

REVIEW ARTICLE

Parental Nonpharmacological Therapy To Reduce Fever In Children At Home: A Scoping Review

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ABSTRACT

Parents view fever as a disease and give fever-reducing medication before consulting a medical professional. However, there are conflicts and concerns about giving fever-reducing medication. Different views on fever cause variations in treatment approaches. This study aims to determine the non-pharmacological therapies used by families in treating children with fever at home. This study employed the scoping review method. Crossref, PubMed, Scopus, Semantic, and Google Scholar searches were used to identify literature. The final results found nine articles that were synthesized narratively. Non-pharmacological therapies found included warm compresses, shallots, dadap serep leaves, aloe vera, and soaking feet in warm water. Nurses can play an important role in educating parents about proper fever management. In conclusion, a coordinated approach between parents and health workers is essential in treating children's fever at home.

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INTRODUCTION

Fever is a biological reaction to infectious invasion and is a useful body defense mechanism (1). Fever in children is the most important marker of disease (2) and is often the main reason families seek medical care. Most parents and caregivers often view fever as an illness and give their children fever-reducing medication before consulting the care team (3), even though a previous review stated that giving fever-reducing drugs to children is still controversial and problematic (4).

Differences in views on fever have led to significant variations in approaches to its management. Many healthcare providers and parents view fever as a dangerous or bothersome condition that needs to be managed (5), although there is evidence that fever is an evolutionary mechanism that helps the body fight acute infections (6) and there is no evidence that fever in children has a high risk of worsening the condition (7). Research shows that parents whose children suffer from fever tend to seek health services (8);(9). The high

number of visits to the Community Health Center due to fever may be caused by excessive concern about these symptoms (10). Parents also experience excessive anxiety when their child has a fever due to a lack of understanding and misconceptions about treating fever (11). However, other research shows that increasing parents' knowledge and practice of fever management is very important for managing children's fever which can be done at home (12). Many factors vary in the management of fever in children at home, such as the background and experience of parents (13), parental health training, experience and pressure, family, child's age, and parent's employment (14).

Fever management in children can be done pharmacologically and non-pharmacologically. Treatment using the pharmacology method is carried out by administering antipyresis drugs (15); (16); (17), Eventhrough recent literature states that guidelines for reducing fever with antipyresis are still problematic (4). This is also supported by other research which states that giving antipyretics should be limited because they have dangerous effects on children (18), such as kidney injury (19) and immunosuppression (6). The harmful effects of improper use of antipyretics can result in toxic reactions (20) and kidney and liver dysfunction (21); (22). Non-pharmacological therapy is defined as interventions

that do not use chemicals, which can provide benefits for the disease healing process (23). However, there is no evidence of non-pharmacological therapy used by parents to manage fever at home. Parents need reliable, evidence-based information about the management of children's fever at home (24) and the important role of nurses in reducing inappropriate practices, eliminating unnecessary anxiety, and ensuring better treatment (25). This is what underlies the importance of this research. This research aims to find various non-pharmacological therapies carried out by parents to reduce fever in children at home.

MATERIAL AND METHODS

Information sources

This study employs a systematic review method adhering to the guidelines by PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) (26).

Search Strategy

The data collection was conducted from April to May 2024. The search was conducted in several databases, including Crossref, PubMed, Scopus, Semantic, and Google Scholar. Using the following query: child's fever; fever management; parents' actions; fever treatment; fever management; fever care; parental practices; parental behavior; parental knowledge; parental attitudes.

Eligibility Criteria for This Review

The eligibility criteria of studies are as follows: (a) reported a study of non-pharmacological measures used by parents to reduce fever in children at home; (b) Parents do not know the cause of their child's fever; (c) management fever not using antibiotics and antipyretics; (d) published from January 2014 to July 2024; (e) Research uses quantitative or qualitative or mix methods; (f) use English. Articles were excluded are as follows: (a) They did not focus on non-pharmacological measures used by parents to reduce fever in children at home; (b) Were systematic reviews, books, or guidelines.

Screening Process

The first author and second author independently conducted the literature search and data extraction. All references are managed using Mendeley. Once data were collected, duplicates were removed, and the remaining references were screened based on title and abstract. References that are still relevant are then selected based on the inclusion criteria. If there are inconsistent final results, the resolution is carried out through discussion or assessment by the third author.

RESULTS

A total of 2,128 articles were identified as relevant to the keywords after compiling search results from five different databases. After removing 280 duplicate articles, 1,848 articles were reviewed based on their titles and abstracts. Following this screening, 74 publications met the requirements for full-text review. Ultimately, only nine papers met the inclusion criteria for further analysis. Figure 1 illustrates the PRISMA flow, detailing the search methodology, article eligibility, and included publications.

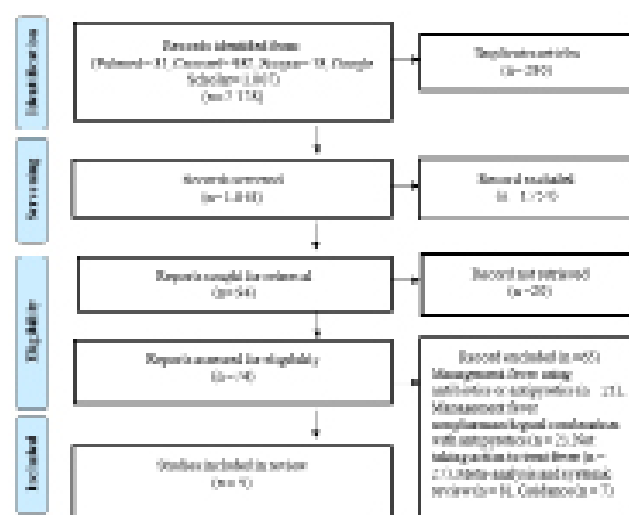


Figure 1: PRISMA flowchart showing the identification, screening, eligibility, and inclusion of studies in the scoping review.

