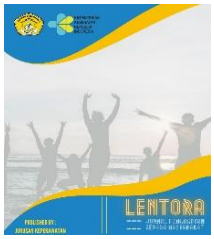

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The Effectiveness of Baby Spa Education in Improving Mothers' Knowledge and Practices in Managing Acute Respiratory Infections (ARI) in Toddlers in Lingsar Village

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ABSTRACT

Introduction: *Acute Respiratory Infections (ARI) are a leading cause of morbidity and mortality in children under five in Indonesia, often exacerbated by low parental knowledge and unfavorable environmental conditions. This community service initiative aimed to address this issue in Lingsar Village, West Lombok, by introducing Baby Spa—a complementary therapy involving infant massage and hydrotherapy—as a measure to improve respiratory hygiene and overall infant health, thereby aiding in the management of ARI.*

Methods: *The intervention was conducted through an educational session and a practical demonstration of Baby Spa techniques. A total of 20 mothers of toddlers with a history of ARI participated in the program. The participants' knowledge and practices regarding ARI management were assessed using a pre-test and post-test questionnaire.*

Results: *The activity demonstrated a significant improvement in the mothers' knowledge and reported practices. The proportion of mothers with good knowledge increased from 10% (pre-test) to 85% (post-test). Similarly, the percentage of mothers demonstrating positive practices for managing ARI in their toddlers rose from 40% to 75% following the intervention.*

Conclusion: *Educational intervention on Baby Spa proved to be highly effective in enhancing maternal knowledge and practices related to ARI management in this community. This approach presents a promising, relevant, and acceptable promotive and preventive strategy that can be integrated into broader public health efforts to reduce the burden of ARI in rural settings.*

INTRODUCTION

Acute Respiratory Infection (ARI) remains a formidable global health challenge, disproportionately affecting children. Worldwide, pneumonia incidence exceeds 1,400 cases per 100,000 children, with South Asia bearing the highest burden at 2,500 per 100,000 (UNICEF, 2020). As the World Health Organization highlights, pneumonia is the leading infectious cause of death in children under five, claiming over 800,000 young lives annually (World Health Organization, 2022). The situation is particularly critical in Indonesia, which reports the highest number of ARI-related deaths in the Southeast Asian region (Perangin-Angin & Richard Jerry, 2024). National data from Basic Health Research underscores this urgent public health issue, showing an alarming increase in ARI prevalence from 13.7% in 2018 to 35.7% in 2023 (Kemenkes, 2023). This trend signals an pressing need for comprehensive and sustainable interventions.

This global and national context is reflected at the local level in Lingsar Village, West Lombok Regency. The region of West Nusa Tenggara has the highest percentage of population reporting health complaints in Indonesia (Badan Pusat Statistik Provinsi Nusa Tenggara Barat, 2023), and Lingsar Village is no exception. Data from the Lingsar Community Health Center (Puskesmas) reveals that 23 infants were diagnosed with ARI in the last three months alone, with most cases linked to poor environmental sanitation. This indicates a vulnerable population where preventive and management strategies are crucial.

Conventional management of ARI in toddlers often relies on pharmacological agents like analgesics and antipyretics. However, pharmacological treatment alone is frequently insufficient. Challenges such as children's fussiness and difficulty taking medication can hinder recovery and even cause trauma (Agussalim et al., 2020a). Consequently, there is a growing interest in safe, non-pharmacological complementary therapies to support the healing process and alleviate symptoms.

One such promising modality is Baby Spa, which incorporates infant massage and hydrotherapy. In developing countries, massage therapy is widely recognized as an alternative to reduce respiratory distress in children and improve lung function (Ester Ratnaningsih & Nita Ivana Benggu, 2020). The mechanical action of massage can help loosen respiratory secretions, while hydrotherapy can strengthen respiratory muscles and improve overall circulation. Furthermore, the act of massage delivered by a parent provides a dual benefit: it addresses physical symptoms while also promoting psychological bonding and reducing stress for both child and parent (Nasution, 2023).

