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Original Article

Community Education on Upper Respiratory Tract Infections and Peppermint Oil Inhalation Therapy

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Abstract

Upper respiratory tract infections (URTIs) is a condition in which a person suddenly expels air from the thoracic cavity through the epiglottis and mouth, usually accompanied by a cough with phlegm or no phlegm. Coughs and colds are common complaints experienced by children and adults, generally caused by viral infections such as influenza. The disease can affect the upper respiratory tract, including the lungs, nose and throat. Traditional treatments such as simple inhalation using peppermint oil can help alleviate URTI symptoms. This study aims to improve the community's understanding of the identification and traditional treatment of Acute Respiratory Infections (ARI), as well as assess the role of nurses in providing nursing care through simple inhalation therapy. In this activity, the nurse acts as a care giver who provides comprehensive nursing care, starting from assessment to evaluation. Based on the results of community service activities in Fampong Lam Neuheun, Kuta Baro, Aceh Besar, it is known that the community has gained a better understanding in recognizing the symptoms of URTI and performing traditional medicine appropriately.

Keywords: Community Health Education, Nursing Interventions, Peppermint Oil Inhalation Therapy, Respiratory Symptom Management, Upper Respiratory Tract Infections (URTIs).

1. Introduction

Upper respiratory tract infections (URTIs) are the most common respiratory disorders affecting infants and children. Very young infants are particularly susceptible to infection, and transmission often occurs because individuals with a cold frequently touch their noses due to itching or wipe nasal discharge. If they do not wash their hands immediately, they may become a source of contagion. Coughs and colds are primary infections of the nasopharynx and nasal cavity that commonly affect infants and children (Ministry of Health, Republic of Indonesia, 2021).

URTI refers to the sudden expulsion of air from the thoracic cavity through the epiglottis and mouth. Coughing can occur either with or without sputum (dry or mucous). Coughing illnesses are prevalent among all individuals, both adults and children. A cold is a symptom frequently seen in children, caused by a virus (Hilmi et al., 2022). Influenza is a severe acute respiratory infection caused by the influenza virus, affecting the lungs, nose, and throat (Putri & Apsari, 2023).

According to the WHO, mucus discharge or cold symptoms commonly occur during mild flu illnesses due to infections from groups such as rhinoviruses or coronaviruses. This illness may be accompanied by fever in children, lasting from one to three days. Air pollution is suspected to be a trigger for virus infections in the upper respiratory tract (Yanti et al., 2022).

Coughing colds can also affect adults, but with different characteristics. In babies and children, the illness tends to be more severe due to infections involving the paranasal sinuses, middle ear, and nasopharynx, often accompanied by high fever. In adults, the illness is usually limited and does not result in high fever. Upper Respiratory Tract Infections (URTI) frequently occur in children. In Indonesia, toddlers are estimated to experience colds 3-6 times a year (an average of four times a year), meaning a toddler experiences coughing colds about 3-6 times annually (Akseer et al., 2020).

URTI is one of the diseases that many children suffer from, being an infection of the upper respiratory tract caused by microorganisms (bacteria and viruses) entering the respiratory organs for up to 14 days (Depkes RI, 2021). URTI is very common in infants and children, mostly caused by viruses, which is why there is no specific treatment (Alhamda & Sriani, 2014). The common cold is defined as an Acute Respiratory Infections (ARI or also known as 'ISPA') characterized by a runny nose, mild coughing, and light fever (Manal (2008) in Yanti et al. (2022)).

The World Health Organization (WHO) estimates the incidence of acute respiratory infections (URTI) in developing countries with under-five mortality rates above 40 per 1,000 live births at 15% - 20% annually in this age group. According to the WHO, 13 million children under five die each year, with most deaths occurring in developing countries, where pneumonia is a leading cause of death, claiming 4 million children annually (Silaban, 2019). Based on Riskesdas data (2018), the prevalence of URTI in Indonesia is 9.3%, with the highest prevalence in the 1 to 4 age group at 13.7% (Kementrian Kesehatan RI, 2018).

