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Original Research Article

A comparative study of blood transfusion services before and during COVID-19 pandemic and the challenges faced: retrospective study done at a tertiary care hospital in North Western India

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ABSTRACT

Background: The aim of blood transfusion services is timely and uninterrupted supply of safe blood. SARS-COV-2 pandemic has created the major disruption worldwide at all levels of health care. Announcement of national lockdown by Government of India and Janta Curfew to control the spread of virus has affected blood bank services majorly. Monitoring of supply and demand was done to maintain sufficient blood stocks to support emergency needs. In this article we have compared the blood bank services provided in the year 2019 to how COVID-19 pandemic has affected blood transfusion services in 2020 with reference to blood collection, blood supply and organization of voluntary blood donation camps.
Methods: A retrospective study was carried out in the department of Immunohematology and blood transfusion in a tertiary care hospital in North Western India. In this study blood collection and blood supply data was evaluated retrospectively for 2 years i.e. from January 2019 to December 2020.
Results: Total 89948 blood components were supplied in the year 2019 and 55152 in the year 2020. Total blood collection was 51317 units in the year 2019 and 34151 units in 2020 from voluntary and replacement blood donors. Major decline in blood collection and blood supply was observed in the months of April and May.
Conclusions: COVID-19 pandemic had a negative impact on blood donation and blood supply and thus adversely affected blood transfusion services.

Keywords: Blood donation, Blood supply, Blood components, COVID-19 pandemic, Voluntary donor

INTRODUCTION

The aim of blood transfusion services is timely and uninterrupted supply of safe blood. SARS-COV-2 pandemic has created the major disruption worldwide at all levels of health care. In India till 31st December around 10.2 million cases of COVID-19 were diagnosed and 1.49 lakh deaths have been reported.[1] In Rajasthan around 3.08 lakh cases of COVID-19 were diagnosed and 2696 deaths on record till 31st December.[1] COVID-19 pandemic has affected the blood transfusion services too. Announcement of national lockdown by Government of India and Janta Curfew to control the spread of virus has affected blood bank services majorly. Reduction in blood donations due to less number of outdoor blood donation camps to avoid social gatherings as well as to maintain strict social distancing policies as per government guidelines caused shortage of blood. Sickness of staff and public health affected it adversely. Major challenges experienced were healthy blood donor recruitment, staff safety, inventory and consumable management. So policies were planned for prioritizing the patients in case

of predicted shortage by transfusion professionals. Monitoring of supply and demand was done to maintain sufficient blood stocks to support emergency needs. In this article we have compared the blood bank services provided in the year 2019 to how COVID 19 pandemic has affected blood transfusion services in 2020 with reference to blood collection, blood supply and organization of voluntary blood donation camps.

METHODS

A retrospective study was carried out in the department of Immunohematology and transfusion medicine in a tertiary care hospital in North Western India. In this study blood collection and blood supply data was evaluated retrospectively for 2 years i.e. from January 2019 to December 2020.

Blood collection data was obtained as donations received from replacement and voluntary donors in the blood bank and from voluntary blood donation camps. Supply data was obtained from various blood components issued to the patients as packed red blood cells (PRBCs), random donor platelets (RDPs), single donor platelets (SDPs) and fresh frozen plasma (FFPs). All the data was obtained from blood bank records. The data obtained was tabulated and results noted. Blood supply data for pediatric patients, obstetric emergencies and trauma cases have been excluded from the study as there is separate hospital for the same. Whole blood and cryoprecipitate issued were excluded from the study due to lesser in number as compared to other components. Blood collection data from other attached hospitals is also excluded from the study.

Statistical analysis

All data obtained was entered, segregated and tabulated in micro excel software as per mentioned variables. Statistical analysis was performed using SPSS software version 21 for Windows statistical software package (SPSS inc., Chicago IL, USA). Charts and tables were prepared in Microsoft excel sheet. The study has been carried out as per ethical guidelines of the institute.

RESULTS

During the study period total 89948 components were issued in the year 2019 and 55152 in the year 2020. Effect of COVID 19 pandemic causing decline in the supply of various blood components was observed. In the year 2019, 55316 packed red blood cell units, 14362 random donor platelet units, 1119 Single donor platelets and 19151 fresh frozen plasma units were supplied from the blood bank.

In the year 2020, the components supplied were decreased to 33049 packed red blood cell units, 8139 Random donor platelet units, 467 Single donor platelets and 13497 Fresh frozen plasma units. Whole blood collection from blood donation camps and replacements donors was total 51317 units in the year 2019 and total 34151 in 2020.

