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Improving Drug Literacy Among Students Through the DAGUSIBU Educational Program

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Abstract

Low public literacy regarding the correct application of the DAGUSIBU (Obtain, Use, Store, and Dispose) principles of drugs contributes to the persistently high prevalence of irrational drug use in Indonesia. This situation has the potential to lead to drug abuse, antibiotic resistance, and negative impacts on public health. This community service activity aims to improve the knowledge and rational drug use behavior of 10th-grade students at SMA Negeri 2 Palangka Raya regarding safe and responsible drug management. The methods used include interactive outreach through educational media, practical simulations, and evaluation using pre- and post-tests. The target group was 35 10th-grade students at SMA Negeri 2 Palangka Raya. The results showed an increase in student understanding with an average pre-test score of 6.9 to 7.6 on the post-test (maximum score of 8) regarding the DAGUSIBU principles, which were delivered directly through practice and active discussion. The conclusion of this activity is that the interactive DAGUSIBU outreach is effective in improving understanding of drug literacy and fostering more responsible drug management behaviors in students, which have a positive impact on reducing the risk of drug abuse and supporting individual and environmental health.

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INTRODUCTION

The increasing consumption of medicines in Indonesia has not been accompanied by optimal literacy in proper drug management, particularly among students. Self-medication practices without consulting healthcare professionals, improper storage of medicines, and inappropriate disposal of unused drugs are still frequently observed (Shufyani et al., 2025; Siponen, 2014). This condition contributes to rising health and environmental risks, as reflected by approximately 3,600 cases of drug poisoning per year and around 30% of environmental waste originating from pharmaceutical residues. In addition, cases of illegal drug distribution and misuse of prescription drugs and narcotics further exacerbate the situation, even within school environments (BPOM, 2023; Ministry of Health of the Republic of Indonesia, 2022).

This issue is closely related to students' limited understanding of the DAGUSIBU principles (Obtain, Use, Store, and Dispose) as guidelines for proper drug management (Mukti & Mayzika, 2020). In today's information era, characterized by rapid technological advancement, the public is increasingly vulnerable to misinformation regarding medicines, which heightens the risk of errors in self-medication and improper drug disposal (Susilo, 2022). Therefore, adequate knowledge about medicines is essential to ensure their optimal benefits. Several studies indicate that public knowledge about medicines remains relatively low (Jayanti & Arsyad, 2020; Morison et al., 2015). The increasing prevalence of self-medication practices may lead to inappropriate drug use and improper therapy if not supported by sufficient knowledge. Approximately 40.6% of self-medication practices in the community are considered irrational (Ramdini et al., 2020).

These findings highlight the need for educational and promotive interventions from healthcare professionals, particularly pharmacists as agents of change. Research by Pujiastuti and Kristiani demonstrates that DAGUSIBU socialization programs effectively improve public understanding of proper drug handling (Pujiastuti, 2019). As part of the Tri Dharma of Higher Education, community service activities conducted by lecturers and students represent a tangible effort to enhance public awareness regarding rational drug use. The DAGUSIBU program, initiated by the Indonesian Pharmacists Association, serves as a relevant intervention in addressing this issue.

This community service activity aims to improve knowledge and promote rational drug use behavior among senior high school students in managing medicines safely and responsibly. By providing education to high school students as the younger generation, it is expected that a multiplier effect will occur in disseminating accurate information about the use of medicine within families and communities. Therefore, this activity is not only informative but also transformative in shaping a community that is aware, knowledgeable, and responsible in drug management to achieve optimal health and environmental sustainability.

METHODS

This community service program was conducted using the Participatory Action Research (PAR) approach through the DAGUSIBU (Obtain, Use, Store, Dispose) Drug Socialization Program for students of SMA Negeri 2 Palangka Raya in October 2025 at SMA Negeri 2 Palangka Raya, Palangka Raya City, Central Kalimantan Province. The primary participants were students of Class X-8 at SMA Negeri 2 Palangka Raya.

Preparation Stage

a. Initial observation and coordination with the school to determine the schedule and participants, followed by a needs assessment survey using questionnaires to evaluate students' prior knowledge of DAGUSIBU.
b. Preparation of socialization materials, including an interactive module on DAGUSIBU principles, visual aids (such as drug samples, packaging labels, and medical waste containers), and pre-test and post-test instruments to assess improvements in students' understanding. The test consisted of eight yes/no questions related to the proper principles of obtaining, using, storing, and disposing of medicines.

The final step in this stage was evaluation through a post-test to measure participants' knowledge improvement after the socialization session. The post-test results were compared with the pre-test scores to determine the effectiveness of the material delivery and the overall impact of the activity on participants' understanding.

Implementation Stage

The socialization was conducted face-to-face and attended by registered students. The implementation steps were as follows:

a. Interactive Education: Delivering educational sessions on the importance of DAGUSIBU using animated videos and case studies, followed by simulations on how to read medicine labels, determine dosages, and understand side effects.
b. Practical Training: Conducting hands-on activities such as sorting medicines based on type (tablets, syrups, prescription drugs), demonstrating how to create simple medicine storage containers from recycled materials, and performing role-play scenarios titled *"What should you do if you find expired medicine?"*

Data Analysis

Quantitative analysis was conducted by calculating the level of conformity in percentage form. Scores were calculated using the Guttman Scale: Yes = 1 and No = 0

$$\% = \frac{Total\ score\ obtained}{Maximum\ possible\ score} \times 100\% \quad (1)$$

Category: Very good (81-100%), Good (61-80%), Fair (41-60%), Poor (21-40%), and Very poor (0-20%). The data were presented in tabular form.

