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Comparison of the number of reactive results to transfusion-transmitted infection in new donors and re-donor in Tangerang City Red Cross, 2022

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ABSTRACT

Introduction: In 2022, the Tangerang City Red Cross collected 51,750 blood bags, 1.39% reactive to transfusion-transmitted infection. PMK no. 91 of 2015 mandates screening for these infections to ensure safe blood. Quality blood supply hinges not just on serological tests but also on recruiting suitable donors. This study compares infection reactivity in new versus repeat donors at Tangerang City Red Cross in 2022.

Methods: The research was conducted at Tangerang City Red Cross, where data was collected on the number of reactive results for transfusion-transmitted infection in donor blood in 2022. The sampling technique employed in this study was Total Sampling, where the entire population was used as a sample. A total of 719 samples were used in the study.

Results: The data from the transfusion-transmitted infection examination method for donor blood in 2022 revealed 719 reactive results. When categorized by donor type, the reactive results for new donors accounted for 544 samples (75.66%), while repeat donors contributed 175 samples (24.34%). This clear distinction in reactive results between new and repeat donors is a significant finding of this study.

Conclusion: Most reactive results are from new donors, not repeat donors. This underscores the importance of recruiting donors from low-risk groups and retaining repeat donors. Such measures can significantly reduce the number of reactive results, thereby enhancing blood safety.

Keywords: Reactive, recruitment, transfusion-transmitted infection.
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INTRODUCTION

Security of blood transfusion services must be carried out at each stage of activity, starting from the recruitment and preservation of blood donors, collection and labeling of donor blood, prevention of disease transmission, blood processing, blood storage and blood destruction, blood distribution, distribution and delivery of blood, as well as medical procedures for giving blood to the patient. Security for blood transfusion services is also performed in apheresis and plasma fractionation services. One of the efforts to protect blood is a screening test for transfusion-transmitted infection.[1,2]

Transfusion-transmitted infections (TTI) cannot be separated from blood transfusion practices worldwide. Several TTIs caused by the spread of hepatitis B virus (HBV), hepatitis C virus (HCV), human immune virus (HIV), and syphilis have become a significant aspect of problems in treatment using transfusion practices because of the long-lasting level of viremia and the presence of career or latent in the individual. TTI has also been reported to cause significant levels of mortality, morbidity, and financial burden worldwide.[3] Therefore, blood donation with reactive transfusion-transmitted infection test results should not be used for transfusion. As a form of concern for donors, Government Regulation No. 7 of 2011 concerning Blood Services has mandated the need to notify the donor of the reactive screening test results. Notification must be done through a particular mechanism to maintain the donor's confidentiality and receive follow-up diagnostic examinations and appropriate treatment.[4] The main target of donor recruitment is to obtain the amount of blood according to the needs or target of the Blood Center, which is focused on low-risk voluntary blood donors.[5]

In 2022, the Tangerang City Red Cross can collect a total donation of 51,750 blood bags. Of the total donations, 1.39% were reactive to transfusion-transmitted infection. According to Minister of Health decrees no. 91 of 2015, a screening test for transfusion-transmitted infection is one of the efforts to protect blood. The availability of safe and quality blood is not only determined by transfusion transmitted infection serological examination, it is also very much influenced by the recruitment of appropriate and targeted donors.[5] Therefore, this study compared the number of reactive results to transfusion-transmitted infection in new donors and re-donors in Tangerang City Red Cross, 2022.

METHODS

Study Design

This analytic observational study compared the number of reactive results to transfusion-transmitted infection in new donors and re-donors in Tangerang City Red Cross, 2022. It was conducted at Tangerang City Red Cross, St. Major General Sutoyo no. 15, Sukarasa, Tangerang, Tangerang City, Banten. The study was conducted on June 20, 2023, using sample data reactive to Transfusion-Transmitted Infection in 2022.

Sample Characteristics and Data Collection

The total sampling technique is used to take samples from the population.[6] The population used to conduct this study were all donors reactive to transfusion-transmitted infection, both new donors and repeated donors (re-donors) at Tangerang City Red Cross in 2022. The variables in this study were age, examination parameters, and type of donation.

Data Analysis

The collected data will be processed using the Statistical Package for the Social Science (SPSS) computer program. The data obtained was then processed manually, analyzed descriptively, and presented in tabular form. Data analysis included univariate analysis, which aimed to describe the proportion of age variables, TTI examination parameters, and type of donations.