Low levels of knowledge are a contributing factor to mothers' ignorance about Acute Respiratory Infections (ARI), affecting the management of URTI at home. There is a lack of knowledge in preventing and addressing illnesses in toddlers. Economic factors, such as maternal education, maternal knowledge, and family income, also influence the occurrence of URTI in toddlers. Economy and education are considered significant risk factors for URTI (Suhendro, 2020). The role and involvement of mothers significantly influence the reduction of ARI mortality rates in toddlers. However, the role of mothers is not yet clearly visible; sometimes, they do not recognize the symptoms of URTI in their children, making it difficult to utilize health services optimally. Consequently, URTI remains a leading cause of death in children. The severity of the illness can cause parental anxiety regarding their child's safety (Fitriyani et al., 2016). Family support and assurance are crucial elements for the care of children with URTI (Prawirohartono, 2009).

According to a study, children with respiratory tract infections, to achieve a rise in oxygen saturation to the normal range of 95%-100% (Stockman, 2010), simple inhalation therapy using peppermint oil for 5 minutes resulted in a decrease in respiratory rate and a reduction in sputum accumulation. However, there was no change in rhonchi, possibly due to the respondents' average age of 1-5 years, as aromatherapy was implemented only for 5 minutes.

In performing simple inhalation with peppermint oil for patients with respiratory infections (URTI), nurses act as caregivers, providing comprehensive respiratory care that includes assessment, diagnosis, intervention, implementation, and evaluation. Nurses also serve as educators, helping to increase patient knowledge. As researchers, nurses gather data on respiratory infection issues (URTI) and analyze it to plan appropriate interventions, such as mint therapy for patients with respiratory infections (URTI). The success of nurses in fulfilling their roles is expected to assist patients in overcoming respiratory infections (URTI) after receiving nursing care.

This research aims to enhance public understanding, particularly among mothers and families, regarding the symptoms, causes, and management of Upper Respiratory Tract Infections (URTIs) in children. The education includes the importance of early detection and the active role of families in preventing and properly managing URTIs. Additionally, this study focuses on the introduction and evaluation of simple inhalation therapy using peppermint oil as a natural, non-pharmacological approach that is accessible to a wide audience. In the implementation process, nurses play a crucial role as caregivers, educators, and researchers. Nurses not only provide therapy but also contribute to educating the public and conducting data collection and analysis to design appropriate interventions. The outcomes of this activity are expected to contribute to improving family health literacy, utilizing natural therapies as a complement to medical treatment, and strengthening the role of community nurses in evidence-based practice. This research could also serve as a foundation for developing public health interventions that align with local needs and potential, especially in addressing cases of URTIs in children in areas with limited access to healthcare services.

2. Methods

Lecture and discussion sessions were organized to educate parents about upper respiratory tract infections (URTIs), focusing on their symptoms, causes, complications, prevention strategies, and treatment options. This valuable information was presented by students from Abulyatama University Aceh, who showcased their expertise in the subject, with assistance from faculty members and staff from local health centers specializing in related areas. The program encompassed multiple facets of URTIs, including informative talks about the disease, various treatment methods, and a practical demonstration of traditional treatment through peppermint inhalation.

3. Results and Discussion

3.1. Research Results

This socialization activity was carried out in the form of lectures and programmed questions and answers. Details of the activities can be shown in table 1 below.

Table 1. Details of Gampong Lam Neuheun Community Socialization Activities

1st Meeting	Activities
	URTI counseling
	Lecture and question and answer about URTI: understanding, how to treat, demonstration of URTI treatment.

In the effort to educate parents of toddlers and children in Gampong Lam Neuheun about Upper Respiratory Tract Infections (URTI), they participated as attendees in a counseling session. This event, led by a knowledgeable speaker, fostered a supportive environment where lectures and interactive Q&A sessions flowed smoothly. With a light-hearted touch of humor, the atmosphere encouraged open and straightforward communication among participants.