Despite these documented benefits, there is a significant knowledge-practice gap, especially in rural communities like Lingsar Village. Many mothers are unaware of Baby Spa techniques and their specific application in managing ARI symptoms in toddlers. This lack of knowledge represents a missed opportunity for a simple, low-cost, and empowering intervention that mothers can perform at home.

To bridge this gap, this community service initiative is designed to provide education and hands-on training in Baby Spa. The program is framed within the "Community as Partner" theoretical framework, which emphasizes active community participation and empowerment as the cornerstone for sustainable health improvement. By equipping mothers with the knowledge and skills to perform Baby Spa, this project aims to actively engage the community in addressing its health challenges.

Therefore, the purpose of this community service is to enhance the knowledge and practices of mothers in Lingsar Village in managing ARI in toddlers through educational intervention on Baby Spa as a complementary therapy.

IMPLEMENTATION METHOD

This community service initiative utilized a pre-experimental design with a one-group pre-test and post-test model. The effectiveness of the intervention was assessed by comparing participants' knowledge scores before and after the educational session. The activity was conducted on May 2, 2025, from 10:00 to 11:30 WITA at the Lingsar Village Office Hall, West Lombok Regency. The participants were 20 mothers who had toddlers with a history of Acute Respiratory Infection (ARI) in the three months preceding the activity. The selection criteria were: a) Being a mother of a toddler (aged 1-5 years) with a recent history of ARI, b) Permanent residence in Lingsar Village, c) Willingness to participate voluntarily and signed informed consent, and d) Ability to read and write in Indonesian.Partnerships were established with the Lingsar Village Health Center (Puskesmas) and Lingsar Village officials to facilitate participant recruitment and ensure the smooth running of the program.

The activity was structured in three phases: Preparation Phase: This involved coordination with partners (Puskesmas and village officials), development of educational materials on ARI and Baby Spa, and preparation of pre-test/post-test questionnaires. Implementation Phase: The session comprised two main components: a) Health Education on ARI: A presentation covered the definition, symptoms, causes, and risk factors of ARI in toddlers, as well as simple home-based management techniques.b) Baby Spa Training: A hands-on training session was conducted, focusing on techniques relevant to respiratory support. This included: Infant Massage: Demonstrating specific strokes on the chest, back, and sinus areas to help loosen mucus and improve comfort. Stimulation and Relaxation Techniques: Teaching methods to promote relaxation and ease breathing difficulties. *Additionally, a brief demonstration on processing household organic waste into Takakura fertilizer was included to address environmental risk factors for ARI.* Evaluation Phase: This phase involved the administration of questionnaires and observation of participants' skills.

Data was collected with Quantitative Data: A structured questionnaire was administered before (pre-test) and immediately after (post-test) the intervention to measure changes in mothers' knowledge about ARI and its management. Qualitative Data: Skill Assessment: Participants' psychomotor skills in performing Baby Spa techniques were evaluated through direct observation by facilitators using a checklist during the practical session. Participant Feedback: Opinions and responses were gathered through an open discussion session to assess the acceptability and perceived benefits of the training.

RESULTS AND DISCUSSION

RESULTS

The community service activity was successfully held at the Lingsar Village Office Hall on May 2, 2025, with 20 mothers in attendance. The event flow consisted of registration and pre-test, opening ceremony, health education, Baby Spa demonstration, Q&A session, post-test, and closing.

Images 1 and 2 Implementation of Counseling and Demonstration of Baby Spa techniques

Table 1. Age Distribution of Participating Mothers (n=20)

Age Group	Frequency	Percentage
20-24 years	1	5.0
25-34 years	12	60.0
35-44 years	6	30.0
45-59 years	1	5.0
Total	20	100.0

As shown in Table 1, the majority of participants (60%) were in the 25-34 age range, indicating that the primary caregivers in this community are predominantly young adults.

The pre-test and post-test results revealed a substantial improvement in maternal knowledge after the educational intervention.

