

BLOOD TYPE DETECTION AS AN EFFORT TO INCREASE STUDENTS' HEALTH AWARENESS AT SMPN 5 TINGGI MONCONG IN GOWA, SOUTH SULAWESI

(Deteksi Golongan Darah sebagai Upaya Peningkatan Kesadaran Kesehatan Siswa SMPN 5 Tinggi Moncong di Gowa, Sulawesi Selatan)

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ABSTRACT

Gaining knowledge of blood type is crucial for individual health, particularly when facing emergencies that require immediate transfusion or medical decisions. However, many adolescents, especially those in rural areas, lack awareness of their own blood types. This community service project aimed to increase blood type literacy and conduct actual blood type screening among students of SMPN 5 Tinggi Moncong, Gowa. A total of 26 students participated in a structured program consisting of health education sessions, demonstrations, and hands-on blood type screening using the slide agglutination method with anti-A, anti-B, anti-AB, and anti-Rh reagents. The results showed that blood type A was the most common (42%), followed by B and AB (23% each), and O (12%). Post-activity surveys indicated that students experienced increased awareness, reduced anxiety, and greater motivation to encourage family members to know their blood types. The activity not only served as a health awareness tool but also helped introduce practical biological knowledge in a rural educational context. This model can be replicated in other underserved schools to promote early health preparedness and reduce barriers to essential health information.

ABSTRAK

Pengetahuan tentang golongan darah sangat penting bagi kesehatan individu, terutama dalam situasi darurat yang membutuhkan transfusi atau keputusan medis secara cepat. Namun, banyak remaja, khususnya di daerah pedesaan, yang belum mengetahui golongan darah mereka. Kegiatan pengabdian kepada masyarakat ini bertujuan untuk meningkatkan literasi tentang golongan darah serta melakukan pemeriksaan langsung terhadap siswa SMPN 5 Tinggi Moncong di Kabupaten Gowa, Sulawesi Selatan. Sebanyak 26 siswa mengikuti rangkaian kegiatan yang terdiri atas sesi edukasi kesehatan, demonstrasi, dan pemeriksaan golongan darah menggunakan metode slide aglutinasi dengan reagen anti-A, anti-B, anti-AB, dan anti-Rh. Hasil menunjukkan bahwa golongan darah A paling banyak ditemukan (42%), diikuti oleh golongan B dan AB (masing-masing 23%), serta golongan O (12%). Survei pascakegiatan menunjukkan peningkatan kesadaran siswa, penurunan rasa takut, dan motivasi yang lebih besar untuk mendorong anggota keluarga juga mengetahui golongan darah mereka. Kegiatan ini tidak hanya berfungsi sebagai sarana edukasi kesehatan, tetapi juga menjadi media pembelajaran biologi praktis di lingkungan sekolah pedesaan. Model ini dapat direplikasi di sekolah-sekolah lainnya untuk mendorong kesiapsiagaan kesehatan sejak dini dan mengurangi kesenjangan akses terhadap informasi kesehatan dasar.

INTRODUCTION

Knowledge of blood types represents a fundamental aspect of individual and community health. This information is crucial not only during medical emergencies but also for family planning, healthy living, and understanding susceptibility to certain diseases (Anstee, 2010; Liumbruno & Franchini, 2013). Despite its significance, many individuals—particularly adolescents—remain unaware of their own blood types. This lack of knowledge may increase health risks and hinder timely medical interventions.

In remote areas of Indonesia such as Tunggimoncong Subdistrict in Gowa Regency, South Sulawesi, access to blood typing services remains limited (BPS, 2021). As an educational institution, SMP Negeri 5 Tunggimoncong plays a vital role in addressing this health information gap. According to Indonesian Ministry of Health (2018), awareness of blood type among the public, especially teenagers, requires further reinforcement.

Research by Setiawan et al., (2022) found that adolescents' knowledge of blood types and their health implications is relatively low in many parts of Indonesia. In fact, understanding blood type is not only important for blood transfusions, but is also related to the risk of certain diseases (Meo et al., 2017). The World Health Organization (2020) emphasizes the importance of accessible blood type information for national health systems, especially during emergencies. Furthermore, (Dean, 2005) highlighted that blood type knowledge can provide insights into genetic predispositions toward various health conditions. Unfortunately, there remains a significant gap between the ideal and actual level of knowledge—particularly in rural regions like Tunggimoncong—compounded by the lack of health education integrated into school curricula.

This community service project aimed to: (1) Enhance students' understanding of the importance of knowing one's blood type; (2) Provide hands-on experience with blood typing to stimulate interest in biology and health sciences; (3) Conduct blood type testing for all students involved; (4) Deliver a student blood type database to the school for future emergency use.

METHODS

The program was implemented at SMPN 5 Tunggimoncong in August 2024 by the Community Service Team of Universitas Patempo. Twenty-six students participated. The activities consisted of education sessions and practical blood type testing using the ABO slide method. The program stages included:

Preparation: Initial coordination meetings with school officials and local authorities to determine program goals, logistics, and timing.

Socialization: A session was conducted to explain program objectives and blood typing procedures, encouraging open dialogue and student engagement.

