

# Implementation of the blood donation preservation strategy at Indonesian red cross (IRC) blood donor unit (BDU) Banda Aceh during the COVID-19 pandemic



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## ABSTRACT

**Background:** The ongoing COVID-19 impacts the world of health, including IRC BDU. There is a need for a rapid response and countermeasures to meet the enormous challenge of balancing blood supply and demand. IRC BDU Banda Aceh in collaboration with the Aceh Government has carried out the civil servant (CS) movement for blood donation. This movement has been carried out since June 2020 until now. The CS donation movement is one of the IRC BDU strategies for the City of Banda Aceh in preserving donors during the COVID-19 pandemic. The study aims to see the impact of the COVID-19 pandemic and the implementation of strategies at IRC BDU Banda Aceh City on the number of blood donors at IRC BDU Banda Aceh City.

**Methods:** This type of research is a descriptive study with a cross sectional survey design. The first quarter of the analysis was carried out to compare the initial period of the 2020 pandemic with the non-pandemic year 2019 to see the impact of the pandemic on the number of blood donors. The second quarter analyzed the impact of the 2020 pandemic with the implementation of the strategy carried out in 2021 on the number of blood donors at IRC BDU Banda Aceh.

**Results:** There was a 12.8% decrease in the number of blood donors in the 2020 period compared to the 2019 period (Mann Whitney test, p-value = 0.038). This shows the impact of the COVID-19 pandemic on the decline in the number of blood donors at IRC BDU Banda Aceh in 2020. In the second quarter, the government's strategy to deal with the shortage of blood supply with the CS donor movement succeeded in increasing the number of blood donors by 12.7% (Mann Whitney test, p-value = 0.242) in 2021 (compared to 2020). This shows that the implementation of the COVID-19 handling strategy from the local government plays an important role in increasing the number of blood donors at IRC BDU Banda Aceh. but there was no significant difference in the average number of donors each month.

**Conclusion:** The Covid-19 pandemic had an impact on the decrease in blood donors at IRC BDU Banda Aceh. The regional government's strategy to mobilize the civil servant for blood donors has managed to fulfill the demand of blood supply to the normal level as pre-pandemic stock. This emphasizes the importance of stakeholders' policies to handling the blood donor shortage during extraordinary conditions such as pandemics.

**Keywords:** COVID-19, Blood donation, strategy.

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## INTRODUCTION

At the beginning of 2020 in March, Indonesia was surprised by the first case of Corona Virus-19 (COVID-19) originating from Depok. In Indonesia itself, the spread of COVID-19 has occurred very quickly since the government announced the first positive case in March 2020. The spread of COVID-19 in Indonesia is very fast, it can be seen that in August the number of confirmed positive cases reached more than 165,000 people. Meanwhile, the death toll from COVID-19 has reached

more than 7,000 people with a CFR of 4.3%. Based on these data, Indonesia ranks second as the country with the most confirmed cases in ASEAN after the Philippines.<sup>1</sup>

It is known that virus transmission can occur from human to human through droplets, contacts and fomites. Most of these viruses are transmitted through indirect or direct contact with an infected person's mucous membranes in the mouth, eyes, or nose.<sup>2</sup> Therefore, this type of virus can spread very quickly. The government takes action to break the chain of Spread

of COVID 19 by enforcing a health protocol, namely the act of staying away from crowded places (social distancing), maintaining physical distance (physical distancing), wearing a mask every time you leave the house, and wash hands. These rules are fundamental control mechanisms for controlling the spread of infectious diseases, especially respiratory infections, associated with large gatherings of people.<sup>3</sup>

The application of avoiding crowds is carried out by means of Work from home (WFH), which has a negative impact

on the education, economy, and health sectors.<sup>4</sup> The impacts that can be felt in the health sector include delays in health services for other diseases, the number of health workers who have died in charge of handling COVID-19 cases, and the reduced blood supply in blood banks due to the drastic decline in the number of donors. The closure of public places and social restrictions during the COVID-19 pandemic has also caused a drastic decline in blood donation activities. This decrease was due to public concerns about exposure to the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) virus when carrying out blood donation activities. This has led to many cancellations and reluctance to donate blood in various countries.<sup>5</sup>

