

Comparison of Actual Blood Type with Blood Type in Indonesian Identity Card of Pekayon Village- East Jakarta Residents in 2022

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Abstract

Among the public, the knowledge of ABO blood type is not well understood. Many people in Indonesia do not know their blood type but they have to state their blood type for the Indonesian Identity Card at the civil registration services. To compare the actual blood type of Pekayon village-East Jakarta residents with the blood type in Indonesian Identity Card in 2022. The research is a cross-sectional study of 100 residents at Pekayon Village-East Jakarta in 2022. We did ABO blood grouping with tube test method then compared the results as actual blood type with the resident's blood type in their Indonesian Identity Card. The blood type of the residents at Pekayon Village-East Jakarta are 39% blood type O, 33% blood type A, 20% blood type B and 8% blood type AB. The actual blood type matched with the blood type in Indonesian Identity Card were 43% and 57% did not match because previously when the residents stated the blood type for Indonesian Identity Card not based on actual blood type. The actual blood type were mostly different with the actual blood type of residents at Pekayon Village-East Jakarta in 2022. The Indonesian citizen should state the correct blood type for Indonesian Identity Card based on blood grouping result.

Keywords: *ABO Blood Type, ABO Blood Grouping, Indonesian Citizen, Indonesian Identity Card*

INTRODUCTION

Blood type is a blood classification system based on the type of antigen found on the red cell membrane. ABO blood type was the first blood type known by Karl Landsteiner in 1900 and in 1901 blood type AB was found (Sulfiani et al., 2021) In pre-transfusion testing, blood grouping is one of the critical tests to get the compatible blood for transfusion (Mulyantari et al., 2016) and blood grouping is also important in some criminal and forensic cases (Rahmawati et al., 2021). ABO blood type should be written in Indonesian Identity Card beside other individual identities such as full name, date of birth, address, religion and occupation. Among the public, the knowledge of ABO blood type is not well understood. Many people in Indonesia including in Pekayon Village East Jakarta where we have conducted preliminary study, do not know their blood type but they have to state their blood type for the Indonesian Identity Card at the civil registration services. They usually mentioned their ABO blood type referred to their parent's or children's blood type, so there is probability the wrong blood type was stated to the civil registration service to be put in Indonesian Identity Card. Based on that, we aimed to do ABO blood typing and to compare the actual blood type of Pekayon village-East Jakarta residents with the blood type in their Indonesian Identity Card in 2022.

LITERATURE REVIEW

There are 43 blood groups that have been found but ABO blood type is still the most important blood type that should be tested in pre-transfusion testing. The gold standard method of blood grouping is tube test because it is more sensitive and we could confirm the reaction's results microscopically. Two principles of blood grouping are cell typing, to identify the antigen A and/or antigen B on red cell membrane and serum typing, to identify the anti-A antibody or anti-B antibody in the plasma or serum (Maharani & Noviar, 2018). These two principles of blood grouping should

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be conducted simultaneously in room temperature. The interpretation of blood grouping result based on agglutinations that were formed in the tube. For example, if we found agglutinations in tube consisted of antisera A and erythrocyte and in tube consisted of test cell B and plasma, we interpreted the blood type of the sample was blood type A. Any discrepancies between cell typing and serum typing result should be investigated and referred to reference laboratory for further test. Newborn and elderly people sometimes would give weak reactions or discrepancies in ABO blood grouping (Mulyantari & Yasa, 2016)

In blood banking, we also used test cell O for detecting any others antibody beside anti-A and anti-B. Auto-control also tested in blood grouping to detect any reactions between in any antibodies in the samples that reacted with its own red cell. The normal results would show no reactions in auto-control and test cell O.

Table 1. The interpretation of ABO blood grouping result with tube method

<i>Cell typing</i>		<i>Serum typing</i>		<i>ABO blood type</i>
<i>Anti-A</i>	<i>Anti-B</i>	<i>Test cell A</i>	<i>Test cell B</i>	<i>Interpretation</i>
0	0	+	+	O
+	0	0	+	A
0	+	+	0	B
+	+	0	0	AB

Source: Mulyantari dan Yasa (2016)

In transfusion setting, the match ABO blood type should be prepared for the patients. If wrong ABO blood type transfused to the patients, acute hemolytic transfusion reactions within 15 minutes after the transfusions started, would occur and could result in acute renal failure and death. (Mujtahida, 2021). Blood grouping was also useful for solving the parental cases, also in some criminal and forensic cases (Rahmawati et al., 2021).

The distribution of ABO blood types was dominated by blood type O in the world. Blood type A is around 45-50%, mostly found in Central and Eastern Europe. In China and India, blood type B was found around 25%. Blood type AB is the least abundant blood type everywhere in the world. In one of the Indonesian ethnic, South Sumatran, blood type A were found 30,5%, blood type B 26,7%, blood type O 31 % and blood type AB 11,8% (Hikma et al., 2021). In Islamic boarding school in Indonesia, blood type A 32,4%, blood type B 21,6%, 35,2% blood type O 10,8% and blood type AB 10,8% (Harris, 2019).

ABO blood type should be known by citizen in emergency cases when they got accidents and there was a need of blood transfusion. Usually, the police or medical staff would look for their ABO blood type in Indonesian Identity Card. According to regulation, all Indonesian citizen that has reached 17 years old, should have Indonesian Identity Card that is coordinated by civil registration services. There are some individual identities such as full name, date of birth, address, blood group, married status, occupation and the holder's photo (Sani, 2021). Due to the knowledge of blood type is not well understood so the citizen never tested their ABO blood type. Only a few people know their blood type. If they do not know, they referred their parent's or children's ABO blood type.

