

Influence of Dagusibu Program Education on Knowledge and Behavior Levels of the Community in Bumi Subdistrict, Laweyan District, Surakarta City

Yashinta Dyah Ayu Setyawati^{1*}, Lucia Vita Inandha Dewi², Samuel Budi Harsono³

Master Of Pharmacy, Faculty of Pharmacy, Setia Budi University

Corresponding Author: Yashinta Dyah Ayu Setyawati shintayudyah@gmail.com

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ABSTRACT

This research aims to measure the public's knowledge level so that drug management in the community becomes effective with the implementation of DAGUSIBU. This study uses a cross-sectional design to determine the level of public knowledge. Data was obtained from the results of questionnaires and interviews. Data analysis was conducted using SPSS analysis with analytical techniques. The solution to improve the effectiveness of the DAGUSIBU medication application in households in Bumi village was analyzed using the Fishbone analysis method. The results of this study showed a difference in the level of understanding before and after education was used. The significance value (p-value) was $0.001 < 0.05$, which means there was a significant difference between before and after education. These results indicate that education is effective in increasing public knowledge of DAGUSIBU. The behavioral aspect has a value (p-value) < 0.05 , reflecting that education has a real impact on people's behavior in implementing DAGUSIBU in households.

INTRODUCTION

DAGUSIBU (Obtain, Use, Store, and Dispose of Medicines Properly and Correctly) is an educational program initiated by the Indonesian Pharmacists Association (Ikatan Apoteker Indonesia) to enhance public literacy regarding the safe use of medicines. In Indonesia, the implementation of DAGUSIBU is crucial, considering that many people still use medicines without prescriptions, store them improperly, or dispose of expired medicines carelessly, posing risks to both health and the environment. This lack of understanding is influenced by limited access to information, insufficient education in healthcare facilities, and the common habit of sharing medicines among family members or neighbors. The implementation of DAGUSIBU in Indonesia represents a strategic effort to build collective awareness of the importance of rational, safe, and responsible medicine use (Ramadhiani, 2023).

According to a study conducted by Agustikawati et al. (2021) on Improving Self-Medication Practices Among Housewives in Home Medicine Management through DAGUSIBU Education, the initial knowledge level of respondents before the education was 52.62%, which was categorized as poor in managing medicines for self-medication. After receiving DAGUSIBU education, the respondents' knowledge level increased to 70.94%, which was categorized as adequate in home medicine management for self-medication. The improvement in respondents' knowledge through DAGUSIBU education reached 38.67%. This finding indicates that the community's overall level of knowledge remains relatively low.

This study is in line with research conducted by Rindiani et al. (2023) entitled Implementation of the "Medicine Awareness Movement" through DAGUSIBU Counseling for Posyandu Cadre Mothers in Karangkemojing Village, which concluded that the community's level of knowledge regarding household medicine management remains low. This was evidenced by the fact that medication use within the community still involves errors, misuse of medicines, and the occurrence of harmful side effects. A similar issue was found in the study by Rahimah et al. (2023) entitled Education on the Implementation of DAGUSIBU in the Galesong Baru Community Group, Galesong District, Takalar Regency, which concluded that the local community had never previously received information about proper medicine management. Therefore, educational outreach activities were considered necessary to improve public knowledge regarding proper methods of storing and using medicines at home.

The level of knowledge and implementation of the DAGUSIBU program in various regions is still relatively low, as reflected in community habits such as using medicines without medical guidance, storing them unsafely, and carelessly disposing of expired drugs (Andi Zulbayu et al., 2021). This condition highlights the need for more intensive and continuous educational outreach so that the public can understand how to properly obtain, use, store, and dispose of medicines. Based on this analysis, appropriate solutions can be formulated to improve medicine literacy and promote the more effective implementation of the DAGUSIBU program within the community.

THEORETICAL REVIEW

DAGUSIBU (Obtain, Use, Store, and Dispose of Medicines Properly and Correctly) is an educational program initiated by the Indonesian Pharmacists Association (Ikatan Apoteker Indonesia) to enhance public literacy regarding the safe use of medicines. In Indonesia, the implementation of DAGUSIBU is crucial, considering that many people still use medicines without prescriptions, store them improperly, or dispose of expired medicines carelessly, posing risks to both health and the environment. This lack of understanding is influenced by limited access to information, insufficient education in healthcare facilities, and the common habit of sharing medicines among family members or neighbors. The implementation of DAGUSIBU in Indonesia represents a strategic effort to build collective awareness of the importance of rational, safe, and responsible medicine use (Ramadhiani, 2023).

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METHODOLOGY

This DAGUSIBU study is an experimental type of interventional research. It employs a cross-sectional design with a prospective approach, using both qualitative and quantitative methods to assess the community's level of knowledge about the DAGUSIBU program.

