Dimas : Jurnal Pemikiran Agama untuk Pemberdayaan
Volume 26 No. 2, Oktober 2026
DOI: 10.21580/dms.v26i2.33502

Effectiveness of Health Education on the Utilization of Ginger-Based Family Medicinal Plants Through Innovative Herbal Jelly Candy in Improving Community Knowledge of ARI Prevention: An Islamic Perspective in Wulung Village, Blora Regency

Yofinia[1], Niken Mashitoh[2], Anak Agung Ayu Tresna Ananda Putri[3], Debby Reiska Putri Purwanto[4], Eka Yuliana Dian Prawesti[5], Prasetya Anang Baja[6]
[1234] Universitas Negeri Semarang, Indonesia
[5] BPJS Kesehatan KC Surakarta, Indonesia
[6] BPJS Kesehatan KC Sleman, Indonesia
[1] biiyofinia@gmail.com
[2] nikenmashitoh@gmail.com
[3] ayutresnaanandaputri@gmail.com
[4] debbyreiskaputripurwanto@gmail.com
[5] eka.yuliana@bpjs-kesehatan.go.id
[6] prasetya.anang@bpjs-kesehatan.go.id

Abstract

Acute Respiratory Infection (ARI) remains one of the most prevalent health problems among children under five in Indonesia. In Wulung Village, Blora Regency, limited community knowledge about the use of Family Medicinal Plants (FMPs), particularly ginger, underscores the need for accessible health education. This community service program aimed to evaluate the effectiveness of health education on the utilization of ginger-based FMPs, delivered through an innovative herbal jelly candy, in improving community knowledge regarding ARI prevention. The program employed a community-based health education approach combined with practical demonstrations. A pre-experimental design with a one-group pretest–posttest approach was used, involving 36 participants in Wulung Village, Blora Regency, in July 2026. The activities included community needs identification, health education on ARI prevention and the benefits of ginger as a family medicinal plant, and a hands-on demonstration of preparing herbal jelly candy made from ginger and lemongrass. Participants' knowledge was assessed before and after the intervention using questionnaires. Data were analyzed using the Wilcoxon Signed-Rank Test. The results showed that 35 participants (97.2%) demonstrated improved knowledge scores, while one participant (2.8%) showed no change, and none experienced a decline. The median knowledge score increased from 62.5 (50–100) before the intervention to 100 (75–100) after the intervention, with a statistically significant difference ($Z = -5.223$; $p < 0.001$). These findings suggest that health education combined with practical

© 2026 by Dimas: Jurnal Pemikiran Agama dan Pemberdayaan.
This publication is licensed under a Creative Commons Attribution ShareAlike 4.0 International (CC BY-SA 4.0)

demonstrations of herbal product preparation can improve community knowledge of the use of FMPs as a promotive and preventive approach to ARI.

Keywords: *Acute Respiratory Infection; Family Medicinal Plants; Ginger; Health Education; Jelly Candy.*

Introduction

Indonesia is recognized as one of the world's megabiodiverse countries, possessing abundant biological resources, including a wide variety of medicinal plants that have been used for generations in indigenous healthcare practices. One of the most widely promoted forms of medicinal plant utilization is Family Medicinal Plants (FMPs), which refers to medicinal plant species cultivated in household gardens and used for traditional treatment and disease prevention.

The cultivation and utilization of FMPs not only provide a natural alternative for maintaining health but also support promotive and preventive health efforts, enhance family self-reliance, and offer educational, economic, and environmental benefits. Nevertheless, the use of medicinal plants within communities has gradually declined due to changing lifestyles and the increasing reliance on modern pharmaceuticals. Consequently, public knowledge, particularly among younger generations, regarding the health benefits of medicinal plants has diminished. Therefore, educational programs are needed to reintroduce the importance of FMPs through engaging, accessible, and community-oriented approaches. (Aprihatin, Y., Shevariant, F., Richard, V., Gustia, M., Idzhar, R. S., & Arza, 2025).

Based on the results of observations and community needs assessment conducted in Wulung Village, Randublatung District, Blora Regency, one of the most prevalent health problems identified was Acute Respiratory Infection (ARI), particularly among children under five. This condition highlighted the need for a community empowerment program focusing on the utilization of Family Medicinal Plants (FMPs) as a promotive and preventive health strategy. To address this issue, the BASKARA Garden (Budi Daya Tanaman Obat Keluarga Nusantara) program was developed as both an educational platform and a cultivation site for medicinal plants that the community could sustainably utilize. The program not only provides education on cultivating and maintaining FMPs but also encourages

community members to process harvested medicinal plants into value-added products, enabling them to obtain direct health and economic benefits.

