



Optimizing Household Medicine Management Through Education on the Proper Use, Storage, and Disposal of Medicines for the Community

Zulia Khozanah

STIKES Widya Dharma Husada Tangerang
Jl Pajajaran No.1, Pamulang Barat, Kecamatan Pamulang, Kota Tangerang Selatan, Banten 15417.

Article Info	ABSTRACT
Corresponding Author: Zulia Khozanah Email : zuliakhozanah@gmail.com	Proper household medicine management is an essential component of rational medicine use and public health promotion. Nevertheless, limited public knowledge regarding the appropriate use, storage, and disposal of medicines remains a common problem, potentially leading to medication errors, reduced drug effectiveness, self-medication risks, accidental poisoning, and environmental contamination caused by improper pharmaceutical waste disposal. This community service program aimed to improve community knowledge and awareness of household medicine management through education based on the DAGUSIBU (Obtain, Use, Store, and Dispose of Medicines Properly) principles. The program was conducted at Posyandu Melati, Sukamaju Village, Sukamaju District, Tangerang Regency, Banten, using a community empowerment approach with the Participatory Learning and Action (PLA) method involving housewives, community health volunteers, and family members responsible for household medicine management. The intervention consisted of interactive lectures, group discussions, practical demonstrations, educational consultations, and the distribution of educational media, including leaflets and posters. Program effectiveness was evaluated using a pre-test and post-test design, complemented by direct observation of participants' practical skills in medicine storage and disposal. The educational intervention improved participants' knowledge of rational medicine use, appropriate storage practices, identification of expired or damaged medicines, and environmentally safe disposal methods. Overall, the program strengthened community pharmaceutical literacy and promoted safer household medicine management practices. Continuous community-based education is recommended to sustain behavioral changes and support the rational use of medicines. Keywords: Community Education; DAGUSIBU; Household Medicine Management; Pharmaceutical Literacy; Rational Use Of Medicines.

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INTRODUCTION

Medicines play a fundamental role in disease prevention, treatment, rehabilitation, and the improvement of public health. However, the therapeutic benefits of medicines can only be achieved when they are obtained, used, stored, and disposed of appropriately. Inappropriate medicine management at the household level may reduce drug efficacy, increase the risk of adverse drug reactions, contribute to medication errors, promote irrational drug use, and generate environmental pollution through improper pharmaceutical waste

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disposal. Therefore, improving community awareness regarding proper household medicine management has become an important component of health promotion and preventive healthcare.

Household medicine management remains a significant challenge in many communities. Medicines are frequently stored under inappropriate environmental conditions, such as in humid rooms, kitchens, or bathrooms, where exposure to heat and moisture may reduce drug stability and effectiveness. Furthermore, leftover medicines are often kept for future self-medication without considering expiration dates or changes in physical characteristics. Such practices may increase the risks of treatment failure, drug toxicity, antibiotic resistance, and accidental poisoning, particularly among children and older adults. Another common problem is the improper disposal of expired or unused medicines, which are frequently discarded into household garbage or drainage systems without adequate destruction procedures, potentially contaminating soil and water resources.

To promote rational medicine use, the Indonesian Pharmacists Association (Ikatan Apoteker Indonesia/IAI) introduced the **DAGUSIBU** program, an acronym for *Dapatkan, Gunakan, Simpan, dan Buang Obat dengan Benar* (Obtain, Use, Store, and Dispose of Medicines Properly). This program emphasizes obtaining medicines only from authorized pharmaceutical facilities, using medicines according to professional instructions, storing medicines based on their pharmaceutical characteristics, and disposing of expired or damaged medicines safely to minimize health and environmental risks. Although DAGUSIBU has been widely promoted nationally, its implementation at the community level remains limited because many people have not yet received structured pharmaceutical education from healthcare professionals.

Preliminary observations and discussions with community partners revealed several issues related to household medicine management. Many community members, particularly housewives and health volunteers, were unable to distinguish appropriate storage conditions for different pharmaceutical dosage forms, such as tablets, capsules, syrups, ointments, and medicines requiring refrigeration. Participants also demonstrated limited understanding of how to identify expired or damaged medicines and were unfamiliar with safe medicine disposal methods. Moreover, educational activities concerning pharmaceutical care had rarely been conducted within the community, resulting in relatively low levels of medicine literacy.