A trend of supply during the study period and variation in the supply of packed red blood cells and random donor platelets during 2019 and 2020 is shown in Figure 1. Both trend lines i.e. PRBC 2020 and RDP 2020 shows the decreased supply in year 2020. PRBC and RDP supply has declined majorly in the months of April and May. Figure 2 shows similar trends of decline in the supply of single donor platelets and fresh frozen plasma.

Figure 3 shows the packed red blood cells supplied versus whole blood donations received during the study period. A balance in blood supply and blood collection was maintained. The decline in PRBC supply was matched to decline in blood collection in the months of April and May 2020. Maximum donations were seen in month of September in both 2019 and 2020.

Table 1: The various blood components supplied and whole blood units collected during the year 2019 and 2020.

Component Supplied	PRBC		RDP		SDP		FFP		Blood Collection	
Year	**2019**	**2020**	**2019**	**2020**	**2019**	**2020**	**2019**	**2020**	**2019**	**2020**
January	4584	4657	846	1088	46	92	1735	1771	4704	4904
February	4481	4651	786	919	52	66	1203	1535	3964	4750
March	4065	3200	850	842	64	36	1398	1374	3836	2703
April	4283	970	912	325	80	2	1449	446	4625	931
May	4846	1154	1198	341	81	7	1677	483	4254	1361
June	4415	2186	982	534	47	16	1488	938	4206	2285
July	4752	3027	1347	794	71	44	1562	1213	5010	3187
August	4575	2825	1497	692	75	35	1769	1296	4259	2892
September	4779	2743	1524	697	77	26	1657	1180	7015	3650
October	4865	3083	1697	744	236	61	1790	1281	2855	2626
November	4893	2147	1497	555	192	48	1727	1062	3520	1963
December	4778	2406	1226	608	98	34	1696	918	3069	2899
Total	55316	33049	14362	8139	1119	467	19151	13497	51317	34151

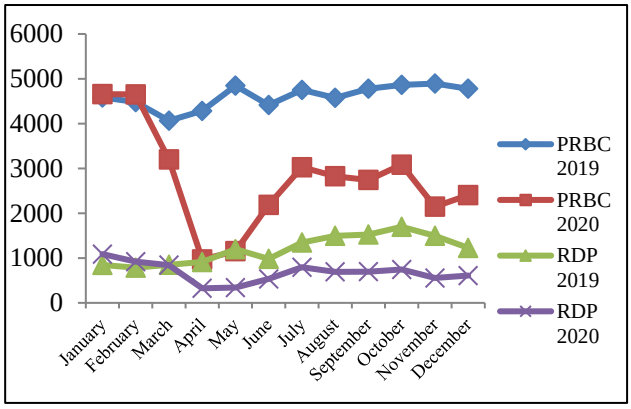

Figure 1: Trends of PRBC and RDP supply during 2019 and 2020.

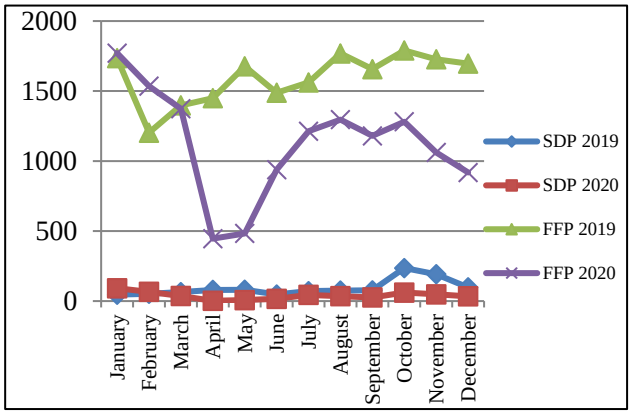

Figure 2: Trends of SDP and FFP supply during 2019 and 2020.

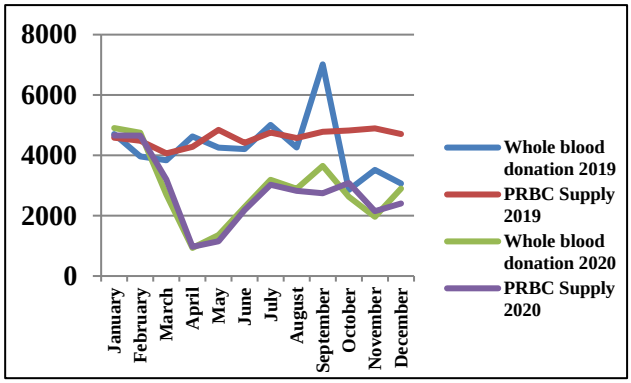

Figure 3: Whole blood donations versus PRBCs supplied during 2019 and 2020.