Among the medicinal plants cultivated in the BASKARA Garden, ginger (*Zingiber officinale*) was selected as one of the primary species due to its considerable potential as a family medicinal plant. Ginger has long been used in traditional Indonesian medicine and is well known for its diverse health benefits. Its rhizome contains various bioactive compounds, including gingerol, shogaol, zingerone, flavonoids, and essential oils, which exhibit antioxidant, anti-inflammatory, antimicrobial, and immunomodulatory properties. These bioactive constituents have been reported to enhance immune function and help alleviate respiratory symptoms, such as cough, sore throat, and discomfort associated with ARI. (Syaputri, E. R., Selaras, G. H., & Farma, 2021). Furthermore, ginger produces a warming effect on the body, promotes blood circulation, and supports overall health.

In addition to its health-promoting properties, ginger is relatively easy to cultivate and can be grown in household gardens. However, the extent to which local communities diversify ginger into processed products should be established through local observations or supporting studies rather than assumed. Previous community-based initiatives have demonstrated practical efforts to process ginger into products such as herbal candy and ginger-based foods (Maulana et al., 2024; Murdaningsih et al., 2026). Building on this work, the BASKARA Garden program introduced ginger-based herbal jelly candy as a practical educational medium and an example of product diversification using locally available resources. This approach was intended to make learning more engaging; the program did not directly measure product-market acceptance or economic value added.

From an Islamic perspective, the responsible use of local resources and community health education can be understood through the principles of amanah (responsibility), seeking beneficial knowledge, and ta'awun (mutual assistance in goodness). The Qur'an encourages cooperation in goodness (Qur'an 5:2). In this program, these values provide an ethical rationale for sharing health knowledge, supporting families in caring for their health, and working together to use locally available plants responsibly. This religious framing complements, rather than replaces, evidence-based health information and appropriate professional healthcare.

One of the innovations introduced through this program was the development of ginger-based herbal jelly candy. This product was selected for its chewy texture, which is generally more appealing to children, and its convenience for consumption at any time. Processing ginger into herbal jelly candy helps reduce its characteristic pungent taste while preserving its primary ingredient, thereby making the product more acceptable to both children and the wider community. This innovation is expected to increase community interest in consuming ginger while promoting the benefits of Family Medicinal Plants (FMPs) through a more creative and engaging approach. (Maulana, I., Aulia, R., Ardillah, D., Nurcahyani, D., Husein, M. L., Shalihat, A., Gusthira, A., & Marscella, 2024).

In addition to serving as a value-added product, ginger-based herbal jelly candy was also developed as a health education medium. Health education integrated with a hands-on demonstration of ginger-based product preparation can enhance community understanding of the benefits of medicinal plants and encourage their use in daily life. Educational sessions covering the health benefits of ginger, cultivation techniques, and the importance of Family Medicinal Plants (FMPs) were delivered alongside the preparation and distribution of the herbal jelly candy. This integrated approach was expected to improve community knowledge more effectively, as participants not only received theoretical information but also gained practical experience in processing medicinal plants into beneficial products.

Through the BASKARA Garden program, the use of Family Medicinal Plants (FMPs) extends beyond health education by fostering sustainable community practices for using medicinal plants in family health maintenance. The innovative ginger-based herbal jelly candy is expected to serve as an effective educational medium to improve community knowledge of ginger's health benefits as a family medicinal plant, particularly in preventing ARI symptoms. Furthermore, this innovation adds value to locally cultivated ginger, encourages community creativity in developing herbal-based products, and promotes community self-reliance in utilizing local resources to support sustainable promotive and preventive health efforts (Murdaningsih, Peni, N., & Supardi, 2026).

Wulung Village continues to face several public health challenges that may adversely affect the well-being of its residents, particularly children under five years of age. A situational analysis, conducted through interviews with village

officials, the village midwife, and community health volunteers, and a review of local health records, identified three major categories of problems: environmental, health, and health education.

Among these, health-related issues were identified as the primary concern. Acute Respiratory Infection (ARI) remains the most prevalent disease among children under five. The high incidence of ARI is presumed to be associated with several risk factors that continue to persist within the community (Rizaldi, 2023). In addition, cases of stunting, low birth weight (LBW), and high-risk pregnancies requiring continuous monitoring are still reported. Among older adults, non-communicable diseases, particularly hypertension and diabetes mellitus, also remain common.