The decrease in blood supply does not only occur abroad but also in Indonesia. The head of the IRC BDU Jakarta, Shalimar Salim, said that the number of donors had decreased during the pandemic by 54 percent. Where blood tapping, which usually collects 1100 bags in a day, but currently only 300-400 bags have been obtained per day.<sup>6</sup>

In need of a quick response and preventive measures to face the big challenge of balancing blood supply and demand, IRC BDU Banda Aceh City during the COVID-19 pandemic implemented a special strategy to overcome blood shortages by collaborating with the Aceh Government (AG) for the implementation of donor activities, routine blood of civil servant (CS) in AG.

## METHOD

This type of research is a descriptive study with a cross sectional survey. The first quarter of the analysis was carried out in the initial period of the 2020 pandemic (T2) with the non-pandemic year 2019 (T1) to see the impact of the pandemic on the number of blood donors. Quarter 2 will analyze the impact of the 2019 (T2) pandemic with the implementation of the strategy carried out in 2021 (T3) on the number of blood donors at IRC BDU Banda Aceh City.

The population in this study were all donors who were declared eligible to donate blood at IRC BDU Banda Aceh City in the period 2019, 2020, and 2021.

The sampling technique used the total sampling technique, the source of data in this study was obtained from secondary data originating from the system. data in IRC BDU Banda Aceh City.

## RESULTS

This type of research is a descriptive study with a cross sectional survey. This study uses secondary data taken from data base IRC BDU. Researchers took data base at IRC BDU Banda Aceh City for the period January 2019 – December 2021. From the data obtained, 76,451 bags of blood were collected with 26,641 in 2019, 23,216 in 2020 and 26,594

Table 1 shows demographic data of blood donors at IRC BDU Banda Aceh City for the periods 2019, 2020, and 2021. The results show that the majority of donors are aged 25-44 years with a percentage of 55% in 2019, 60.1% in 2021 and 59.3% in 2021. This table also shows that the majority of donors are male with a percentage of 79, 2% in 2019, 83% in 2020 and 82.5% in 2021. The majority of donors are repeat donors with a percentage of 96.5% in 2019, 95.1% in 2020 and 82.5% in 2021. The majority of the types of donors shown in the table are voluntary donors with a percentage of 99% in 2019, 98.4% in 2020 and 98.6% in 2021.

Table 2, shows the impact of the IRC BDU strategy in Banda Aceh City on blood scarcity during the COVID-19

pandemic19 in the second quarter. In the first quarter, the impact of the COVID-19 pandemic on the number of blood donors decreased by a percentage reaching 12.86%. Quarter 2 compares the blood scarcity strategies implemented in 2021, showing an increase in the number of donors reaching 12.7%.

Based on Table 3 above, as we can see there is no relationship between the implementation of the IRC BDU strategy in Banda Aceh City to the increase in the number of donors during the COVID-19 pandemic with the occurrence of an increase in the number of donors in IRC BDU Banda Aceh City in 2021.

## DISCUSSION

In the results of the study table 1 shows the demographic data of blood donors at IRC BDU Banda Aceh City for the period 2019, 2020, and 2021. The results show that most donors are aged 25-44 years, with a percentage of 55% in 2019, 60.1% in 2021 and 59.3% in 2021. This is related to the level of public awareness and concern which generally has begun to increase in the age range of 25-44 years, as well as the level of knowledge of the benefits obtained by donating blood regularly. The minimum age for donors is 17 years. First-time donors >60 years old and repeat donors >65 years old can become donors with special attention based on medical considerations of health conditions.<sup>7</sup>