Total blood donations received in the year 2019 were 51317 and 34151 in 2020 out of which 28063 and 12084 were through voluntary blood donation camps in 2019 and 2020 respectively. Numbers of camps conducted were 279 in 2019 which was increased to 299 in 2020 to meet the blood demands. Results are tabulated in Table 2 and decline in blood donations during 2020 shown in Figure 4.

Table 2: Blood collection and Voluntary blood donation camps in 2019 and 2020.

Year	Total Blood donations	Voluntary blood donations	No. of camps
2019	51317	28063	279
2020	34151	12084	299

DISCUSSION

The total number of blood components supplied in various departments from our blood bank in year 2019 was 89948 units which were decreased to 55152 units in 2020. In the year 2019, not much variation was seen in PRBC and FFP supply throughout the year, however variation was seen in the supply of RDPS and SDPs as maximum supply during months of October and November due to peak dengue season.

In the year 2020 during January and February the blood supply was almost similar to 2019. From March 2020 after commencement of national lockdown due to COVID 19 pandemic the blood supply was decreased. There was 40% reduction in PRBC supply, 43% in RDP, 58% in SDP and 29% in FFP supply in 2020 as compared to the year 2019. Major decline was seen in supply of all blood components during April and May 2020 (Figure 1 and Figure 2) where PRBC supply was decreased by 76%, RDP BY 68%, SDP by 94% and FFP by 70% due to decreased in blood demand.

The decrease in blood demand during the Covid 19 pandemic was primarily due to decreased number of hospital admissions and elective surgeries and thus maintaining the blood stock for emergencies. Similar challenges were faced by study done by Yahia et al.[2] Hospitals faced similar challenges during previous outbreaks of corona virus.[3-5]

Whole blood donation in 2020 was decreased by 33% as compared to 2019. It was decreased by 74% in months of April and May 2020. Blood donations received from voluntary blood donation camps were 28063 which was decreased by 57% i.e. 12084 in 2020. The drop in voluntary donation has been noted in many countries across the world.[2,6] Voluntary blood donation camps organized in 2019 were 279 which were increased to 299 to meet the blood requirements. Various majors were taken to increase the blood collection. Major challenge faced was donor recruitment. Donors were scared of getting infection in hospital or blood bank, observed in another study as well.[7,8] Donors were motivated through social media and by telephonic interaction to increase the blood donations. In case of blood shortage donor passes were issued for the ease of movement during lockdown.

Other challenges faced were shortage of supply of consumables like PPE kits, masks, sanitizers and misuse of consumables by staff. Availability of staff was also a

concern as many got infected, some were quarantined and some were unable to reach the blood bank due to restrictions on public transport. A demand based blood collection and allocation planning was done to avoid shortage and to prevent expiry of the collected units.

CONCLUSION

This study revealed that the COVID 19 pandemic had a negative impact on blood donation and blood supply and thus adversely affected blood transfusion services. Effective communication between the blood bank staff, clinicians, donors and the public is needed for maintaining the balance between blood demand and blood supply.

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REFERENCES

1. Ministry of health and family welfare. Available at https://www.mohfw.gov.in/#state-data. Accessed on 1 January 2021.
2. Yahia AI. Management of blood supply and demand during the COVID-19 pandemic in King Abdullah Hospital, Bisha, Saudi Arabia. Transfusion Apheresis Sci. 2020;59(5):102836.
3. Gschwender AN, Gillard L. Disaster preparedness in the blood bank. Am Society Clin Laboratory Sci. 2017;30(4):250-7.
4. Teo D. Blood supply management during an influenza pandemic. ISBT Science Series. 2009;4(2):293-8.
5. Kim KH, Tandi TE, Choi JW, Moon JM, Kim MS. Middle east respiratory syndrome coronavirus (MERS-CoV) outbreak in South Korea, 2015: epidemiology, characteristics and public health implications. J Hospital Infect. 2017;95(2):207-13.
6. Wang Y, Han W, Pan L, Wang C, Liu Y, Hu W, et al. Impact of COVID-19 on blood centres in Zhejiang province China. Vox Sanguinis. 2020;115(6):502-6.
7. Landro L. New flu victim: blood supply. Available at https:// www. wsj. com/ articles/ SB1 00014 2405 274870380890457452557041059380O. Accessed on 9 April 2020.
8. World Health Organization. Maintaining a safe and adequate blood supply during pandemic influenza: guidelines for blood transfusion services. Geneva, Switzerland: World Health Organization. 2011.

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