



## ANTIBODY SCREENING EXAMINATION ON VOLUNTARY BLOOD DONORS AT BLOOD DONATION UNITS BANYUMAS REGENCY IN 2023

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### ABSTRACT

Blood donation is a humanitarian activity where someone donates blood voluntarily. Blood Donation Units are required to provide safe and quality blood products to avoid transfusion reactions. One effort that can be made is to carry out pre-transfusion examinations on donor blood, one of which is an antibody screening examination. The aim of the antibody screening examination is to detect the presence or absence of clinically significant irregular antibodies in both the patient and donor. The aim of this study was to determine the blood type, gender and age of antibody screening in voluntary blood donors at the Blood Donation Unit. This type of research is descriptive using observational methods which was carried out in March 2023 at the Banyumas Regency Blood Donation Unit. Samples were taken using a total sampling technique, namely all voluntary blood donors who underwent an antibody screening test. Data collection was carried out using the qwalist diagast tool and laboratory archives which were accessed via the SIMDONAR system. The results of the antibody screening research from a total of 3198 voluntary blood donors showed that the highest results were in blood type O, namely 1236 (39%) donors, in men, namely 2196 (69%), and in the elderly (26).-60 years).namely 1531 (48%) donors

Keywords: Blood, Donor, Hemoglobin

### Introduction

According to the Indonesian Ministry of Health, blood donation is a humanitarian activity where someone donates blood voluntarily and then uses it for blood transfusion needs. Blood and its components are medicinal materials that can save human lives, therefore Blood Donation Units is obliged to provide quality products to avoid transfusion reactions in patients. To ensure the safety of the blood to be transfused, Blood Donation Units carries out pre-transfusion checks before the blood is given to the patient.

Pre-transfusion examination is a series of examination procedures carried out before blood

is given to the patient. Pre-transfusion examination includes ABO blood group examination, antibody screening examination, and cross-matching examination [1]. Antibody screening examination is an examination to detect irregular antibodies that have clinical significance in both donor and patient samples. The antibodies detected in this examination are anti-Rh, anti-Kell, anti-Kidd, anti-Duffy, anti-MNs, and anti-Lewis. Antibody screening examination is an effort to reduce the occurrence of hemolytic transfusion reactions and help reduce the risk of babies being born with HDN (Trudell 2014).

According to Nuraini (2020), from 489 samples from voluntary blood donors at Blood Donation Units Palembang City in 2020, negative results were obtained with a percentage of 99.4% and positive results were 0.6%. All positive results were found in male donors with the highest age being in the young adult category (17-25 years) at 1.2% and the most in donors with blood type A, namely 0.8% [3]. According to Perwitasari (2017) at RSUP Dr. Hasan Sadikin Bandung found positive alloantibodies in 1.1% (2 of 183) samples which could interfere with pre-transfusion examination and could cause a transfusion reaction [4]. According to Ningrum et al (2018), of the 70 samples with positive results at the UTD PMI DKI Jakarta reference laboratory, 48% of them found Anti-E most often because the patients often had blood transfusions [5]. Based on this, it proves that screening for antibodies in donor blood is important to maintain and improve blood safety and as an effort to determine early whether there are antibodies in the plasma and prevent transfusion reactions.

According to the Central PMI UDD, there are still few PMI UDDs that carry out antibody screening tests due to limited panel cells. UDD PMI Banyumas Regency carries out antibody screening on patients and donors to detect the presence or absence of irregular antibodies. Therefore, the author decided to compile research with the title "Antibody Screening Examination of Voluntary Blood Donors at UDD PMI Banyumas Regency in 2023".

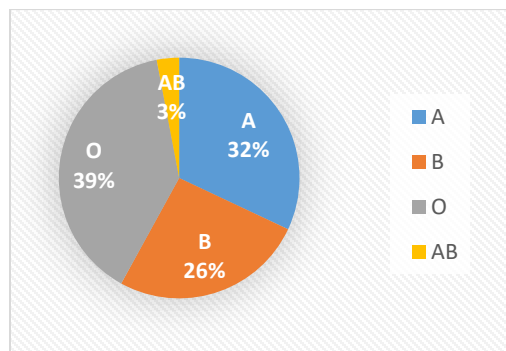
### Methods

This research is descriptive in nature using observational methods by collecting data, processing data, and describing blood type, gender, and age based on antibody screening examinations on voluntary blood donors at the PMI Blood Donation Unit, Banyumas Regency in 2023. The samples taken in this study used observational method. Total sampling method, namely all voluntary blood donors who underwent an antibody screening test in March 2023, amounting to 3198 donor samples.