Community empowerment through health education represents one of the most effective approaches to improving medicine literacy and encouraging behavioral change. Educational interventions that combine lectures, interactive discussions, demonstrations, and practical exercises allow participants not only to acquire theoretical knowledge but also to develop practical skills that can be implemented in daily household medicine management. Supporting educational media, including leaflets, posters, and pocketbooks, further reinforce knowledge retention and facilitate continuous learning after the intervention has been completed.

Based on these identified needs, this community service program was designed to optimize household medicine management through educational activities focusing on proper medicine use, storage, and disposal according to the DAGUSIBU principles. The program targets housewives, community health volunteers, and family members who are responsible for managing medicines at home because these groups play a strategic role in family healthcare decision-making. The intervention employs interactive counseling sessions,

demonstrations, educational media, and consultations supported by pre-test and post-test evaluations to measure improvements in participants' knowledge.

The expected outcomes of this community service initiative include increased public knowledge regarding rational medicine management, improved household practices related to medicine storage and disposal, enhanced awareness of environmental protection from pharmaceutical waste, and the availability of educational materials that can be sustainably utilized by community partners. Ultimately, strengthening community medicine literacy is expected to contribute to safer medicine use, improved family health, and broader public health promotion efforts.

METHODS

This community service program employed a community empowerment approach using the Participatory Learning and Action (PLA) method to improve public knowledge and practices regarding proper household medicine management based on the DAGUSIBU (Obtain, Use, Store, and Dispose of Medicines Properly) principles. The program was designed to actively involve participants throughout the educational process, enabling them not only to receive information but also to practice appropriate medicine management skills that can be implemented in their daily lives.

Community Partners and Participants

This community service program was conducted at Posyandu Melati, Sukamaju Village, Sukamaju District, Tangerang Regency, Banten, Indonesia. The location was selected because it is an active community health post supported by Posyandu cadres and members of the Family Welfare Movement (PKK), who play important roles in promoting family health, including household medicine management. The site is located approximately 8 km from STIKes Widya Dharma Husada Tangerang and can be reached within 20–30 minutes by motor vehicle, providing convenient access for implementing the educational activities.

The community partners consisted of local residents, particularly housewives, community health volunteers (Posyandu cadres), and family members responsible for managing medicines at home. These groups were selected because they play an important role in household healthcare decision-making, including medicine procurement, administration, storage, and disposal. Approximately 30 participants were targeted to participate in the educational program.

Program Implementation

Preparation Stage

The preparation phase included coordination with community partners to determine the implementation schedule, participant recruitment, and venue selection. During this stage, the service team also conducted preliminary observations to identify community needs related to household medicine management. Educational materials, PowerPoint presentations, leaflets, posters, pocketbooks, and evaluation instruments were developed based on the DAGUSIBU guidelines issued by the Indonesian Pharmacists Association.

Implementation Stage

The educational intervention consisted of several integrated activities. Before the educational session, participants completed a **pre-test** to assess their baseline knowledge regarding medicine use, storage, and disposal. The educational session was then delivered through interactive lectures covering medicine classification, rational medicine use, proper interpretation of medicine labels, expiration dates, appropriate storage conditions for different

dosage forms, recognition of damaged or expired medicines, and environmentally safe disposal procedures.

To reinforce learning outcomes, the lecture was followed by interactive discussions and question-and-answer sessions, allowing participants to share their experiences and obtain solutions to medicine-related problems encountered in their households. The educational activities were complemented by hands-on demonstrations, during which participants practiced reading medicine labels, organizing medicines according to expiration dates, identifying unsuitable storage conditions, and performing appropriate disposal procedures for expired or damaged medicines. At the end of the session, participants received educational media, including leaflets and posters, as references for continuous learning at home.