RESEARCH METHOD

The research was a cross-sectional study of 100 residents at Pekayon Village-East Jakarta in 2022. The inclusion criteria were all residents aged between 17 years old until 60 years old, had Indonesian Identity Card and would like to participate in this study. We excluded any discrepancies results and if no ABO blood type in Indonesian Identity Card. The study was conducted in July until August 2022.

We collected 3 mL EDTA blood and did ABO blood grouping with tube test method in one of

the hospital blood banks in Jakarta. The red cell and plasma were separated after centrifugation. We added 2 drops of antisera-A and 2 drops of antisera-B in each tube of red cells and added 1 drop of test cell-A and 1 drop of test cell-B in each tube of plasma. After gently mixing, we centrifuged the tubes at 3000 rpm for 15 seconds then read the results. The positive results were shown by visual agglutination that were confirmed by microscopical identification (Harmening, 2012) The results of this blood grouping were called the actual blood type that will be compared with the blood type written in Indonesian Identify Card of the residents at Pekayon Village- East Jakarta. We also did an interview with the residents while we took their blood samples as the basis data when there was differences ABO blood type between the actual blood type with the Indonesian Identity Card.

FINDINGS AND DISCUSSION

All the residents in Pekayon Village-East Jakarta meet the inclusion criteria. No residents were excluded. There were 100 samples taken from residents of Pekayon Village-East Jakarta and tested blood grouping in the hospital blood banks. There were no discrepancies in blood grouping results but we found weaker reactions in serum grouping results in elderly people. Most of the samples showed 4+ agglutination (Figure 1) but 8 samples from 57 until 60 years old residents showed 2+ until 3+ results. These weak reactions are in accordance with the blood grouping interpretation in elderly people (Mulyantari & Yasa, 2016)

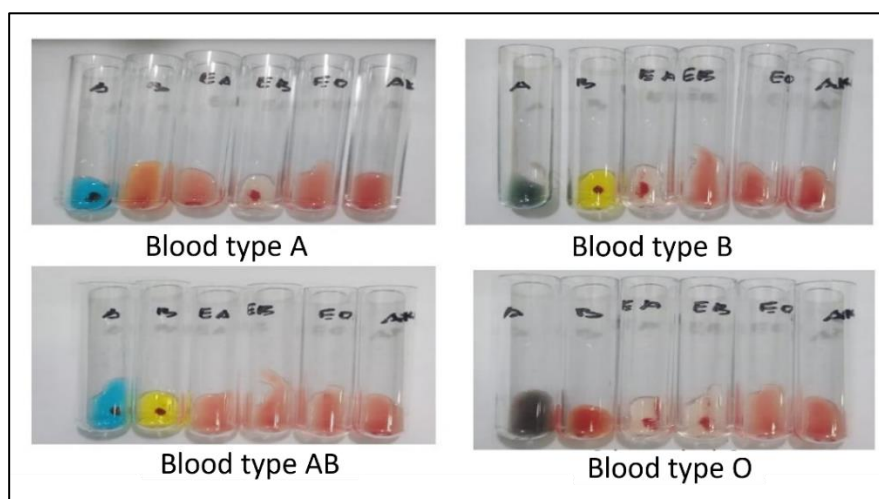


Figure 1. Image of the ABO blood grouping results and its interpretation

The characteristic of 100 residents at Pekayon Village-East Jakarta that became the sample of this research consisted of 48% male and 52% female. (Table 2) The blood grouping results were 39% blood type O, 33% blood type A, 20% blood type B and 8% blood type AB. The male residents that have blood type O 18%, A 16%, B 10%, AB 4%. The female residents that have blood type O 21%, A 17%, B 10% and AB 4% (Table 3).

Blood type O is the highest frequency of blood type and AB is the lowest frequency of blood type found in this research. These frequencies of ABO blood type that found in this study were in line with other community in Harris (2019) and also Hikma et al. (2021) in Sumatra population. The comparison of blood type in Pekayon Village with Sumatran population was shown in Table 4.

Table 2. The frequency of sex characteristic (n = 100)

Sex Characteristic	Frequency	%
Male	48	48
Female	52	52

Table 3. The frequency of blood type based on sex (n = 100)

No	Sex	Blood Type			
		A	B	AB	O
1	Male	16 (16%)	10 (10%)	4 (4%)	18 (18%)
2	Female	17 (17%)	10 (10%)	4 (4%)	21 (21%)
	Total	33 (33%)	20 (20%)	8 (8%)	39 (39%)

Table 4. Comparison Blood type in Pekayon and Sumatran population

No	Blood type	Pekayon village (n=100)	Sumatran population* (n=187)
1	A	33%	30,5%
2	B	20%	26,7%
3	AB	8%	11,8%
4	O	39%	31%

*[Hikma et al. \(2021\)](#)

The actual blood type matched with the blood type in Indonesian Identity Card were 43% and 57% did not match. This happened because previously when the residents stated the blood type for Indonesian Identity Card not based on actual blood type. Based on the results of the interview, we found out that the wrong blood type in Indonesian Identity Card were caused by the resident's assumption referring on their parents or their children's blood type.

Table 5. Comparison Actual Blood with the blood type in the Indonesian Identity Card

No	The comparison actual blood with the blood type in the Indonesian Identity Card	Frequency	%
1	Match	43	43
2	Not mactch	57	57
	Total	100	100

CONCLUSIONS

The actual blood type was mostly different with the actual blood type of residents at Pekayon Village-East Jakarta in 2022. The Indonesian citizen should state the correct blood type for Indonesian Identity Card based on blood grouping result.

LIMITATION & FURTHER RESEARCH

This study should be conducted in larger scale population to show the importance of doing the blood grouping test for Indonesian citizen.

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