The audience consisted of dedicated parents from Lam Neuheun. Throughout the session, key educational insights were shared on understanding cold coughs and effective treatment methods. Demonstrations of cough and cold remedies were provided, followed by an engaging Q&A. Overall, it became clear that the community's understanding of cold coughs

remains limited, particularly regarding treatment options. While some parents were aware of appropriate remedies, many had yet to implement them in practice.

Figure 1. Socialization and Demonstration

After conducting counseling in the community of Lam Neuheun Kuta Baro Aceh Besar, the results of the Pre Test and Post Test are as follows.

Table 2. Pre-Test and Post-Test Results

Paired Samples Statistics I					
Pair 1	**Test**	**Mean**	**N**	**Std. Deviation**	**Std. Error Mean**
	Pre_Test	12.5000	10	.97183	.30732
	Post_Test	15.7000	10	.67495	.21344

Tabel 3. Pre-Test and Post-Test Results

Paired Samples Test II									
Pair 1	**Test**	**Paired Differences**					**t**	**df**	**Sig. (2-tailed)**
		Mean	**Std. Deviation**	**Std. Error Mean**	**95% Confidence Interval of the Difference**				
					Lower	**Upper**			
	Pre_Test - Post_Test	-3.20000	1.39841	.44222	-4.20036	-2.19964	-7.236	9	.000

Based on the results of counseling provided by Ners Professional Study Program students at Abulyatama University, it was found that the P value was 0.000, meaning that there was a difference before and after the provision of inhalation counseling on URTI disease in the Lam Neuheun Kuta Baro Community, Aceh Besar.

3.2. Discussion

Upper respiratory tract infections (URTIs) are acute inflammations of the respiratory tract caused by infectious agents such as viruses, bacteria, and fungi that enter the body and attack the respiratory system, ranging from the nose (upper respiratory tract) to the alveoli (lower respiratory tract), and are transmitted through the air (Luhukay et al., 2018). URTI generally lasts up to 14 days, with common symptoms including fever, cough, runny nose, headache, sore throat, excessive mucus, and loss of appetite. Many parents tend to overlook these symptoms, even though the infection can be caused by viruses and bacteria that quickly accumulate in the respiratory tract. If left untreated, the infection can worsen into pneumonia and may lead to death (Priwahyuni et al., 2020).

The results of this health education are supported by a study by Aprilliawati et al. (2019), which found that simple inhalation therapy using peppermint oil once a day for three consecutive days, lasting 10–15 minutes each session, effectively improved airway clearance

in patients with pulmonary tuberculosis. Similar findings were observed in a study by Oktaviana (2019), who found that simple inhalation by pouring warm water into a basin and adding 5–10 drops of peppermint oil, then asking the child to inhale the steam for 30 minutes before bedtime for three consecutive days, effectively relieved cough and expelled secretions.

3.2.1. Causes

Upper respiratory tract infection (URTI) is caused by over 300 types of bacteria and viruses. The bacterial agents include *Streptococcus hemolyticus*, *Streptococcus pneumoniae*, *Staphylococcus*, *Klebsiella pneumoniae*, *Haemophilus influenzae*, and *Bordetella pertussis*. Viral agents include adenovirus, parainfluenza virus, rhinovirus, and influenza virus. Children with weak immune systems are especially vulnerable to these infections (Widiastuti & Yuniastuti, 2017).

Another contributing factor to URTI is the attitude and knowledge of the mother. Mothers play a crucial role in caring for their children. Parents' level of knowledge about diseases affects their behavior. Lack of awareness regarding health issues or diseases can lead to improper prevention and treatment practices (Putra & Wulandari, 2019).

3.2.2. Signs and Symptoms

According to Triola et al. (2022), the symptoms that frequently appear in cases of Upper respiratory tract infection (URTI), as stated by the World Health Organization (WHO), include cough, runny nose, nasal congestion, fever, and sore throat. The signs and symptoms of URTI can be categorized based on the severity level into three groups. Mild URTI is indicated by one or more symptoms such as fever with a body temperature over 37°C, cough, hoarseness, and runny nose. Moderate URTI includes symptoms such as a body temperature above 39°C, shortness of breath, and noisy breathing resembling wheezing. Severe URTI is characterized by decreased consciousness, rapid or weak pulse, shortness of breath accompanied by restlessness, loss of appetite, and bluish lips and extremities (cyanosis).