Tools and Materials

The tools used in this study included writing instruments, questionnaires, and a recording device. The materials consisted of questions related to knowledge and behavior aspects concerning the DAGUSIBU program, which were distributed during community gatherings in Bumi Subdistrict.

Research Flow

1. Preliminary Study.

The research began with a literature review and a preliminary study conducted in Bumi Subdistrict. This stage aimed to establish the theoretical foundation, understand the context of the problem, and identify the main issues to be investigated.

2. Design of Data Collection Form.

The next stage involved designing a data collection form to serve as the research instrument. The form was systematically structured to gather information relevant to the research objectives.

3. Permission Request to Bumi Subdistrict Office.

Before conducting the research, the researcher submitted an official request for permission to the Bumi Subdistrict Office as a form of legal authorization to carry out fieldwork.

4. Questionnaire Data Collection.

After obtaining permission, the researcher proceeded to collect data by distributing questionnaires to community members who met the research criteria.

Data Analysis

Data analysis was carried out in three stages:

1. Instrument Validity and Reliability Testing.

The research instrument was tested for validity using item validity through the *Corrected Item-Total Correlation* technique in SPSS, where an item is considered valid if the correlation coefficient is significant at the 0.05 level or exceeds the minimum correlation threshold. Subsequently, a reliability test was conducted using the *Cronbach's Alpha* method to ensure instrument consistency, where a value of ≥ 0.7 indicates acceptable reliability, and a value of > 0.8 reflects good reliability.

2. Quantitative Data Analysis.

Quantitative data were obtained through pretest and posttest evaluations conducted among residents of Bumi Subdistrict after interventions such as counseling sessions, distribution of educational leaflets, and demonstrations of medicine storage boxes. The data were analyzed using SPSS and the Likert scale

technique to observe changes in knowledge scores before and after the intervention, and the results were presented in descriptive tables.

3. Qualitative Data Analysis.

Qualitative data were collected through in-depth interviews with four selected respondents using a semi-structured interview guide. The interview results were analyzed to strengthen the quantitative findings and then integrated into an evaluation using a *Fishbone Diagram* to identify the root causes of the main problems and formulate appropriate solutions.

RESULTS AND DISCUSSION

Respondent Characteristics

Characteristics Based on Gender

The characteristics based on gender are presented in Figure 13 below:

Table 1. Characteristics Based on Gender

Gender	Amount	%
Male	28	8
Famale	309	92
Total	337	100

The percentage of female participants was higher than that of males because the event was conducted in collaboration with the PKK (Family Empowerment and Welfare) women's group as part of the DAGUSIBU educational program in Bumi Subdistrict, Laweyan District. Consequently, the participants were predominantly women.

This phenomenon can be explained through a sociocultural perspective, in which women more frequently assume the role of family health managers and are therefore more responsive to community-based educational programs (Kurniawan, 2021). The low participation rate of men reflects both structural and normative barriers that hinder their involvement, such as work responsibilities, gender perceptions regarding health roles, and the lack of inclusive outreach activities (Sutinah, 2017). Therefore, health communication strategies should be designed to reach all segments of society proportionally, ensuring a more equitable and sustainable impact (Twiceandaru et al., 2016).

Characteristics Based on Age

The characteristics based on age are presented in Table 2 below:

Table 2. Characteristics Based on Age

Age (years)	Amount	(%)
17-25	40	12
26-45	95	28
46-65	202	60
Total	337	100

Based on the table above, the age distribution of respondents participating in the DAGUSIBU educational activity in Bumi Subdistrict, Laweyan District, shows that the productive age group dominated participation, particularly those aged 26–45 years (95 individuals) and 46–65 years (202 individuals). These results indicate that individuals in middle adulthood tend to have higher involvement in efforts to improve health literacy, especially regarding medicine management (Muzadi & Febriani, 2025).

Participation among younger respondents (17–25 years) was relatively low (40 individuals), and there was no participation from those over 65 years old. This finding may suggest limited access or interest among the elderly group, as well as the need for more engaging and age-appropriate educational approaches for younger generations to ensure that health education coverage encompasses all age groups more evenly (Firamadhina & Krisnani, 2021).

Characteristics Based on Education

The characteristics based on the respondents' educational background are presented in Table 3 below:

Table 3. Characteristics Based on Education

Education	Amount	%
Elementary School	14	4
Junior High School	46	14
Senior High School	158	47
Diploma	53	16
Bachelor's Degree (S1)	66	20
Total	337	100

Based on the data on respondents' educational levels in the DAGUSIBU educational program held in Bumi Subdistrict, Laweyan District, the majority of participants were senior high school graduates (158 individuals), followed by bachelor's degree holders (66 individuals) and diploma graduates (53 individuals). Meanwhile, participation from respondents with basic education levels—elementary school (14 individuals) and junior high school (46 individuals)—was relatively low, and no participants were found with postgraduate education (master's or doctoral degrees).