Program Evaluation

Program effectiveness was evaluated using a pre-test and post-test design to measure changes in participants' knowledge after the educational intervention. The same questionnaire was administered before and immediately after the activity. Improvement in participants' knowledge was determined by comparing pre-test and post-test scores, with the program targeting a minimum 30% increase in average post-test scores.

Practical skills were evaluated through direct observation during demonstration sessions using an observation checklist. Participants' ability to identify appropriate medicine storage conditions and explain correct disposal procedures was assessed by the facilitators. In addition, participant satisfaction was evaluated using a structured questionnaire covering the quality of educational materials, delivery methods, program usefulness, and suggestions for future activities. The success indicators included at least 80% participant attendance, 80% of participants demonstrating correct medicine management practices, and 85% reporting satisfaction with the program.

Sustainability Strategy

To ensure long-term program sustainability, educational materials were handed over to the community partners for continued use after the intervention. Community health volunteers were encouraged to disseminate the DAGUSIBU principles to other residents through routine community health activities such as Posyandu and PKK meetings. Furthermore, continuous communication between the community service team and the partners was planned to monitor the implementation of proper household medicine management and to support future initiatives, including the establishment of community-based DAGUSIBU ambassadors and household medicine information corners.

RESULTS AND DISCUSSION

Implementation of the Community Service Program

The community service program was conducted through an educational intervention designed to improve community knowledge regarding proper household medicine management based on the DAGUSIBU (Obtain, Use, Store, and Dispose of Medicines Properly) principles. The activities consisted of four main stages: preparation, educational counseling, practical demonstration, and evaluation. The participants included housewives, community health volunteers (Posyandu cadres), and family members responsible for medicine management at the household level. These participants were selected because they play a strategic role in determining how medicines are obtained, administered, stored, and disposed of within the family.



Figure 1. Documentation of Community Service activities

During the educational session, participants received comprehensive information regarding medicine classification, rational medicine use, interpretation of medicine labels, recognition of expiration dates, appropriate storage conditions according to dosage forms, identification of damaged medicines, and environmentally responsible disposal methods. Interactive discussions enabled participants to share their experiences concerning medicine storage and self-medication practices commonly encountered in their households. Practical demonstrations further reinforced participants' understanding by allowing them to directly practice reading medicine labels, organizing medicines according to expiration dates, identifying appropriate storage locations, and performing proper disposal procedures for expired medicines. Educational materials, including leaflets and posters, were distributed to facilitate continuous learning after the completion of the program.

Improvement of Participants' Knowledge

The effectiveness of the educational intervention was evaluated using a pre-test and post-test design. The evaluation focused on participants' understanding of medicine use, storage, and disposal before and after the educational activities. According to the program indicators established during the planning stage, the intervention was considered successful if the average post-test score increased by at least 30% compared with the pre-test results.

Overall, the educational activities were designed to improve participants' pharmaceutical literacy by addressing common misconceptions regarding household medicine management. Before the intervention, preliminary observations indicated that many participants stored medicines in inappropriate places such as kitchens and bathrooms, reused leftover medicines without consulting healthcare professionals, and disposed of expired medicines together with household waste or into drainage systems. These practices reflected insufficient understanding of medicine stability, safety, and environmental protection. After participating in the educational sessions and demonstrations, participants demonstrated a substantially better understanding of appropriate medicine management practices, particularly regarding correct storage conditions, recognition of expired medicines, and safe disposal procedures. The combination of lectures, demonstrations, and interactive discussions facilitated participants' comprehension by integrating theoretical knowledge with practical applications.

Enhancement of Practical Skills

Besides increasing theoretical knowledge, the program aimed to strengthen participants' practical skills in managing medicines safely within their households. During the demonstration sessions, participants practiced identifying information displayed on medicine packaging, including dosage instructions, expiration dates, registration numbers, and recommended storage conditions. They also practiced separating medicines according to pharmaceutical dosage forms and storage requirements while learning appropriate disposal techniques for expired or damaged medicines.

Observational evaluation indicated that most participants were able to perform these practical tasks correctly following the demonstrations. The participatory learning approach allowed participants to actively engage with real medicine packages, thereby enhancing knowledge retention and increasing confidence in implementing proper medicine management at home. This finding supports the effectiveness of experiential learning strategies in community health education, where direct practice significantly improves participants' behavioral competence compared with lecture-based education alone.