**Table 1. Demographic Data of Blood Donors at IRC BDU Banda Aceh City.**

Category	2019 (%)	2020 (%)	2021 (%)
<b>Age Donors</b>			
17	526 (1.97)	396 (1.7)	145 (0.54)
18-24 years	7002 (26.3)	3932 (16.9)	4393 (16.5)
25-44 years old	14669 (55)	13958 (60.1)	15773 (59.3)
45-44 years	4305 (16.1)	4771 (20.5)	6082 (22.8)
>65 years	139 (0.52)	159 (0.68)	201 (0.7)
<b>Gender</b>			
Male	21108 (79.2)	19273 (83)	21956 (82.5)
Female	5533 (20.7)	3943 (16.9)	4638 (17.4)
<b>Visit</b>			
First	915 (3.4)	1121 (4.8)	1792 (6.7)
Deuteronomy	25726 (96.5)	22095 (95.1)	24802 (93.2)
<b>Donor Type</b>			
Voluntary	26377 (99)	22860 (98.4)	26243 (98.6)
Substitute	264 (0.9)	356 (1.53)	351 (1.31)
Paid	0 (0)	0 (0)	0 (0)
<b>Total</b>	<b>26641</b>	<b>23216</b>	<b>26594</b>

**Table 2.** Impact of the IRC BDU Strategy for Banda Aceh City on blood scarcity during the COVID-19 pandemic with a comparison of the number of blood donors at IRC BDU Banda Aceh City Period 2019, 2020, and 2021.

Quarter 1				Quarter 2					
2019 Non Pandemic		2020 Pandemic		%	2020 Pandemic		2021 Pandemic		%
Mobile Unit/out door	Building/ in-house	Mobile Unit/out door	Building / in-house		Mobile Unit/ out door	Building/in- house	Mobile Unit/out door	Building/ in-house	
16611	10030	12259	10259	↓ 12,86	14096	10259	12498	26641	↑ 12.7
23216		23216			26594				

**Table 3.** Analysis of the Impact of the IRC BDU Strategy for the City of Banda Aceh on blood scarcity during the COVID-19 pandemic with a comparison of the number of blood donors at IRC BDU for the City of Banda Aceh for the 2020-2021 Period, *Mann Whitney*.

Number of Donors	Mean Rank	N	p-value
2020	10.75	12	
2021	14.25	12	0.225

Table 1 shows that the majority of donors are male with a percentage of 79.2% in 2019, 83% in 2020 and 82.5% in 2021. The dominance of the male sex can donate blood compared to women due to the decrease in hemoglobin levels caused by menstruation every month, as well as the period of pregnancy and childbirth experienced women.<sup>8</sup>

Table 1 shows the majority of donors are repeat donors with a percentage of 96.5% in 2019, 95.1% in 2020 and 82.5% in 2021. This is in accordance with research conducted by Kandasamy in India, where the majority of donors are repeat donors with a percentage of 54.7% (2018), 59.3% (2019), and 80.4% (2020). This study states that donor education through social media has an important role in donor preservation, repeat donors are familiar with the information provided by blood services so that blood donor information during COVID-19 is conveyed to repeat donors.<sup>9</sup>

Table 1 shows the majority of the types of donors shown in the table are voluntary donors with a percentage of 99% in 2019, 98.4% in 2020 and 98.6% in 2021. At the ministry's data and information center The Indonesian Health Ministry in 2018 noted that 80% of donors who came to blood services were volunteers.