Environmental factors also contribute to the high risk of ARI incidence (Zolanda et al., 2021). The implementation of *Clean and Healthy Living Behavior (CHLB)* in the community remains suboptimal, particularly in Taman Wetan. Some residents continue to raise cattle near their homes, which may compromise environmental quality and increase exposure to disease-causing agents. In addition, several houses still have unplastered earthen floors, increasing the risk of exposure to dust and microorganisms associated with respiratory tract disorders (Zulfikar et al., 2025). Indoor smoking is also still practiced by some community members, thereby increasing the risk of respiratory problems among children under five who are exposed to secondhand smoke (Rahmi et al., 2024).

Another issue that further exacerbates the community's health condition is the suboptimal implementation of health policies and promotive–preventive initiatives. To date, no local regulation on Smoke-Free Areas (SFA) has been established, despite the emergence of smoking behavior among junior high school adolescents. Furthermore, the implementation of the Adolescent Integrated Health Post (*Posyandu Remaja*) and the Youth Information and Counseling Center (*Pusat Informasi dan Konseling Remaja* [PIK-R]) remains suboptimal, with most activities limited to health education.

Viewed from an Islamic perspective, the limited knowledge identified during the community needs assessment points to an opportunity to strengthen the responsibility to seek and share beneficial knowledge and to protect family well-being. The principles of ta'awun (mutual assistance in goodness) and care for life are relevant to community-based health promotion; Qur'an 5:2 encourages cooperation in goodness. Accordingly, the

BASKARA Garden program connected health education with practical learning about locally available Family Medicinal Plants (FMPs). Ginger may be discussed as a traditional or complementary resource. Still, it should not be presented as a proven means of preventing or curing ARI, and it must not replace clinical assessment or recommended treatment. General ARI prevention measures, including reducing exposure to tobacco smoke and improving the home environment, remain important.

Based on these findings, the primary priority was to improve community knowledge of ARI symptom prevention through the use of ginger-based Family Medicinal Plants (FMPs). Health education integrated with the innovative development of ginger-based herbal jelly candy was considered a promising approach to enhance both community knowledge and interest in independently using FMPs. This initiative is also aligned with the Sustainable Development Goals (SDGs), particularly SDG 3 (Good Health and Well-being), which aims to improve population health and well-being (Kementerian PPN, 2025).

Methods

This community service program employed a community-based health education approach combined with practical demonstrations. The program was designed to address limited community knowledge about preventing acute respiratory infections (ARI) and using Family Medicinal Plants (FMPs). Community needs were identified through an initial survey, interviews with village officials, the village midwife, and community health volunteers, and a review of local health data. The intervention included health education on the causes, risk factors, and prevention of ARI; education on the benefits of ginger as a family medicinal plant; and a hands-on demonstration of preparing ginger-based herbal jelly candy made from ginger and lemongrass. Community members participated as recipients of health education and as participants in the practical demonstration. The program involved 36 participants in Wulung Village, Blora Regency, Indonesia, in July 2026. To evaluate the effectiveness of the intervention, a pre-experimental design using a one-group pretest–posttest approach was employed. Participants' knowledge was assessed before and after the intervention using questionnaires, and the data were analyzed using the Wilcoxon Signed-Rank Test.

The community service program was implemented through a series of systematic, interconnected stages to ensure the achievement of the BASKARA Garden program's objectives. The detailed stages of program implementation are presented in Table 1.

Table 1. Stage of Activities

No.	Stage	Activity	Description
1.	Problem Identification and Needs Assessment	Initial survey and interviews	Conducted an initial survey, interviews with village officials, the village midwife, community health volunteers, and a review of local health data to identify community health problems. The findings indicated that Acute Respiratory Infection (ARI) was the most prevalent disease among children under five in Wulung Village.
2.	Literature Review and Program Planning	Literature review and selection of FMPs	Conducted a literature review to identify medicinal plants with potential for preventing and managing the predominant health problems within the community. Based on the findings, ginger and lemongrass were selected for ARI prevention, while green chiretta (Andrographis paniculata) and Java tea (Orthosiphon aristatus) were selected to support older adults' health. The review served as the basis for developing the BASKARA Garden program.
3.	BASKARA Garden Program Implementation	Cultivation of Family Medicinal Plants	Implemented the cultivation of Family Medicinal Plants (FMPs) with community participation to improve the availability and sustainable utilization of medicinal plants at the household level. The cultivated species included ginger, lemongrass, green chiretta, and Java tea.