3.2.3. Prevention

Efforts to prevent URTI in children include ensuring they receive proper nutrition, such as providing food that contains adequate nutrients. Children should also receive complete immunizations to strengthen their immune system against disease. Maintaining personal and environmental hygiene is important to keep surroundings clean. It is also crucial to prevent children from having direct contact with individuals suffering from URTI. Additionally, wearing a mask or covering the nose and mouth is recommended when in close contact with family members or others who are experiencing symptoms of URTI.

3.2.4. Supportive Examinations

Non-pharmacological measures to support recovery from ARI include increasing fluid intake, applying warm compresses, performing chest physiotherapy, and using natural inhalation therapy.

Simple inhalation is the process of administering medicine by inhaling it in the form of vapor into the respiratory tract, using simple ingredients and methods that can be carried out in a basic environment. This method aims to ease breathing, thin and expel mucus more easily, and keep the mucous membranes of the respiratory tract moist such as through the use of peppermint oil (Amelia et al., 2018). Peppermint oil, derived from an aromatic herbal plant that produces essential oils or mint oil, is widely used in the food, cosmetics, and pharmaceutical industries due to its menthol content, which is commonly used in cold remedies. The menthol aroma in peppermint oil has anti-inflammatory properties, which help open the airways. Additionally, peppermint oil aids in treating infections caused by bacterial

attacks because it possesses antibacterial properties. It works by relaxing the bronchial tubes, thereby optimizing oxygen intake.

Peppermint has strong antimicrobial, antiviral, and antioxidant properties that provide various health benefits, making it one of the most popular essential oils worldwide. Some of its health benefits include relieving symptoms of Irritable Bowel Syndrome (IBS), such as abdominal pain, bloating, diarrhea, and constipation. Research has shown that peppermint oil can ease abdominal pain and other IBS symptoms by reducing spasms in the colon, relaxing intestinal muscles, and reducing bloating. It can also help relieve indigestion when combined with cumin, particularly in cases of functional dyspepsia, which is characterized by bloating and abdominal pain.

Peppermint oil can reduce nausea, especially after surgery, due to its aromatherapeutic effects (Maghami et al., 2020). It is also effective in relieving headaches, as it promotes circulation and relaxes tense muscles thanks to its calming properties. Furthermore, peppermint oil naturally freshens breath because of its menthol content and helps kill bacteria and fungi that cause infections and cavities. In terms of respiratory health, inhaling peppermint oil can ease sinus congestion and soothe an itchy throat. It acts as an expectorant that opens airways, clears mucus, and reduces blockages. Laboratory studies also support its antimicrobial, antioxidant, and antiviral effects in combating respiratory tract infections.

4. Conclusion

The community service activity carried out in Gampong Lam Neuheun yielded several important conclusions. Firstly, the health education sessions significantly bolstered parents' understanding of Acute Respiratory Infections (ARI), particularly in identifying the symptoms, causes, complications, and preventive measures. The engaging format, which incorporated both lectures and interactive Q&A sessions, effectively captivated parents and heightened their awareness. Secondly, participants acquired valuable insights into traditional treatment options, notably the inhalation of peppermint oil, which was demonstrated during the sessions. This natural remedy resonated well with the community as a practical and cost-efficient way to alleviate respiratory symptoms. Thirdly, the initiative underscored the critical role of knowledgeable caregivers in the early detection and management of ARI in children, which is vital for preventing complications like pneumonia.

Given these insights, it is recommended that similar health education programs be implemented regularly in other rural and semi-urban areas to foster community-level preventive health behaviors. Additionally, merging traditional remedies with evidence-based medical practices can provide comprehensive solutions that are culturally appropriate and easy to adopt. Strengthening collaboration among universities, local health centers, and community leaders is essential to ensure the continuity and sustainability of health promotion initiatives.

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