Discussion

Household medicine management represents an essential component of rational medicine use because medicines continue to exert therapeutic benefits only when they are obtained, administered, stored, and disposed of appropriately. The present community service program demonstrated that educational interventions based on the DAGUSIBU principles provide an effective strategy for improving community medicine literacy. The improvement observed in participants' understanding after the educational activities indicates that insufficient pharmaceutical knowledge remains one of the primary barriers to appropriate household medicine management.

The success of this intervention can largely be attributed to the participatory educational approach employed throughout the program. Rather than relying solely on conventional lectures, participants were actively involved in discussions, demonstrations, and practical exercises. Active learning methods encourage participants to connect newly acquired information with their previous experiences, thereby facilitating better knowledge retention and behavioral change. Educational media such as leaflets and posters further strengthened the intervention by providing participants with accessible references that could be used after the completion of the program.

These findings are consistent with previous studies reporting that community-based pharmaceutical education significantly improves public knowledge regarding rational medicine use. The Indonesian Pharmacists Association has promoted the DAGUSIBU movement as an effective framework for increasing public awareness concerning appropriate medicine acquisition, utilization, storage, and disposal. Similar educational interventions have also demonstrated positive impacts on reducing irrational medicine use and encouraging safer household medicine management practices. Furthermore, the World Health Organization emphasizes that public education constitutes one of the core components for promoting the rational use of medicines and preventing medication-related problems at the community level.

An additional strength of the program lies in its emphasis on environmentally responsible medicine disposal. Pharmaceutical waste has increasingly become a public health concern because improper disposal may introduce active pharmaceutical ingredients into soil and water ecosystems. By introducing participants to safe disposal procedures, the program

not only contributes to patient safety but also supports environmental sustainability. This dual perspective broadens the impact of pharmaceutical education beyond individual health toward environmental health protection.

The sustainability strategy proposed in this program further enhances its potential long-term impact. The distribution of educational materials, involvement of community health volunteers, and recommendation to establish community-based DAGUSIBU ambassadors provide opportunities for continuous dissemination of pharmaceutical knowledge after the completion of the intervention. Such empowerment-based approaches are expected to strengthen community self-reliance in household medicine management and support national efforts to promote rational medicine use.

This community service program demonstrates that structured pharmaceutical education combining interactive lectures, practical demonstrations, educational media, and participatory discussions constitutes an effective approach for improving household medicine management. Future community service activities should incorporate follow-up monitoring to evaluate whether improvements in knowledge are translated into sustained behavioral changes and should expand educational coverage to broader community groups in order to maximize public health benefits.

CONCLUSION

This community service program demonstrated that educational interventions based on the DAGUSIBU (Obtain, Use, Store, and Dispose of Medicines Properly) principles are an effective strategy for improving community knowledge and awareness regarding household medicine management. The combination of interactive lectures, practical demonstrations, discussions, and educational media successfully enhanced participants' understanding of proper medicine use, appropriate storage conditions, and environmentally safe disposal practices. The use of a participatory learning approach encouraged active engagement, enabling participants to translate theoretical knowledge into practical skills applicable in their daily lives.

The implementation of pre-test and post-test evaluations provided an objective measure of the educational program's effectiveness, while practical demonstrations strengthened participants' ability to correctly identify medicine labels, organize household medicines, recognize expired products, and apply appropriate disposal procedures. These outcomes indicate that community-based pharmaceutical education can contribute to promoting rational medicine use, reducing medication-related risks, and increasing public awareness of environmental protection associated with pharmaceutical waste management.

To ensure sustainable impact, continuous educational activities should be integrated into routine community health programs through collaboration with community health volunteers, local health centers, and other stakeholders. Future programs are also recommended to establish community-based DAGUSIBU ambassadors or household medicine information centers to reinforce public medicine literacy and encourage long-term behavioral changes in household medicine management. Such initiatives are expected to support safer medicine use, improve family health outcomes, and contribute to sustainable community health development.

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