RESULTS AND DISCUSSION

The community service program began with coordination with the Principal of SMA Negeri 2 Palangka Raya regarding scheduling, venue arrangements, and target participants. A survey was then conducted to assess students' knowledge needs regarding DAGUSIBU using a questionnaire.

Based on the survey conducted at SMA Negeri 2 Palangka Raya, two main problems related to drug management among students were identified. First, there was a low level of literacy regarding the proper DAGUSIBU principles (Obtain, Use, Store, and Dispose of medicines correctly). The survey showed that more than 60% of students did not understand drug classifications (over-the-counter drugs, limited over-the-counter drugs, prescription drugs, and pharmacy-only medicines) and the risks of drug misuse. Approximately 70% of students were also unaware of proper drug storage procedures (temperature, container, and location) and the safe disposal of expired or damaged medicines.

The DAGUSIBU socialization was conducted through educational sessions on proper drug use and handling, along with the distribution of DAGUSIBU pocketbooks to students on October 2, 2025. The activity took place in Class X-VIII with a total of 35 participants.

The session began with a pretest to evaluate students' initial understanding of DAGUSIBU. The material was then delivered by Lecturer apt. Ahmad Irawan, M.Farm. The presentation was conducted interactively using media such as PowerPoint slides, the DAGUSIBU handbook, and case study analysis to facilitate students' comprehension. The session was designed to help students understand the importance of proper drug handling through structured explanations relevant to daily life. In addition, students were provided with practical examples regarding the risks of drug misuse and the benefits of implementing DAGUSIBU principles, enabling them to connect the material with real-life situations. The DAGUSIBU Pocket Book is shown in Figure 1.

Figure 1 DAGUSIBU pocketbook

After the presentation, a discussion and question-and-answer session was held to encourage active participation. Many students enthusiastically asked questions about various aspects, such as the effectiveness of oral versus injectable medicines, the use and side effects of medicines they were currently taking, and whether medicines could be shared with others who have similar symptoms. The presentation of material about DAGUSIBU is shown in Figure 2.

Figure 2 Delivery of DAGUSIBU material

The activity concluded with a post-test, and the results were compared with the pre-test to verify improvements in students' understanding after the socialization (Fauzi, 2022). The measurement of increased literacy regarding DAGUSIBU was assessed through the pre-test and post-test. The results are presented in Table 1.

Table 1 Pre-test and post-test results on improving drug literacy using DAGUSIBU principles

Question	Understanding Level (%)	
	Pre-test Score	Post-test Score
Is a pharmacy the appropriate place to obtain medicines?	100	100
Does medicine packaging provide instructions for use?	97.10	100
If a medicine is taken before meals, does it mean it should be taken on an empty stomach or 1 hour before eating?	80	88.50
If a medicine must be taken three times a day, does it mean every 8 hours?	82.80	100
Can medicines be exposed to direct sunlight?	91.40	100
Is it permissible to store syrup medicines in a refrigerator?	37.10	68.50
Can liquid medicines such as syrups be thrown directly into the trash?	80	100
Can solid medicines such as tablets be discarded directly without crushing them first?	71.40	100

Based on Table 1, the pre-test and post-test results indicate an improvement in students' understanding of the DAGUSIBU concept (Obtain, Use, Store, and Dispose of Medicines Properly). Before the educational intervention, the pre-test score of 100% showed that all students already understood the correct and legal way to obtain medicines, namely from pharmacies. Understanding of proper medicine use based on packaging instructions, appropriate storage methods, and correct disposal procedures also improved after the intervention. Many students admitted that they previously stored medicines carelessly and disposed of expired medicines in regular trash without proper procedures. However, after the educational session, the post-test results demonstrated significant improvement. Students better understood that medicines should be obtained from official healthcare facilities such as pharmacies or community health centers, used according to dosage and instructions, stored appropriately to maintain quality, and disposed of in environmentally safe ways. A group photo of the community service team and participants is shown in Figure 3.

Figure 3 Group photo of community service team and participants

Analysis of the pre-test and post-test results shows progress in students' understanding of DAGUSIBU principles. The average pre-test score was 6.9 out of a maximum score of 8, reflecting limited initial understanding of proper drug handling. After participating in the educational program, the average post-test score increased to 7.6 out of 8. This finding aligns with Ramadhiani et al., (2022), which reported an increase in community knowledge after educational interventions. Before the intervention, only 2.9% of participants were categorized as having good knowledge, which increased to 82.9% afterward. This improvement indicates that the delivery methods, including interactive media and question-and-answer sessions, were effective in helping students understand DAGUSIBU principles (Indrawan & Puspitasari, 2022). Furthermore, students were able to recognize the risks of drug misuse and the importance of proper drug management in daily life.

CONCLUSION

The community service activity on DAGUSIBU principles at SMA Negeri 2 Palangka Raya successfully improved students' drug literacy, proper drug management skills, and responsible behavior in medicine use. The increase in the average score from 6.9 to 7.6 demonstrates the effectiveness of the interactive methods used in this program. As a follow-up, similar educational activities should be conducted continuously and expanded to other schools in collaboration with healthcare professionals and school authorities to strengthen understanding and promote proper drug management habits among adolescents.

CONFLICT OF INTEREST

All authors declare that there is no conflict of interest in this article.

AUTHOR CONTRIBUTIONS

DAR: Conceptualization, data analysis; AI: Speaker, drafting; SC: Visualization, editing; SAH: Methodology, data analysis; NPW: Documentation; GRD: Description; AND JK: Documentation and visualization.

AI DISCLOSURE STATEMENT

The authors used Google applications during the preparation of this work to search for references related to article writing. After using these tools/services, the authors thoroughly reviewed and edited the content as necessary and take full responsibility for the publication's content. The authors declare that this research was designed, conducted, written, and edited without the assistance of artificial intelligence (AI) technologies.

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