RESULTS

A total of 719 donor samples that were reactive to TTI examination were obtained in this study. A description of the sample characteristics is explained as follows.

Based on Table 1, the majority of samples were aged 25-44 years, as many as 410 samples (57%), then aged 45-64 years as many as 225 samples (31.3%), then aged 18-24 years as many as 71 samples (9.9%), then 11 samples (1.5%) were over 64 years old, and 2 samples (0.3%) were 17 years old.

Based on Table 2, it is known that the number of sample results reactive to transfusion-transmitted infection at Tangerang City Red Cross in 2022 was reactive to hepatitis B in 258 samples (36%), then reactive to syphilis in 201 samples (28%), then reactive to hepatitis C in 161 samples (22%), and a small portion then reactive to HIV as many as 99 samples (14%).

Table 1. Sample characteristics based on age group at Tangerang City Red Cross, Tangerang City, 2022

No	Age	Frequency	Percentage (%)
1	17	2	0.3
2	18-24	71	9.9
3	25-44	410	57
4	45-64	225	31.3
5	>64	11	1.5
	Total	**719**	**100.0**

Table 2. Sample characteristics based on examination parameters at Tangerang City Red Cross, Tangerang City, 2022

No	Parameters	Frequency	Percentage (%)
1	Hepatitis B	258	36
2	Hepatitis C	161	22
3	HIV	99	14
4	Syphilis	201	28
	Total	**719**	**100**

Table 3. Sample characteristics based on the type of donation at Tangerang City Red Cross, Tangerang City, in 2022

No	Type of Donation	Frequency	Percentage (%)
1	New	544	75.66
2	Repeat	175	24.34
	Total	**719**	**100.00**

Based on Table 3, data on the number of samples that are reactive to transfusion-transmitted infection in new donors and repeat donors at Tangerang City Red Cross in 2022 showed that there are more reactive results from new donors of 544 samples (75.66%) compared to repeat donors of 175 samples (24.34%).

DISCUSSION

The results showed that among the 719 samples that were reactive to transfusion-transmitted infections at Tangerang City Red Cross in 2022, 544 were from new donors, and 175 were from repeat donors. Descriptive statistics were obtained with administrative data, inputted every month, and re-analyzed by researchers according to parameters such as age group and blood type examinations. This objective has been reiterated by the Minister of Health Decree No. 91, 2015, that the main aim of recruitment for donors is to provide the Blood Center with safe blood from low-risk volunteers. Not only serological surveillance of TTIs but effective donor recruitment strategies have been involved in assuring the availability of safe blood of good quality.[7] The study group thus commented that the increased number of reactive samples in new donors may be due to the high participation of new donors in blood donation camps.

These findings also align with previous studies in which TTI, especially HBV, was more common in first-time donors than repeat donors (4.7% vs. 3.4%).[8] This may be related to low screening standards. However, several other studies report the opposite finding, where higher levels of TTI are reported in repeated donors, which can be related to poor rates of notification and accidental or intentional failure to disclose diagnosis at counseling, which is related to still high levels of stigma.[8,9]

Several identified limitations were detected from the process of research findings. A few of them include limitations in research time, energy, and researcher skills. The comparison study of the incidence of transfusion-transmitted infection among donors in Tangerang City Red Cross in 2022 targeted only new

and repeat donors, so this needs to be further investigated through exploration across broader demographic factors. The conclusions drawn were strictly based on the data analyzed, requiring future research with different methodologies, extended sample sizes, and comprehensive research instruments to add depth and scope to the study.

CONCLUSION

In 2022, the Tangerang City Red Cross collected 544 new donors and 175 repeat donors who tested reactive for transfusion-transmitted infections. A comparison reveals that the reactivity among the new donors was much higher. These findings indicate that, regarding Minister of Health Decree No. 91 of 2015, donor recruitment targets consist of low-risk groups to assure a safe blood supply and not high-risk populations for certain behaviors or infectious diseases. Proper recruitment strategies must target low-risk groups to help ensure a low reactivity rate among new donors.

DISCLOSURES

Conflict of Interest

The authors have no conflict of interest.

Ethical Considerations

Ethical approval was obtained from The Health Research Ethics Committee.

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Author Contribution

All authors contribute similarly to the thinking about investigative concepts, information acquisitions, information investigation, and factual investigations, changing the paper until detailing the consideration that comes about through publication.

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