Training: A demonstration on ABO blood typing was provided to show students how to conduct tests.

Testing: Capillary blood samples were collected using alcohol swabs, lancets, and blood typing cards. Reagents (anti-A, anti-B, anti-AB, and anti-Rh) were applied, and results were observed based on agglutination within one minute.

RESULT

The program began with a discussion on the significance of knowing one's blood type (Figure 1), followed by a live demonstration using a student volunteer (Figure 2). The goal was to demystify the process and assure students of its simplicity and safety. The blood typing tests were then conducted on all 26 students (Figure 3), with results summarized in Table 1 and visually presented in Figure 4.



Figure 1. Socialization on the procedure of blood type testing using the slide method



Figure 2. Demonstration of blood type testing using a student as the probandus

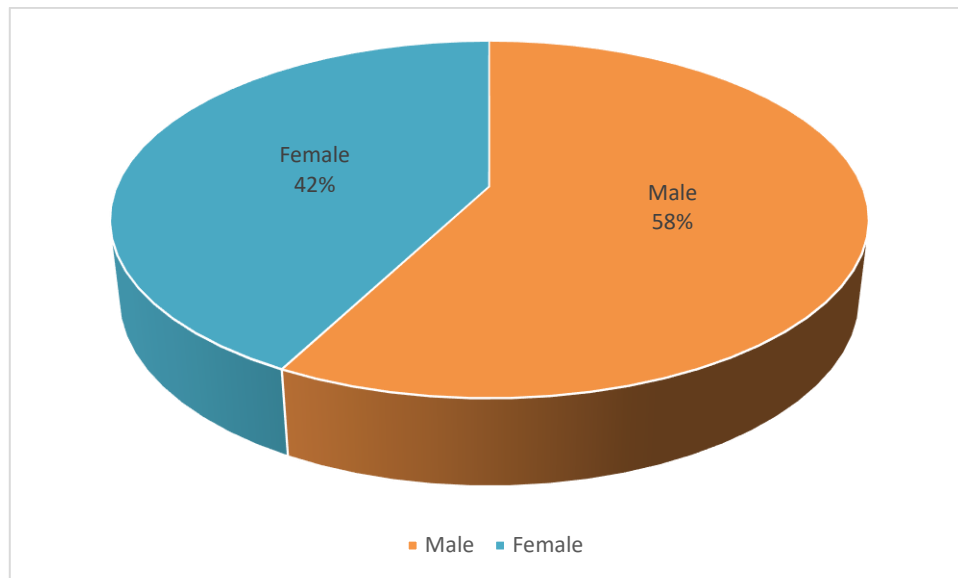


Figure 3. Gender ratio chart of SMPN 5 Tinggi Moncong student participants

Table 1. Distribution of Blood Types among Students

Blood Type	Number of Students	Percentage (%)
A	11	42
B	6	23
AB	6	23
O	3	12
Total	26	100



Figure 4. Blood type cards of 26 students who have been tested

DISCUSSION

The ABO blood typing system is based on antigen-antibody agglutination. Individuals with type A blood possess A antigens and anti-B antibodies, while those with type B have B antigens and

anti-A antibodies. Type AB has both antigens but lacks antibodies, and type O lacks antigens but has both anti-A and anti-B antibodies (Kiswari R, 2014). Blood typing relies on the visible agglutination reaction between antigens on red blood cells and corresponding antibodies in reagents (Shaz et al., 2013).

The results showed that blood type A was the most prevalent, while type O was the least common. Informal interviews revealed that 77% of students were excited about the activity, 4% felt anxious, and the rest were uncertain. Notably, 73% of students had never undergone a blood type test before, but all participants expressed the importance of knowing one's blood type and committed to encouraging their families to get tested at local health clinics.

The ABO blood grouping method used in this activity was the slide method, which relies on the principle of agglutination between blood antigens and antisera antibodies. Agglutination occurs when there is a specific interaction between corresponding antigens and antibodies, resulting in visible clumping (Mulyantari & Yasa, 2017). The agglutination process consists of two stages: in the first stage, antibodies bind to antigens upon contact, coating or sensitizing the cells without yet forming clumps. In the second stage, a lattice structure forms, leading to visible agglutination (Jafriati, 2022).

Blood type in humans is determined by hereditary factors. The phenotypes and genotypes of parents significantly influence the antigens present on red blood cells. The presence of specific antigens (agglutinogens) determines an individual's blood type—A, B, or O—where type O lacks both A and B antigens on the surface of red blood cells (Oktari & Daeninur Silvia, 2016).

This blood grouping was conducted using antisera reagents, where agglutination indicates a positive reaction. Antibodies involved in blood type reactions are naturally occurring immunoglobulin proteins found in the serum and play a key role in the body's immune defense (Mitra et al., 2014).

CONCLUSION

This community engagement activity successfully increased student knowledge and understanding of blood types; and Enabled students to identify their blood types using the ABO system.

Recommendations for future is Blood typing should be conducted for all students at SMPN 5 Tinggimoncong and extended to other schools; Alternative methods (e.g., Rh factor testing) should be considered to ensure more comprehensive screening.

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