

Enhancing The Understanding of Villagers in Semoyo Patuk Gunungkidul Yogyakarta Regarding Medicinal Chemical in Commercial Natural Products

Ingenida Hadning, Aris Widayati

Universitas Muhammadiyah Yogyakarta, Yogyakarta, Indonesia

Submitted: 2 January 2023 / Revised: 8 July 2023 / Received: 9 December 2023

Abstract: The consumption of herbal medicine in Indonesia has attracted people since ancient times. The trend of consuming jamu is increasing along with the COVID-19 pandemic. Some studies mention that medicinal chemical ingredients are added to marketed natural medicines for a specific purpose, that is not allowed. These medicinal chemicals are known to cause side effects that are very harmful to the body. This reported program aims to improve knowledge regarding the dangers of medicinal chemicals added in marketed natural products. The participants of this program were 30 members of Argomoyo Sejahtera in Semoyo Village, Patuk, Gunung Kidul, Yogyakarta. This program was held on Saturday, May 4th, 2024, at Universitas Muhammadiyah Yogyakarta (UMY). This program was carried out through education about medicinal chemicals added in marketed natural products. Participants were given a questionnaire before and after the education to evaluate their knowledge regarding the delivered materials. Data of the pre-test and post-test were analysed using paired sample t-test. The results show that there is a significant increase in participants' knowledge, with a p-value of 0.017 (<0.05). These results indicate that education could effectively enhance knowledge about medicinal chemicals' dangers which are added to marketed natural products.

Keywords: community empowerment, medicinal chemical, natural product, side effects

Copyright ©2025 The Authors.

This is an open access article under the CC BY-SA License.



Corresponding Author:

*Ingenida Hadning

Email: ingenida.hadning@umy.ac.id

How to Cite: Hadning, I., & Widayati A. (2025). Enhancing The Understanding of Villagers in Semoyo Patuk Gunungkidul Yogyakarta Regarding Medicinal Chemical in Commercial Natural Products. ADMA: Jurnal Pengabdian dan Pemberdayaan Masyarakat, 6(1), 113-120.

Introduction

Indonesia is one of the countries with very abundant biodiversity. As many as 75% or around 30,000 of the 40,000 plant species in the world can be found in Indonesia ([Hafsah et al., 2022](#)). About 9,600 have potential as medicinal plants, and about 300 species have been utilized by the traditional medicine industry as the main ingredient ([Dini et al., 2024](#)). Using plants as medicine has interested people in Indonesia since ancient times ([Harefa, 2020](#)). This is indicated by many natural products, commonly referred to as jamu, that are marketed. Jamu is a traditional medicine made from various natural ingredients that generally come from plant parts such as leaves, bark, and rhizomes/roots, which are used and tested for their properties empirically ([Huda, 2022](#)). Jamu does not only reflect Indonesia's rich cultural heritage but also plays a vital role in the healthcare practices in many Indonesian communities. The utilization of herbal medicine is believed to have beneficial properties for the body's health ([Yulianto, 2017](#)). Jamu can be a single or mixed plant material used to prevent or treat disease ([Widyowati & Agil, 2018](#)). Furthermore, during the COVID-19 pandemic the culture of consuming jamu is known to increase rapidly ([Sudarsana et al., 2020](#)). As much as 65-80% of the world's population consumes natural products for alternative medicines ([Rusdiana et al., 2021](#)). Natural product is perceived to have minimal side effects and relatively lower costs when compared to synthetic medicines ([Efremila et al., 2015](#)). Therefore, natural medicine is one of the opportunities to be developed as a cultural heritage in Indonesia.