4.	Health Education	Health education on FMPs and ARI prevention	Delivered health education on the causes, risk factors, and prevention of ARI, the benefits of FMPs, and the utilization of ginger and lemongrass as promotive and preventive strategies for maintaining respiratory health.
5.	Training and Practical Demonstration	Preparation of ginger-based herbal jelly candy	Conducted a hands-on demonstration on the preparation of ginger-based herbal jelly candy made from ginger and lemongrass. The activity aimed to improve participants' skills in processing medicinal plants into appealing, practical, and consumer-friendly herbal products.
6.	Community Assistance	Assistance for community health volunteers and residents	Assisted community health volunteers and residents regarding the utilization of FMPs and the preparation of ginger-based herbal jelly candy to support independent and sustainable implementation.
7.	Program Evaluation and Sustainability	Monitoring and evaluation	Evaluated the program using pretest and posttest questionnaires to assess changes in participants' knowledge and promoted program sustainability by optimizing the utilization of cultivated FMPs and strengthening the role of community health volunteers as community facilitators.

Result

The health education program on the utilization of Family Medicinal Plants (FMPs) through the innovative ginger-based herbal jelly candy was attended by 36 participants. Participants' knowledge was evaluated using pretest and posttest questionnaires consisting of 8 questions covering ARI, the benefits of FMPs, the bioactive compounds of ginger, and the use of ginger-based herbal jelly candy as an alternative product.

The findings demonstrated an improvement in participants' knowledge following the educational intervention. Based on the Wilcoxon Signed-Rank Test, 35 participants (97.2%) showed an increase in their knowledge scores, 1 participant (2.8%) showed no change, and no participants experienced a decline. Furthermore, the median knowledge score increased from 62.5 (50–100) before the intervention to 100 (75–100) after the intervention.

Table 2. Changes in Participants' Knowledge Before and After the Educational Intervention

Variable	**Median (Min–Max)**	**Wilcoxon Signed-Rank Test**
Pretest	62.5 (50–100)	
Posttest	100 (75–100)	
Statistical result		$Z = -5.223$; $p < 0.001$
Score changes		35 participants improved (97.2%); 1 participant remained unchanged (2.8%); 0 participants declined

The Wilcoxon Signed-Rank Test yielded a Z value of −5.223 ($p < 0.001$), indicating a statistically significant difference in participants' knowledge scores before and after the intervention. These findings suggest that the educational intervention on the utilization of Family Medicinal Plants (FMPs), integrated with the innovative preparation of ginger-based herbal jelly candy, was effective in improving community knowledge regarding the promotive and preventive use of FMPs for the prevention of ARI symptoms

Discussion

The findings of this study demonstrated that health education on the use of Family Medicinal Plants (FMPs), integrated with the innovative preparation of ginger-based herbal jelly candy, effectively improved community knowledge of ARI prevention. None of the participants experienced a decline in their knowledge scores, while nearly all demonstrated an improvement following the educational intervention. These findings indicate that combining health education with a hands-on product demonstration enhanced participants' understanding of the educational materials and facilitated more effective knowledge acquisition. Beyond the measured educational outcome, the program may be understood as a form of

community service informed by Islamic ethical values, particularly the sharing of beneficial knowledge, mutual assistance, and responsibility for the well-being of family and community. Qur'an 5:2 encourages cooperation in goodness; in this context, the principle is reflected in collaboration with local stakeholders and the practical sharing of health information. This is an ethical and contextual interpretation, not a claim that the study tested the religious principle itself.

The observed improvement in knowledge indicates that participants not only gained a better understanding of the health benefits of ginger as a family medicinal plant but also learned that ginger contains bioactive compounds, including gingerol, shogaol, and zingerone, which possess anti-inflammatory, antioxidant, and immunomodulatory properties. These compounds have the potential to reduce inflammatory responses, protect cells against oxidative stress, and support immune function, thereby making ginger a promising complementary therapy for alleviating symptoms associated with acute respiratory infections (Ayustaningwarno et al., 2024).

One factor that may have contributed to the effectiveness of the educational intervention was the use of the innovative ginger-based herbal jelly candy as an educational medium. Integrating health education with a tangible product made the learning process more engaging and easier for participants to understand. In addition to its more acceptable taste, particularly for children, the ginger-based herbal jelly candy provided a practical alternative for consuming ginger compared with its conventional forms. These findings are consistent with previous studies reporting that innovative educational media combined with practical demonstrations can enhance community engagement, improve knowledge acquisition, and encourage the utilization of medicinal plants in daily life (Lisdawati et al. 2024). These findings are consistent with previous studies demonstrating that using ginger as a complementary therapy for ARI can increase community acceptance of traditional medicinal plants, particularly when ginger is processed into products that are more convenient and appealing to consume.