Table 2. Distribution of Mothers' Knowledge Levels Before and After Intervention (n=20)

Knowledge Level	**Pre-test**		**Post-test**	
	Frequency	Percent	Frequency	Percent
Good	2	10.0	17	85.0
Fair	14	70.0	3	15.0
Poor	4	20.0	0	0.0
Total	20	100.0	20	100.0

The data demonstrates a dramatic shift. The proportion of mothers with "Good" knowledge increased from 10% to 85%, while no mothers remained in the "Poor" category after the session.

Participants' attitudes towards preventing ARI through Baby Spa and environmental management also showed a positive change.

Table 3. Distribution of Mothers' Attitudes Before and After Intervention (n=20)

Attitude	**Pre-test**		**Post-test**	
	Frequency	Percent	Frequency	Percent
Positive	8	40.0	15	75.0
Negative	12	60.0	5	25.0
Total	20	100.0	20	100.0

The percentage of mothers with a positive attitude increased from 40% to 75% following the intervention.

The present community-based intervention study demonstrated the remarkable efficacy of an educational program integrating ARI management and Baby Spa techniques in significantly enhancing the knowledge and attitudes of mothers in Lingsar Village. The findings illuminate the potential of simple, non-pharmacological, and empowering interventions to address the persistent public health challenge of ARI in toddlers within resource-limited setting (Walker et al., 2013).

The demographic profile of our participants, as detailed in Table 1, reveals that the majority (60%) were young mothers aged 25-34 years. This demographic is particularly significant, as mothers in this age group are typically the primary caregivers and are at a crucial stage for adopting and sustaining new health behaviors (World Health Organization (WHO)., 2020). However, young motherhood in rural contexts is often associated with unique challenges, including potential gaps in health literacy and limited access to credible information, which can adversely affect child health outcomes (Al kibria, 2019). Our intervention successfully targeted this vulnerable group, suggesting that tailored education can effectively bridge this knowledge gap.

The most striking outcome of this study was the dramatic improvement in maternal knowledge following the intervention. As shown in Table 2, the proportion of mothers with "Good" knowledge surged from a mere 10% to 85% post-intervention. This substantial increase underscores the power of structured, hands-on health education (Launiala, 2009). The finding is consistent with a growing body of literature. For instance, a study found that participatory learning methods were far more effective in improving health knowledge among caregivers than traditional didactic approaches alone (Y. Chen et al., 2023). The combination of theoretical instruction on ARI with the practical demonstration of Baby Spa techniques likely created a more engaging and memorable learning experience, facilitating deeper cognitive processing and knowledge retention (Kirkpatrick & Stryker, 2020).

Beyond knowledge, a positive shift in maternal attitudes is a critical precursor to behavioral change. Our results, illustrated in Table 3, indicate a significant rise in positive attitudes from 40% to 75%. This suggests that the intervention did not just impart information but also successfully influenced mothers' perceptions and beliefs about their capability to manage their children's health (Ajzen, 2020).This aligns with the principles of the Social Cognitive Theory, where building self-efficacy is a key driver of health-related action (Bandura, 2018). By mastering a tangible skill like Baby Spa, mothers' confidence in their ability to provide care and prevent ARI was likely enhanced.

The findings of this study suggest that the application of Baby Spa, incorporating infant massage and hydrotherapy, exerts a beneficial influence on alleviating the symptoms of Acute Respiratory Infections (ARIs) in toddlers. This therapeutic modality appears to function through a multi-mechanistic pathway that addresses both physiological and psychological aspects of the illness. The mechanical action of specific massage techniques, particularly on the chest and back, has been shown to facilitate the loosening and mobilization of pulmonary secretions, thereby improving airway clearance (Field, 2019). This physical mobilization of mucus is a critical non-pharmacological intervention for maintaining patent airways in infants with respiratory distress.

Concurrently, the gentle stimulation and relaxation induced by the spa process are believed to modulate autonomic nervous system activity, promoting a shift from a sympathetic-dominant "fight-or-flight" state to a parasympathetic-dominant "rest-and-digest" state (Diego & Field, 2009). This shift is clinically significant as it can lead to a reduction in respiratory rate and heart rate, contributing to a overall calming effect on

the child (Bennett et al., 2022). The reduction of stress is not merely a comfort measure; it has direct immunological implications, as lower cortisol levels associated with relaxation can support a more robust immune response to infection (Mörelius et al., 2015).

