	0.5639	0.0004	0.0001	0.3552	0	0.0386	0.0132
		Above graduate							
	Post covid	Graduate & below	0	0	0	0	0	0	0.0218
		Above graduate							
No. of times blood donated	During covid	≤ 5	0.0115	0.0002	0.001	0.409	0	0	0
		> 5							
	Post covid	≤ 5	0.0202	0.2872	0.0782	0.3661	0	0	0.0012
		> 5							
Donor Covid	Pre covid	Yes	0.0477	0.1484	0.5022	0.6358	0.0379	0.6566	0.2457
		No							
	During covid	Yes	0	0.0234	0.1061	0.0022	0.0415	0.0364	0.1613

DISCUSSION

Demographic Dynamics and Blood Donation Attitudes:

This study examines the relationship between demographic characteristics and the attitudes of RBDs during the COVID-19 pandemic and pre-COVID times. The predominance of males (88.8%) in the participant pool signifies a notable gender skew, possibly reflecting prevailing trends in blood donation demographics. The age distribution, with 83.21% falling within the 18-35 range, suggests a youth-centric donor base. This demographic alignment is consistent with other studies highlighting the active involvement of young adults in voluntary blood donation initiatives. [20, 21]

Positive Attitude Factors*:*

Positive attitudes toward blood donation, as reflected in the willingness to donate blood and plasma, encouragement of others, and preferences for donation locations, showcase a commendable altruistic inclination among RBDs. The universal willingness to be available for blood donation anytime (65.2%) and the majority expressing the intent to donate plasma for COVID-19 treatment (77.6%) highlight a resilient commitment to voluntary blood donation even amidst the challenges posed by the pandemic.

Urban-rural disparities in positive attitudes, particularly in encouraging others to donate blood during the COVID pandemic, point towards the need for tailored communication strategies. The significant

differences in responses across education levels underscore the role of education in shaping attitudes. This aligns with previous research by M. Giles et al suggesting that individuals with higher education levels are more likely to engage in prosocial behaviours, including blood donation. [22]

Negative Attitude Factors:

Negative attitudes, encompassing concerns about COVID-19 exposure, preferences for donating to specific individuals, and perceptions of safety in different donation settings, provide insights into potential barriers to blood donation. Notably, 82.6% of donors expressed confidence in donating blood despite close contact with COVID-19 patients, emphasizing a commitment to the cause even in challenging circumstances.

Urban populations exhibited distinct concerns, particularly in believing that blood donation is not safer in hospitals compared to outdoor donation camps. Similar findings of fear among blood donors during COVID in the study by Sachdev et al. [23] This scepticism may be rooted in perceptions of infection risk in healthcare settings, urging the need for targeted communication addressing safety protocols implemented in blood donation centres within hospitals.

Neutral Attitude Factors:

Neutral attitudes, gauging responses to hypothetical scenarios and disclosure of health issues, indicate a balanced perspective among donors. The majority acknowledging the need to disclose health issues before blood donation (90.8%) reflects a responsible approach. The study also reveals an interesting dichotomy in attitudes toward donating blood in the presence of mild breathing problems, with a significant proportion opting to inform the blood centre later. This suggests a nuanced approach to health disclosures, possibly influenced by a desire to prioritize public health amid personal health considerations.

Demographic Associations:

Urban-rural dynamics emerged as significant influencers, particularly in questions related to encouraging others to donate and perceptions of safety in donation settings. The varied responses across education levels underline the role of education in shaping attitudes, emphasizing the need for targeted educational campaigns. The impact of donor frequency on attitudes underscores the importance of donor retention strategies. Regular donors, donating 2-5 times in their lifetime, exhibited distinct attitudes compared to those who donated more than 5 times. Understanding the motivations and concerns of different donor categories can inform tailored strategies to engage and retain donors.

COVID-19 Influence on Attitudes:

The study gauged the influence of the ongoing pandemic on blood donation attitudes. Despite demographic variations, positive attitudes remained resilient across age groups. The heightened concerns about safety in hospitals during the pandemic, particularly among those with higher education levels, suggest that trust-building measures and transparent communication about safety protocols are imperative.

Limitations and Future Directions:

While the study provides valuable insights, limitations such as self-reporting bias and the exclusion of suspected professional donors should be acknowledged. Future research could adopt a longitudinal approach to capture evolving trends in donor attitudes, and exploring the impact of socio-economic factors on attitudes could provide a more comprehensive understanding.

CONCLUSION

In conclusion, this study offers a detailed analysis of Repeat Blood Donors' attitudes, providing nuanced insights into the demographics and blood donation behaviours. The positive attitudes prevailing

among donors are commendable, highlighting a resilient commitment to blood donation even in challenging circumstances. Addressing negative attitudes, especially urban-rural differentials and education-related concerns, is crucial for fostering a more inclusive blood donation environment. Tailoring strategies based on demographic details and donor frequency can enhance the effectiveness of blood donation campaigns. The study's findings contribute not only to refining public health strategies but also to fostering a culture of responsible blood donation. As the world grapples with ongoing health challenges, understanding and responding to the attitudes of blood donors become integral to ensuring a sustainable and diverse blood donor pool.

Declaration by Authors

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