The results can also be discussed from an Islamic ethical perspective. The increase in knowledge among 35 participants may be interpreted as a constructive outcome of sharing beneficial knowledge and supporting community well-being. The Qur'anic principle of ta'awun, or cooperation in goodness (Qur'an 5:2), is relevant because health education and practical

demonstrations were delivered to help community members learn together and make more informed decisions about family health. The one participant whose score did not change also highlights the importance of patience, compassion, and continued educational support: learning outcomes may differ between individuals, and community empowerment should not assume that everyone benefits equally from a single session. However, the unchanged score alone does not explain why the participant's knowledge remained unchanged, nor does it prove that the intervention caused no misunderstanding. These are possibilities that would require further assessment. Religious values provide an ethical interpretation of the activity, while the pretest–posttest data remain the basis for the study's empirical conclusions.

This educational intervention also supported the objectives of the BASKARA Garden (Budi Daya Tanaman Obat Keluarga Nusantara) program by promoting the use of Family Medicinal Plants (FMPs) sourced locally. The improvement in participants' knowledge represents an important initial step toward fostering behavioral change, enabling community members to cultivate and utilize FMPs independently as part of promotive and preventive efforts to maintain family health (Lisdawati et al., 2024). Furthermore, this program contributes to achieving the Sustainable Development Goals (SDGs), particularly SDG 3 (Good Health and Well-being), by empowering communities and optimizing the use of local resources to improve population health. Strengthening community knowledge regarding the utilization of FMPs is expected to enhance community self-reliance in maintaining family health while supporting the prevention of ARI symptoms (Notoatmodjo, 2018).

Conclusion and Suggestion

The health education program on the utilization of ginger-based Family Medicinal Plants (FMPs) through the innovative preparation of ginger-based herbal jelly candy as a strategy for preventing Acute Respiratory Infection (ARI) symptoms was successfully implemented and achieved its intended objectives. The results of the Wilcoxon Signed-Rank Test demonstrated that the educational intervention effectively improved community knowledge, with 35 participants (97.2%) showing increased knowledge scores, one participant (2.8%) showing no change, and no participants demonstrating a

decline in their scores. Statistical analysis confirmed a significant difference between pretest and posttest knowledge scores ($Z = -5.223$, $p < 0.001$).

These findings indicate that integrating health education with an innovative herbal product effectively enhanced community understanding of the use of Family Medicinal Plants (FMPs) as a promotive and preventive strategy for preventing ARI symptoms. Overall, the program contributed to improving community health literacy and to achieving Sustainable Development Goal 3 (Good Health and Well-being) through health promotion and community empowerment based on local resources. To ensure the sustainability of the program, future initiatives should include ongoing community support for the cultivation and use of Family Medicinal Plants, the provision of self-directed educational materials, and periodic evaluations to assess long-term behavioral changes following the educational intervention.

References

Anggraini, N., Maharani, S. P., Novitri, D. C., Saputra, F., & Surahman, F. (2026). *Edukasi pemanfaatan jahe merah untuk penyakit infeksi saluran pernapasan akut (ISPA)*. Jurnal Dehasen Untuk Negeri.

Aprihatin, Y., Shevariant, F., Richard, V., Gustia, M., Idzhar, R. S., & Arza, T. D. (2025). Implementasi program tanaman obat keluarga oleh mahasiswa KKN UNP sebagai upaya edukasi kesehatan tradisional di Nagari Koto Tuo, Kecamatan Harau. *Jurnal Media Akademik, 3*, 12. https://doi.org/10.62281

Atmojo, M., Darumurti, & Awang. (2021). *Pemberdayaan masyarakat melalui tanaman obat keluarga (FMPS). Jurnal Abdimas BSI: Jurnal Pengabdian Kepada Masyarakat.*

Ayustaningwarno, F., Anjani, G., Ayu, A. M., & Fogliano, V. (2024). A critical review of ginger's (*Zingiber officinale*) antioxidant, anti-inflammatory, and immunomodulatory activities. *Frontiers in Nutrition, 11*, 1–16. https://doi.org/10.3389/fnut.2024.1364836

Fathmawati, F., Rauf, S., Indraswari, & Braghmandita Widya. (2021). Factors related to the incidence of acute respiratory infections in toddlers in Sleman, Yogyakarta, Indonesia. *PLOS ONE.*