This pattern indicates that the DAGUSIBU educational program reached more participants with secondary and higher education backgrounds, who theoretically possess better health literacy capacities. The low involvement of respondents with lower educational levels suggests the presence of an information and understanding gap that needs to be addressed through simpler and more contextually relevant communication strategies, ensuring that the principles of proper medicine use are disseminated evenly across all segments of society (Firamadhina & Krisnani, 2021).

Sources of Information about DAGUSIBU

The characteristics of respondents based on their knowledge of DAGUSIBU (*Obtain, Use, Store, and Dispose of Medicines Properly*) provide

valuable insights into the level of public literacy regarding the safe and responsible use of medicines.

Table 4. Characteristics Based on Whether or Not the Community Has Knowledge about DAGUSIBU

Knowledge	Amount	%
Have Heard	95	28
Have Not Heard	242	72
Total	337	100

The majority of the community members had no prior knowledge of the DAGUSIBU program, totaling 242 individuals (72%) out of 337 respondents. Only 28% or 95 individuals reported having previously received information about DAGUSIBU. The low level of awareness indicates a significant gap in the dissemination of education concerning proper medicine management among the public (Wahyuni et al., 2023).

This finding serves as strong evidence that DAGUSIBU outreach efforts need to be further strengthened and more strategically focused, particularly on community groups that have never received such information. Community-based approaches—such as through *posyandu* (integrated health posts), PKK activities (Family Welfare Movement), schools, and places of worship—are essential to broaden the reach and enhance the effectiveness of DAGUSIBU education, ensuring that public awareness increases evenly across all societal groups (Rahimah et al., 2023).

Distribution of Responses Regarding Knowledge Aspects Related to DAGUSIBU

Table 5. Distribution of Responses on Knowledge Related to DAGUSIBU Before and After Education

Domain	Knowledge	Question	Percentage (%)	
			Before	After
Get	1	Over-the-counter (OTC) drugs with a green logo, such as paracetamol, can be purchased at pharmacies without a prescription.	327 (97%)	337 (100%)
	2	Limited OTC drugs with a blue logo, such as Decolgen, can be dispensed at pharmacies without a prescription.	307 (91%)	337 (100%)
	3	Prescription-only drugs, such as antihypertensive, cholesterol, and diabetes medications with a red logo, can only be purchased at pharmacies.	100 (30%)	326 (97,4%)
	4	Medicines can be obtained from other people who have recovered.	31	303 (90%)

			(19%)	
Average			191	326
Use	5	Antibiotics must be taken until finished	326 (98%)	335 (99,3%)
	6	Medicines must be used according to the dosage stated on the doctor's prescription or label.	327 (97%)	337 (100%)
	7	If symptoms improve, prescription medicines may be stopped without consulting a doc.	97 (29%)	303 (90%)
	8	Using expired drugs is safe as long as they still appear physically good.	10 (3%)	333 (99%)
Average			190	327
Store	9	Insulin, suppositories, and ovules in unopened packaging can be stored at room or high temperature.	84 (25%)	253 (75%)
	10	Syrup medicines must be stored in the refrigerator.	162 (48%)	303 (90%)
	11	Eye drops in bottle packaging must be discarded 30 days after opening.	100 (30%)	300 (89%)
	12	Medicines should be stored in places easily accessible to children to facilitate access.	246 (73%)	323 (96%)
Average			148	294,8
Dispose	13	Tablet medicines should be disposed of by burying them in the ground.	169 (50%)	333 (99%)
	14	Expired medicines can be disposed of directly in the trash.	90 (26%)	303 (90%)
	15	Unused liquid medicines can be discarded directly into drains such as sinks or toilets.	270 (80%)	326 (97,6%)
	16	The labels of medicines to be discarded must be removed to prevent misuse.	303 (90%)	328 (98%)
Average			194,5	322,5

Table 6. Category of Public Knowledge Level Related to DAGUSIBU Before and After Education

No.	Parameter	Category	Score Range	Respondent Score	P Value
1	Before (Pre)	Moderate	6-10	7,82	0,000<0,05

2	After (Post)	High	11-16	14,47
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Based on the results of the knowledge level categorization, before the educational intervention, the community's knowledge level was moderate with a score of 7.82, and after education, it increased to the high category with a score of 14.47. Statistical analysis showed that the knowledge level data before and after education were not normally distributed according to the Kolmogorov-Smirnov test ($\text{Sig} < 0.065$). Therefore, to determine the difference before and after the test, the Wilcoxon test was applied. The significance value (p-value) was $0.000 < 0.05$, indicating a significant difference between before and after education.