Figure 3 Group photo after the closing

A cornerstone of the Baby Spa's efficacy lies in its demonstrated ability to enhance cardiopulmonary function. Research indicates that massage therapy can lead to measurable improvements in pulmonary function tests and increased oxygen saturation levels in children with respiratory conditions (Field, 2019). The hydrotherapy component, often involving gentle movement in warm water, further aids by providing mild resistance that can strengthen respiratory muscles and improve the efficiency of breathing (Chen et al., 2022). This combination makes Baby Spa a valuable complementary approach for managing respiratory symptoms.

Evidence from the literature demonstrates that massage therapy confers significant recovery benefits for infants suffering from Acute Respiratory Infections (ARI), encompassing both upper and lower tract infections. The documented therapeutic effects include the alleviation of fever and sleep difficulties (Perdani et al., 2024), alongside enhancements to immune response, respiratory system function, blood circulation, cognitive concentration, and appetite.(Agussalim et al., 2020b; Nurul et al., 2019).

CONCLUSION AND SUGGESTION

ConclusionThis community service initiative successfully demonstrates that a structured educational intervention, integrating health education on Acute Respiratory Infections (ARI) with practical training in Baby Spa techniques, is a highly effective strategy for empowering mothers in Lingsar Village. The program led to a statistically significant improvement in both maternal knowledge and attitudes regarding ARI prevention and management in toddlers. The dramatic increase in knowledge scores (from 10% to 85% in the "good" category) and the positive shift in attitudes (from 40% to 75%) underscore the intervention's efficacy. **Suggestions** For Healthcare Providers: Integrate Baby Spa education into routine maternal and child health services at community health centers (*puskesmas* and *posyandu*) as a standard complementary therapy for ARI management. For the Community: Encourage the consistent practice of Baby Spa techniques at home and the formation of mother-support groups to share experiences and reinforce learning.

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BIBLIOGRAPHY

Agussalim, A., Kusmiyati, Y., & Mashoedi, I. D. (2020a). Massage Therapy for Infants and Toddlers With Acute Respiratory Infections: A Literature Review. *STRADA Jurnal Ilmiah Kesehatan*, *9*(2), 656–663. https://doi.org/10.30994/sjik.v9i2.352

Ajzen, I. (2020). The theory of planned behavior: Frequently asked questions. *Human Behavior and Emerging Technologies*, *2*(4), 314–324. https://doi.org/10.1002/hbe2.195

Badan Pusat Statistik Provinsi Nusa Tenggara Barat. (2023). Persentase Penduduk yang Mempunyai Keluhan Kesehatan Selama Sebulan Terakhir Menurut Kabupaten/Kota di Provinsi Nusa Tenggara Barat, 2023. *Badan Pusat Statistik*, *11*(1), 1–14.

Bandura, A. (2018). Toward a Psychology of Human Agency: Pathways and Reflections. *Perspectives on Psychological Science*, *13*(2), 130–136. https://doi.org/10.1177/1745691617699280

Bennett, C., Underdown, A., & Barlow, J. (2022). Massage for promoting mental and physical health in typically developing infants under the age of six months. *Cochrane Database of Systematic Reviews*, *2013*(4). https://doi.org/10.1002/14651858.CD005038.pub3

Chen, X., Jiang, J., Wang, R., Fu, H., Lu, J., & Yang, M. (2022). Chest physiotherapy for pneumonia in adults. *Cochrane Database of Systematic Reviews*, *2022*(9). https://doi.org/10.1002/14651858.CD006338.pub4

Chen, Y., Wu, Y., Dill, S.-E., Guo, Y., Westgard, C. M., Medina, A., Weber, A. M., Darmstadt, G. L., Zhou, H., Rozelle, S., & Sylvia, S. (2023). Effect of the mHealth-supported Healthy Future programme delivered by community health workers on maternal and child health in rural China: study protocol for a cluster randomised controlled trial. *BMJ Open*, *13*(1), e065403. https://doi.org/10.1136/bmjopen-2022-065403