### Results and Discussion

Based on research carried out on 3198 voluntary blood donors who underwent antibody screening tests, the following results were obtained:

*Diagram 1: Blood type based on antibody screening examination of voluntary blood donors at Blood Donation Units Banyumas Regency in 2023*



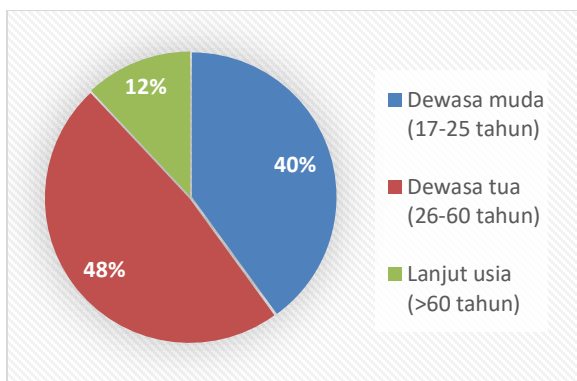
Blood type examination is an examination carried out to determine the blood type of voluntary blood donors. Based on diagram 1, blood groups based on antibody screening examinations in voluntary blood donors at Blood Donation Units Banyumas Regency in 2023 were mostly found in voluntary blood donors with blood type O, namely 1236 (39%) donors

These results are in line with research by Amalia, et al (2021) conducted at UTD RSUP Dr. Mohammad Hosein Palembang where it was stated that from 45 samples the highest results were found for blood type O, namely 19 samples (42.3%) [6]. Likewise, in Pessoni, et al's (2018) research conducted on positive samples for antibody screening at the Hospital das Clinicas and Universidade Federal de Goiaz, Brazil, the highest results were found in blood type O, namely 14 samples (50%) out of 28 samples (Pessoni,2018)

These results were influenced by the number of male blood donors at UDD PMI Banyumas Regency in March 2023, which was more than female blood donors, namely 2984 male donors and 1308 female donors. The frequency of blood donations for male donors is higher than for female donors because the blood donor selection requirements for women are more complex than

for men, such as menstruation, pregnancy and breastfeeding. Menstruation affects hemoglobin levels in the body, women who are menstruating have hemoglobin levels of less than 12 g/dl due to loss of iron stores in the body [9]. This is in accordance with the donor selection requirements according to Minister of Health Regulation No. 91 of 2015 which states that the donor hemoglobin level requirement is 12.5-17 g/dl (Kemenkes,2015)

*Diagram 3: Age based on antibody screening examination of voluntary blood donors at UDD PMI Banyumas Regency in 2023*



The Indonesian Ministry of Health, 2011 stated that the productive age in Indonesia is 15-64 years old. This fulfills the donor selection requirements according to the Republic of Indonesia Minister of Health Regulation No. 91 of 2015 which states that the age for blood donors is 17-65 years with certain health considerations (Pessoni 2018) . Based on the 3 age diagram based on antibody screening examination of voluntary blood donors at Blood Unit Donations Banyumas Regency in 2023, the majority were found in older adults (26-60 years), namely 1531 (48%) donors.

The results of this study are in line with research by Pessoni, et al (2018) which stated that 17 of 28 samples (61%) of antibody screening were aged 26-60 years [7]. Likewise in research by Septiana, et al (2021) which states that in UTD PMI Gunungkidul Regency the number of donors aged 25-44 years was 194 donors (52.6%) and aged 45-64 years was 119 donors (32.3% ) from a total sample of 368 donors (Septiana 2021).

The results of this research occurred because the largest number of blood donors at

UDD PMI Banyumas Regency in March 2023 were aged 26-60 years, namely 1960 donors. Blood donors are often found in young adults and old adults because the donor's health condition is adequate and there is little resistance to blood donor selection. In old age, the frequency of donors is reduced because it can have an impact on the donor's own health condition, such as increasing the risk of developing cardiovascular and cerebrovascular disease in old age (Maria,2016).

## Conclusion

Based on research results of antibody screening examinations on voluntary blood donors from a total of 3198 donors, the highest results were found in blood group O, namely 1236 (39%) donors, in men, namely 2196 (69%), and in older adults ( 26-60 years) namely 1531 (48%) donors.

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