Leswara, D. F., Larasati, N., Program Studi Farmasi, Fakultas Kesehatan Jenderal, Achmad, Y., & ... (2024). Edukasi untuk peningkatan pengetahuan tentang tanaman obat keluarga (FMPS) terhadap

pemanfaatan tanaman jahe. *Journal of Innovation in Community Empowerment.*

Lestari, D. P., Juniansah, R., Kusuma, R. R., Trsinawati, V., Juniarti, M., & ... (2026). *Pemanfaatan jahe (Zingiber officinale) sebagai upaya pendukung penanganan infeksi saluran pernapasan akut. Jurnal Dehasen Untuk Negeri.*

Lisdawati, K., Milka Anggraeni, & Citiasrini, U. (2024). Efektifitas pemberian rebusan jahe dan madu terhadap balita dengan ISPA pada balita di Puskesmas Cibungbulang Tahun 2024. *Innovative: Journal of Social Science Research, 4*(3), 14569–14577.

Maulana, I., Aulia, R., Ardillah, D., Nurcahyani, D., Husein, M. L., Shalihat, A., Gusthira, A., & Marscella, O. (2024). Edukasi dan demonstrasi pembuatan permen JAHERDA (Jahe Herbal Puraseda) sebagai pemanfaatan rimpang jahe dan gula aren produk hasil Desa Puraseda. *Jurnal Pengabdian Masyarakat Tjut Nyak Dhien, 3*(2).

Murdaningsih, Peni, N., & Supardi, P. N. (2026). Pengembangan budidaya dan pengolahan jahe sebagai produk bernilai ekonomi pada kelompok tani Weo Baru Wongga. *SELAPARANG: Jurnal Pengabdian Masyarakat Berkemajuan, 10*(1), 878–885.

Notoatmodjo, S. (2018). *Promosi kesehatan dan perilaku kesehatan.* Rineka Cipta.

Rahman, M. S. A., Pham, M. T., Hoang, A. T., Le, A. T., & Dong, V. V. (2024). *[Title unavailable].*

Rahmi, I. R., Rosa Pini Septiani, S., & Rasyid, K. (2024). Home environmental factors with the incidence of ISPA in toddlers Indonesia: Literature review. *Media Publikasi Promosi Kesehatan Indonesia, 7*(12), 2877–2885. https://doi.org/10.56338/mppki.v7i12.6339

Rizaldi, M. A. (2023). House environmental conditions with the event of acute respiratory infection (ARI) in toddlers in Indonesian: A meta-analysis. *Journal of Air Pollution and Health, 8*(1), 103–116. https://doi.org/10.18502/japh.v8i1.12033

Roja, A. S., Dinil, S. H., Rolekta, S., & ... (2024). Pengaruh edukasi terhadap tingkat pengetahuan mahasiswa tentang tanaman obat keluarga (FMPS). *Jurnal Ilmiah Sain dan Teknologi.*

Safyira, D., & Trihono, H. (2023). *Survei Kesehatan Indonesia 2023 (SKI).* Kementerian Kesehatan Republik Indonesia.

Syaputri, E. R., Selaras, G. H., & Farma, S. A. (2021). Manfaat tanaman jahe (*Zingiber officinale*) sebagai obat-obatan tradisional (traditional medicine).

Prosiding SEMNAS BIO 2021 Universitas Negeri Padang, 1, 579–586. https://doi.org/10.24036/prosemnasbio/vol1/71

Yanti, Y., Hamid, H., Suhendra, D., Juniarti, J., Wibowo, I., Wahyuni, F., & Andria, F. (2023). Sosialisasi pengolahan jahe menjadi produk cookies jahe di Nagari Sungai Talang, Kecamatan Payakumbuh, Kabupaten Lima Puluh Kota. *Prosiding Seminar Nasional Pengabdian Masyarakat.*

Zolanda, A., Raharjo, M., & Setiani, O. (2021). Risk factors and association of environmental with the incidence of acute respiratory infection in toddlers: Study on working area of Lubuk Kilangan Public Health Center. *Jurnal Aisyah: Jurnal Ilmu Kesehatan, 6*(3), 585–590. https://doi.org/10.30604/jika.v6i3.729

Zulfikar, M., Putra, A. P., & Saipullah. (2025). The relationship between ventilation area and floor type with the incidence of ARI in toddlers in Pepayungen Angkuy Village—Pancasakti *Journal of Public Health Science and Research.*