Improvement Analysis

The improvement analysis for each causal factor contributing to the suboptimal public knowledge regarding DAGUSIBU (Get, Use, Store, Dispose of Medicines Properly) is presented based on the fishbone diagram:

Table 7. Corrective Actions for the Suboptimal Public Knowledge Related to DAGUSIBU

NO	Observed Factor	Identified Problem	Corrective Action
1	Material	a. The language used contains medical terms, making it difficult for some community members to understand.	a. Simplify the language in educational materials by replacing medical terms with everyday language familiar to the community. For instance, "antibiotic" can be explained as "medicine used to kill germs." Use narrative or illustrative approaches to clarify messages.
		b. Lack of health education sessions in healthcare facilities, resulting in limited public awareness about the DAGUSIBU program.	b. Develop a periodic education schedule (e.g., every three months) integrated with community activities such as <i>posyandu</i> (maternal and child health services), religious gatherings, or neighborhood meetings.
2	Method	a. No reinforcement through digital media.	a. Apply a blended learning method combining in-person education with digital reinforcement so

NO	Observed Factor	Identified Problem	Corrective Action
		b. Educational sessions are rarely held regularly due to time constraints.	that the community can access materials anytime when needed. b. Use real-life cases or stories from the local community as an experiential learning approach to make the material more relatable and engaging.
3	Environment	a. Healthcare workers rarely explain about DAGUSIBU. b. Low awareness about the importance of safe medication use. c. The community still normalizes discarding leftover or expired medicines into water drains. d. The community continues to store medicines within reach of children.	a. Conduct communication skill training for healthcare workers, emphasizing the importance of incorporating DAGUSIBU education during routine services such as prescription dispensing or medicine retrieval. b. Enhance public medicine literacy through community bulletin boards or simple stickers placed in homes, displaying proper methods for storing and disposing of medicines. c. Conduct simulations on proper medicine disposal. Create a "medicine drop box" where residents can collect expired or damaged medicines for proper destruction by authorized parties. Involve key community figures such as neighborhood leaders, women's organizations (PKK),

NO	Observed Factor	Identified Problem	Corrective Action
			religious leaders, and local healthcare providers in implementing environmentally safe disposal practices. d. Demonstrate types of small cabinets or storage boxes with locks as ideal storage places for medicines. Encourage people not to store medicines in kitchens, dining tables, or refrigerators without separation.
4	Human Factors	a. People still use medicines based on prior experiences, believing they are safe because they previously helped them recover. b. People still share medicines with family members or neighbors without consulting healthcare professionals.	a. Foster collective awareness that each individual has different health conditions; a medicine suitable for one person may not be safe for another. Health education should address both logical and emotional aspects. b. Emphasize collective understanding that self-medication and medicine sharing can be harmful, reinforcing that professional consultation is necessary before using any medication.
5	Facilities and Infrastructure	a. Educational sessions are conducted without projectors or other visual aids.	a. Develop short video content (1-3 minutes) in local language or with subtitles, and distribute it via community WhatsApp groups, Instagram, TikTok, Facebook pages, or screens in public health centers and pharmacies.

NO	Observed Factor	Identified Problem	Corrective Action
		b. Inadequate facilities for conducting educational sessions.	b. Optimize public spaces such as community halls, mosques, or village auditoriums for health education to create a more comfortable and interactive learning environment.
		c. Limited access to educational videos, guidebooks, or leaflets in healthcare centers, communities, and women's group activities.	d. Involve health vocational students or university service program participants (KKN) in producing simple educational content and assisting in technology-based outreach. Provide and distribute brochures or leaflets on DAGUSIBU to women's community groups (PKK) and households.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the discussion, it can be concluded that the community's level of knowledge before the educational intervention was in the moderate category with a score of 7.82, which increased to 14.47 after the intervention. Meanwhile, the behavioral aspect of the community was categorized as good, with a score of 19.732—exceeding the threshold value of 17.817. Therefore, the proposed solutions include simplifying the language used in educational materials, conducting regular counseling integrated with community activities, utilizing digital media, providing communication training for healthcare workers, and supplying supporting materials such as leaflets, videos, and expired medicine drop boxes. With the collaboration of various stakeholders, it is expected that the community will improve their understanding and practices regarding the safe use of medicines, thereby maintaining both public health and environmental sustainability.

FURTHER STUDY

Further research is recommended to involve a larger and more demographically diverse number of respondents, as well as to employ a qualitative approach using NVIVO statistical analysis, in order to better

understand the factors influencing community knowledge and behavior toward DAGUSIBU.

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