The increasing trend of natural medicines consumption has resulted in some irresponsible people looking for loopholes to increase their sales figures ([Rusmalina et al., 2020](#)). Cases of added medicinal chemicals are often found in commercial traditional medicines that are packaged modernly ([Fadly Mochtar et al., 2023](#)). One of them is the addition of medicinal chemicals into natural products, specifically Jamu. This is intended to provide a faster effect of the jamu, but is very harmful to the body ([Nasution et al., 2022](#)). Medicinal chemicals usually mixed in jamu are caffeine, dexamethasone, paracetamol, theophylline, pyroxene, CTM, phenylbutazone, and antalgin ([Sari, 2006](#)). When combined with natural products, these medicinal chemical ingredients can cause adverse effects on the body. These effects include overdose or interaction with the natural ingredients themselves ([Hidayat & Hayati, 2020](#)). Furthermore, the addition of medicinal chemicals to jamu is possibly to cause death. For example, antalgin can cause damage to the digestive system, which triggers bleeding. Another medicinal chemical is dexamethasone's impact, which is also known to cause moon face ([Chamidah et al., 2021](#)). Unfortunately, not all people have good knowledge about these medicinal chemicals. The safety factor in natural products is essential for consumers ([Campbell et al., 2013](#)). Therefore, a program is needed to increase public knowledge regarding medicinal chemicals added irresponsibly to commercial natural products.

The government program related to collaboration between the Ministry of Tourism and Creative Economy (Kemenparekraf) and the Ministry of Health (Kemenkes) has an excellent opportunity to be implemented. The program encourages the development of the concept of health tourism. Health tourism is divided into health and herbal medicine tourism, medical tourism, health science tourism, and sports tourism that supports health ([Widarini et al., 2022](#)).

This improves community health (Prawira, 2019). Health and herbal tourism have a high potential to be implemented in Indonesia, one of which is Hermoyo Edupark. Hermoyo Edupark is a community-based Herbal Edupark located in Semoyo Village. Semoyo Village is one of the areas in Gunung Kidul Regency in Yogyakarta Province with an area of 5.76 km². The area in Semoyo Village is filled with lush community and conservation forests, which have potential in their own right. In addition, medicinal plants grow quickly in this region, such as turmeric (*Curcuma longa* L.), ginger (*Zingiber officinale*), mango turmeric (*Curcuma amada*), cloves (*Syzygium aromaticum*), lemongrass (*Cymbopogon citratus*), lime (*Citrus aurantifolia*), and others. Thus, the potential for developing plants into medicine is enormous. However, the utilization of medicinal plants in this area is still limited, as the community still needs to gain adequate knowledge and skills in processing good and safe herbal products.

The community service program is the first of its kind in this area. It aims to increase knowledge about the dangers of medicinal chemicals added irresponsibly to marketed natural products, especially herbal medicine, to the people of Semoyo village, Patuk, Gunung Kidul, Yogyakarta. The results of this program are expected to equip the participants with adequate knowledge about the dangers of medicinal chemicals so that they can develop a Herbal Edupark in their village correctly.

Methods

This program was carried out on Saturday, May 4, 2024, at the Faculty of Medicine and Health Sciences UMY located in Bantul, Yogyakarta. The participants were 30 members of the Agromoyo Sejahtera group from Semoyo Village, Patuk, Gunung Kidul, Yogyakarta Province. Data gathered using a questionnaire, which was delivered to the participants before and after education (pre-post test intervention). An illustration of the whole program can be seen in Figure 1.

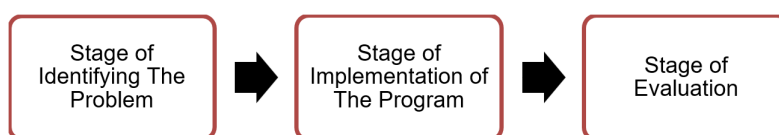


Figure 1. Stages of the education program to Semoyo villagers in Patuk, Gunungkidul, Yogyakarta Province regarding medicinal chemical constituents present in commercial natural products

1. Stage of Identifying the Problem

The problem identification process was carried out by observing Semoyo Village, Pathuk, Gunung Kidul, Yogyakarta. This observation included analyzing the situation of both location potential, natural potential, and community empowerment potential. A gap was obtained from the situation analysis results, which encouraged the implementation of this education program regarding medicinal chemical constituents present in commercial natural products.

2. Stage of Implementation of the Program

This community service was implemented by educating participants about the dangers of medicinal chemicals. The education program was aimed to enhance participants' understanding on medicinal chemicals that are often misused by adding them to natural products, specifically

Jamu. The education materials contained the types of medicinal chemicals, how they work, and potential side effects.