Diego, M. A., & Field, T. (2009). Moderate Pressure Massage Elicits a Parasympathetic Nervous System Response. *International Journal of Neuroscience*, *119*(5), 630–638. https://doi.org/10.1080/00207450802329605

Ester Ratnaningsih, & Nita Ivana Benggu. (2020). Terapi Komplementer Dalam Mengatasi Ispa Pada Ibu Yang Memiliki Balita Di Dusun Setan Desa

Maguwoharjo, Kelurahan Depok, Kabupaten Sleman. *Jurnal Ilmu Kebidanan Dan Kesehatan (Journal of Midwifery Science and Health)*, *11*(2), 8–18. https://doi.org/10.52299/jks.v11i2.66

Field, T. (2019). Pediatric Massage Therapy Research: A Narrative Review. *Children*, *6*(6), 78. https://doi.org/10.3390/children6060078

Kemenkes. (2023). Survei Kesehatan Indonesia 2023 (SKI). *Kemenkes*, 235. https://www.badankebijakan.kemkes.go.id/ski-2023-dalam-angka/

Launiala, A. (2009). How much can a KAP survey tell us about people's knowledge, attitudes and practices? Some observations from medical anthropology research on malaria in pregnancy in Malawi. *Anthropology Matters*, *11*(1). https://doi.org/10.22582/am.v11i1.31

Mörelius, E., Örtenstrand, A., Theodorsson, E., & Frostell, A. (2015). A randomised trial of continuous skin-to-skin contact after preterm birth and the effects on salivary cortisol, parental stress, depression, and breastfeeding. *Early Human Development*, *91*(1), 63–70. https://doi.org/10.1016/j.earlhumdev.2014.12.005

Nasution, N. (2023). Stimulasi Tumbuh Kembang Anak Dengan Pijat Bayi Di Desa Sumber Mufakat Kecamatan Kabanjahe Kabupaten Karo. *Jurnal Pengmas Arta*, *1*(1), 1–23. http://ejournal.stikesarta.ac.id/index.php/jpa/article/view/59

Nurul, W. M., Malikhah, F., Suprihatin, K., & Sutarmi. (2019). Baby Massage With Common Cold Massage Oil on Temperature Change, Pulse Rate, Frequency of Breath, Sleep Quality and Number of Streptococcus Bacteria in Toddlers with Acute Respiratory Infection. *Indian Journal of Public Health Research & Development*, *10*(1), 413. https://doi.org/10.5958/0976-5506.2019.00082.2

Perangin-Angin, S. B., & Richard Jerry. (2024). Determinants of ISPA Incidents in Toddlers in the Working Area of Pangkalan Budiman Community Health Center, Serdang Bedagai Regency in 2022. *Indonesian Journal of Contemporary Multidisciplinary Research*, *3*(2), 261–274. https://doi.org/10.55927/modern.v3i2.7719

Perdani, A. L., Widaningsih, W., Hendra, A., & Srinatania, D. (2024). The Effect of Baby Massage Toward Sleep Quality Among Baby with Acute Respiration Infection: A Quasi-Experimental Study. *NurseLine Journal*, *9*(1), 84–89. https://doi.org/10.19184/nlj.v9i1.47013

UNICEF. (2020). *Every Child's Right to Survive: an Agenda to End Pneumonia Deaths*. https://data.unicef.org/resources/every-childs-right-to-survive-an-agenda-to-end-pneumonia-deaths/

Walker, C. L. F., Rudan, I., Liu, L., Nair, H., Theodoratou, E., Bhutta, Z. A., O'Brien, K. L., Campbell, H., & Black, R. E. (2013). Global burden of childhood pneumonia and diarrhoea. *The Lancet*, *381*(9875), 1405–1416. https://doi.org/10.1016/S0140-6736(13)60222-6

World Health Organization. (2022). Pneumonia in children. In *Archives of pediatrics* (Vol. 64, Issue 8, pp. 403–410). https://doi.org/10.5005/jp/books/11599_13

World Health Organization (WHO). (2020). *Improving Early Childhood Development: Who Guideline*. https://www.who.int/publications/i/item/97892400020986