Regulation of the Minister of Health of the Republic of Indonesia No. 91, 2015 divides the types of donors into 3, namely voluntary, substitute and paid blood donors. Voluntary donors are

donors who give blood, plasma or other blood components at their will and do not receive payment, either in cash or in other terms as a substitute for money. Voluntary donors may be provided with small gifts, food and beverages, and immediate reimbursement of transportation costs in certain circumstances.<sup>7</sup> Family/surrogate donors are donors who give their blood when needed by their family members or the community.<sup>7</sup>

Paid donors are donors who give blood in exchange for payment or other benefits to meet basic living needs or something that can be sold or exchanged for cash or transferred to other people.<sup>7</sup>

The ideal blood supply for donors is 2.5% of the total population. So if the population in Indonesia is 247,837,073 people, then ideally,  $0.025 \times 247,837,073 = 4,956,741$  blood bags are needed, especially during the current COVID-19 pandemic where the need for blood continues to increase but donors are still decreasing.<sup>8</sup>

The lack of blood availability in Indonesia, among others, is constrained by the low awareness of the community to become voluntary donors, so that the availability of blood in BDU is still lacking. Most of the blood donations in Indonesia are seasonal, only done if there is a certain event.<sup>2</sup>

Table 2 shows the impact of the IRC BDU strategy in Banda Aceh City on blood scarcity during the COVID-19 pandemic in the second quarter. In the first quarter, the impact of the COVID-19 pandemic

on the number of blood donors decreased by a percentage reaching 12.86%. Several studies have shown that several countries, including Indonesia, have experienced a shortage of blood supply since the COVID-19 pandemic. This is because many people are worried that they will be exposed to the COVID-19 virus when they donate blood. In fact, until now there have been no reports of transmission of COVID-19 through blood.<sup>10</sup>

Implementing health protocols in the form of closing public places and social restrictions during the COVID-19 pandemic caused many delays and cancellations, especially for Unit/outdoor blood donation activities. The cancellation of blood donation activities carried out by unit/outdoor cars is mostly due to the public's fear of contracting COVID-19 when carrying out blood donation activities. Research in Hong Kong shows that since January 2020, there has been a 40% decrease in the number of blood donors from the usual blood donation activities due to the cancellation of blood donor activities.<sup>5</sup>

In the second quarter, comparing the blood scarcity strategies implemented in 2021, it shows an increase in the number of donors reaching 12.7%. In Aceh, especially IRC Banda Aceh City to overcome blood shortages during the COVID-19 pandemic. Cooperation with the Aceh Government through the Acting Governor of Aceh, launched the CS movement on 27 May 2020, this movement aims to overcome the problem of blood donors during COVID-19. In addition, according to the direction of the IRC General Chair, Jusuf Kalla, education is needed to the public so that people don't have to worry about donating blood while practicing aspects of vigilance and prevention against the spread of COVID-19, IRC

also applies health protocols according to WHO standards to prevent transmission of COVID-19.<sup>11</sup>

In table 3, an analysis was carried out using the Mann Whitney to see the impact of the IRC strategy during COVID-19 in overcoming blood scarcity, the results of the analysis showed a p-value of 0.225 ( $p > 0.05$ ), which means  $H_0$  is rejected or there is no relationship between the implementation of the BDU strategy. IRC BDU Banda Aceh City on the increase in the number of donors during the COVID-19 Pandemic with the increase in the number of donors at IRC BDU Banda Aceh City in 2021.

Collaboration between IRC Banda Aceh City and the Aceh Government in an effort to assist IRC in meeting the blood needs of the Acehnese people, through the movement according to Dedi Sumardi Nurdi, blood donors for the civil servant (CS) has had a huge impact on IRC because 50% of blood donors at IRC during this program were launched from CS.<sup>12</sup>

## CONCLUSION

The Covid-19 pandemic had an impact on the decrease in blood donors at IRC BDU Banda Aceh. The regional government's strategy to mobilize the civil servant for blood donors has managed to fulfill the demand of blood supply to the normal level as pre-pandemic stock. This emphasizes the importance of stakeholders' policies to handling the blood donor shortage during extraordinary conditions such as pandemics.

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## ETHICAL CONSIDERATION

This research has passed the ethical review No: 806KEP/FKUMSU/2021.

## CONFLICT OF INTEREST

All author declares there is no conflict of interest regarding publication of current study.

## AUTHOR CONTRIBUTION

All author had contributed in manuscript writing and agreed for the final version for publication.

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