3. Stage of Evaluation

This program was started by pre-test activities using a questionnaire. The pre-test was aimed to measure the participants' knowledge before the education. The education was completed by post-test. The post-test was proposed to assess participants' knowledge after the education. The questionnaire contained 15 questions with short answer choices. Then, the data was analyzed using a paired t-test. If the p-value ≤ 0.05 , then there is a significant difference between the participants' knowledge before education and after.

Discussion

This education program was targeted villagers who were members of Agromoyo Sejahtera Group in Semoyo Village, Patuk, Gunungkidul, Yogyakarta Province. They are involved in managing Herbal EduPark in Semoyo village. Thirty participants participated in this program. The program was conducted through three steps, i.e.: identifying the problem, implementation the program, and evaluation of the program.

The stage of the identifying program was carried out through observations in Semoyo village, Pathuk, Gunung Kidul, Yogyakarta Province. The observation was done through thoroughly analyzing the area and its potencies, assessing various enablers such as local resources, community needs, and existing challenges. This analysis stage helped identify key stakeholders and foster collaboration with residents, which is essential for the success of proposed program. This stage suggested that there was a problem to improve understanding of the villagers, especially those who were in charge in the managing of Herbal EduPark in Semoyo village regarding medicinal chemicals ingredients added irresponsibly to Jamu. This problem was urgent as they must handle Herbal EduPark business, in which their activities is herbal production. Therefore, the formulated program was an education regarding the dangers of medicinal chemicals ingredients added irresponsibly to Jamu.

The stages of implementing this program were educating the participants about the dangers of medicinal chemicals added irresponsibly to jamu. Education related to the dangers of medicinal chemicals can be seen in (Figure 2). This education aimed to provide a deep understanding of the risks of adding medicinal chemicals irresponsibly to Jamu that leads to adverse effects.



Figure 2. Education about The Dangers of Medicinal Chemicals Added Irresponsibly in Jamu

Education about the dangers of medicinal chemicals was carried out by delivering material related to natural products, types of medicinal chemicals, how medicinal chemicals work in the body and the impact and dangers of medicinal chemicals. This education is expected to be able to prevent the misuse of medicinal chemicals in natural medicine production, especially Jamu. Community service related to education on the dangers of medicinal chemicals has been done many times previously. Other similar programs applied a virtual ethnographic approach and online education. The final stage of the activities can be seen in Figure 3.



Figure 3. Stage of Evaluation Program

The final stage in this community service program was the evaluation stage. This stage was carried out to evaluate the effectiveness of the education about the dangers of medicinal chemicals added irresponsibly to jamu. The measurement of the participant's knowledge level related to medicinal chemicals was carried out through pre-test and post-test to ensure increased participants' knowledge before and after the community service activity. Results of the pre-test and post-test can be seen in Table 1.

Table 1. *Pre-test and Post-test Results of the Education about medicinal chemicals added in Jamu*

Measurement	N	Mean (%)	p-value
Pre-test	30	63.60	0.017
Post-test	30	72.07	

Table 1 shows the analysis using a paired sample t-test result which is a p-value of 0.017 (<0.05). The result indicates a significant difference in the pre-test and post-test results, as the p-value is less than 0.05. This significance suggests that the education was effectively received by the participants, leading to a measurable improvement in their understanding about the dangers of medicinal chemicals added irresponsibly in Jamu.

The result is in line with results from the previous community service activity done by Anwar et al. (2024) and Priyana et al. (2021). The results show that there is an increase in knowledge before and after education (Priyana et al., 2021). A community service program reported by Anwar et al. (2024), shows an increase in community knowledge related to the dangers of medicinal chemicals. This result shows a significant positive impact, namely that participants showed an increase in knowledge, which means that the material delivered was well understood. The increased understanding of the dangers of medicinal chemicals added irresponsibly in jamu

may encourage the community to choose safer and healthier natural products. Furthermore, it is expected that participants in this program who manage the Herbal Edupark in Semoyo Village can produce safer herbal products. At the end, the closing activities can be seen in Figure 4.



Figure 4. Closing Community Service Activity

The closing of community service activities was carried out by giving souvenirs to participants and taking photos together. This community service program can be carried out thanks to several supporting factors. First, the support from relevant partners, such as Agromoyo Sejahtera Group, who were willing to be directly involved in this activity, was crucial. In addition, the high enthusiasm of the participants showed their interest and commitment to learning and develop skills. In addition, in the implementation of this community service program, there are also several inhibiting factors, such as a lack of motivation from some community members who may feel skeptical about the benefits of this training, which can be a challenge and limited time for implementing community service activities.

Conclusion

In conclusion, this community service program successfully enhanced the knowledge of the Agromoyo Sejahtera Group members in Semoyo Village regarding the safe processing of herbal ingredients and the risks associated with medicinal chemicals added irresponsibly in natural remedies. The significant improvement in participants' understanding, as evidenced by pre-test and post-test results (p -value 0,017), underscores the importance of education in promoting safe herbal products. By empowering the community to produce high-quality natural products, the initiative contributes to public health. This program also lays the groundwork for developing Hermoyo Edupark into a sustainable herbal tourism destination, fostering economic growth among the local people and cultural preservation.

Acknowledgment

Thanks to Universitas Muhammadiyah Yogyakarta for supporting this activity. BSI Maslahat has assisted by providing zakat funds through economic empowerment programs. We would also like to express our gratitude to the collaborators, Argomoyo Sejahtera members, who have participated in this program.

References

- Anwar, K., Utami, M. N., Na, L., & Pertiwi, T. N. (2024). Edukasi Bahaya Bahan Kimia Obat (BKO) dalam Obat Tradisional dan Pembuatan Jamu di Desa Sumberahayu. 6(1), 40–44. <https://doi.org/10.53359/dimas.v6i1.81>
- Campbell, N., Clark, J. P., Stecher, V. J., Thomas, J. W., Callanan, A. C., Donnelly, B. F., Goldstein, I., & Kaminetsky, J. C. (2013). Adulteration of purported herbal and natural sexual performance enhancement dietary supplements with synthetic phosphodiesterase type 5 inhibitors. *Journal of Sexual Medicine*, 10(7), 1842–1849. <https://doi.org/10.1111/jsm.12172>
- Chamidah, S., Yulastuti, D., & Fauzi, R. M. (2021). Identification Of Dexamethason in Jamu Pegal Linu Circulating in Cilacap using A Thin Layer Chromatography Method (KLT). *Pharmaqueous: Jurnal Ilmiah Kefarmasian (JP)*, 3(1), 39–45.
- Dini, A. Y. R., Rohaeni, E., Mahendra, N. P., & Nopita, D. (2024). Pemberdayaan Masyarakat Dalam Penanaman Toga Sebagai Upaya Sehat Dengan Herbal Asli Indonesia. *Health Care : Journal of Community Service*, 2(1), 45–49. <https://doi.org/10.62354/healthcare.v1i2.11>
- Efremila, E., Wardenaar, E., & Sisillia, L. (2015). Studi Etnobotani Tumbuhan Obat Oleh Etnis Suku Dayak Tanam Kecamatan Mandor Kabupaten Landak. *Jurnal Hutan Lestari*, 3, 234–246.
- Fadly Mochtar, C., Luthfi, M., Misnawati Aisyiyah, N., Puji Lestari, K., Putri, S., & Pratiwi, J. (2023). Edukasi Bahaya Obat Tradisional Mengandung Bahan Kimia Obat Di MTs Nurul Islam Kecamatan Palaran Kota Samarinda. *BERNAS: Jurnal Pengabdian Kepada Masyarakat*, 4(2), 1440–1447.
- Hafsah, H., Nur, S., & Alang, H. (2022). Tumbuhan Antipiretik Sebagai Upaya Swamedikasi Demam Masyarakat Suku Mandar, Campalagian, Kabupaten Polman. *Jurnal Kesehatan Tambusai*, 3(3), 404–411. <https://doi.org/10.31004/jkt.v3i3.6494>
- Harefa, D. (2020). Pemanfaatan Hasil Tanaman Sebagai Tanaman Obat Keluarga (TOGA). *Madani : Indonesian Journal of Civil Society*, 2(2), 28–36. <https://doi.org/10.35970/madani.v2i2.233>
- Hidayat, H., & Hayati, H. (2020). Eureka Herba Indonesia. *Eureka Herba Indonesia*, 1(1), 1–5.
- Huda, N. (2022). Pemanfaatan Rempah Pilihan Sebagai Jamu Imunitas di Masa New Normal. *Jurnal Surya Masyarakat*, 4(2), 160. <https://doi.org/10.26714/jsm.4.2.2022.160-168>
- Nasution, P. A., Sa'diyah, H., & Rahmadani, R. (2022). Analisis Natrium Diklofenak pada Jamu Pegal Linu di Kota Banjarmasin. *Journal of Social Research*, 1(10), 1076–1081. <https://doi.org/10.55324/josr.v1i10.227>
- Prawira, A. E. (2019). Menkes Terangkan Perbedaan Wisata Kebugaran dan Wisata Sehat.

- Priyana, P., Dianrachma, M., & Ardiansyah, R. (2021). Sosialisasi Aspek Hukum Penggunaan Jamu Yang Mengandung Bahan Baku Obat Kimia Berbahaya Berdasarkan Undang-Undang Nomor 36 Tahun 2009 Tentang Kesehatan. *Abdimas Unwahas*, 6(2), 93–97. <https://doi.org/10.31942/abd.v6i2.5543>
- Rusdiana, N., Wulansari, D. K., & Sylvia, D. (2021). Determination of Methampyrone Levels Using Thin Layer Chromatography and UV Spectrophotometry Method in Gout Herbal Medicine. *Proceedings of the 4th International Conference on Sustainable Innovation 2020–Health Science and Nursing (ICoSIHSN 2020)*, 33(ICoSIHSN 2020), 479–483. <https://doi.org/10.2991/ahsr.k.210115.094>
- Rusmalina, S., Khasanah, K., & Nugroho, D. K. (2020). Deteksi Asam Mefenamat pada Jamu Pegel Linu yang beredar di Wilayah Pekalongan. *Pharmacon: Jurnal Farmasi Indonesia*, 51–60. <https://doi.org/10.23917/pharmacon.v0i0.10111>
- Sari, L. O. R. K. (2006). Pemanfaatan Obat Tradisional Dengan Pertimbangan Manfaat Dan Keamanannya. *Pharmaceutical Sciences and Research*, 3(1), 1–7. <https://doi.org/10.7454/psr.v3i1.3394>
- Sudarsana, I. K., Suryanti, P. E., Subrahmaniam, I. B., Saitya, S., Suastika, K., Arimbawa, A., Ekaningtyas, E., Drajadi, N. L., Sutana, I. G., Dwipayana, A. A. P., Rudiarta, I. W., Wiguna, W., Arta, I. B. A., Paramarta, P., Nerta, I. M., Wayan, I., Armini, I. A. A., Susila, G. H. A., Anak Agung Putra Laksana, G. A. J. N., . . . Suryana, I. M. (2020). *COVID-19: Perspektif Agama dan Kesehatan*. Yayasan Kita Menulis.
- Widarini, P. S. I., Wijaya, M., & I N, A. M. (2022). Wellness and Herbal Tourism Based on Local Wisdom as an Alternative to 'New Normal' Tourism. *Jurnal Komunikasi*, 14(2), 299–321. <https://doi.org/10.24912/jk.v14i2.17568>
- Widyowati, R., & Agil, M. (2018). Chemical constituents and bioactivities of several Indonesian plants typically used in jamu. *Chemical and Pharmaceutical Bulletin*, 66(5), 506–518. <https://doi.org/10.1248/cpb.c17-00983>
- Yulianto, S. (2017). Penggunaan Tanaman Herbal Untuk Kesehatan. *Jurnal Kebidanan dan Kesehatan Tradisional*, 2(1), 1–7. <https://doi.org/10.37341/jkkt.v2i1.37>