Data extraction was performed by analyzing data based on the author's name, publication year, title, research outcomes, and findings. Table I displays the outcomes of data extraction.

Table I: Summary of reviewed articles

No	Author, year	Title	Results	Non-pharmacological measures to reduce fever
1	(Mohamad et al., 2021)	Effect of Warm Water Foot Bath Therapy on Body Temperature among Children with Fever	The mean body temperature in children in the study group at baseline was 38.7 ± 0.417 versus 38.6 ± 0.587 in children in the control group, decreasing to 37.4 ± 0.496 versus 37.8 ± 0.554 °C after application of warm water foot soak therapy.	soak feet in warm water.
2	(El-Naggar & Mohamed, 2021)	Effectiveness of Warm Water Footbath on Temperature and Fatigue among Children with Fever	The mean age of children in the study group was 10 ± 1.3 years and in the control group was 10 ± 1.5 years. Nearly two-thirds of them (68% in the study group and 62% in the control group) were boys. There were significant differences in body temperature and fatigue scores in children who experienced fever between the study group and the control group after the application of soak feet in warm water. In addition, there was a statistically significant difference between the mean body temperature and fatigue scores of children before and after warm water foot soak therapy in the study group.	soak feet in warm water.
3	(Pereira & Sebastian, 2018)	Effectiveness of hot water foot bath therapy in reduction of temperature among children (6-12 years) with fever in selected hospitals at Mangaluru	The results showed a very significant difference between the pre-test and post-test results in reducing body temperature in the experimental group ($t=8.068$, $P=0.0001$) and a significant difference in post-test body temperature between the experimental and control groups ($t(58)=1.99$, $p<0.05$). In addition, there was a significant relationship between pre-test body temperature in the experimental group and initial body temperature ($\chi^2=11.03$, $p<0.05$) and in the control group with the child's age and initial body temperature ($\chi^2=9.64$ and 9.33 , $p<0.05$). The results of the study also showed a significant relationship between post-test body temperature in the control group with the child's age, gender, and initial body temperature ($\chi^2=10.93$, 3.59 , 7.90 , $p<0.05$).	soak feet in warm water.
4	(Mardhiah, 2022)	The Effect of Shallot Compresses on Decreasing Body Temperature in Children With Fever	Children had a body temperature of 37.8 °C (25%) before being given the shallots compress, and after being given the compress, the body temperature of most children fell to 37.0 °C (30%). A significance value of $0.000 (<0.05)$ indicates that there is a significant difference in body temperature before and after using the shallot compress.	Shallots Compresses
5	(Anuhgera et al., 2019)	Combination of Red Onion Compress with Virgin Coconut Oil to Reduce Children's Fever	After being given an shallots compress for 15 minutes, there was a decrease in body temperature by 3.11%, while a warm water compress only reduced body temperature by 1.54%. There was a statistically significant difference in body temperature between the experimental group and the control group ($p\text{-value} = 0.000$).	Shallots Compresses and Warm Compresses
6	(Awatizahro et al., 2023).	Erythrina Subumbrans Compress To Reduce Fever Of Children With Hyperthermia	The statistical test shows a $p\text{-value}$ of $0.001 < 0.05$, which means that compressing dadap leaves affect reducing body temperature in children suffering from hyperthermia.	Dadap Serep Leaves Compresses
7	(Saukiyattunnufus & Tahun, 2022)	The Effectiveness of Compressing Leaves (Erythrina Lithosperma) in Reducing Body Temperature in Toddlers at the Bojonegara Health Center	The results of the study showed a $p\text{-value}$ of $0.000 \leq 0.05$, which indicates the influence of Dadap Serep leaf compresses on body temperature levels in toddlers.	Dadap Serep Leaves Compresses
8	(Astuti et al., 2017)	Aloe Vera Barbadensis Miller As an Alternative	The group that used the Aloe Vera compress experienced a greater decrease in body temperature compared to the group that used the warm water compress. The difference in body temperature after 20 minutes in the experimental group was 1.435, while in the control group, it was only 1.085. There was a statistically significant difference in body temperature between the two groups ($p=0.013$).	Aloe vera Compresses and Warm Compresses
9	(Karra et al., 2019)	The Difference Between the Conventional Warm Compress and Tepid Sponge Technique Warm Compress in the Body Temperature Changes of Pediatric Patients with Typhoid Fever	The data were tested for significance using repeated measurements of the General Linear Model, showing a $p\text{-value}$ of 0.03 for conventional warm compresses and a $p\text{-value}$ of 0.01 for the tepid sponge warm compress technique.	Warm Compresses

DISCUSSION

The final search found various non-pharmacological measures used to reduce children's fever at home, namely soaking feet in warm water, Shallots Compresses, Warm Compresses, Dadap Serep Leaves Compresses, Aloe vera Compresses, and drinking lots of fluids. All non-pharmacological measures used for the management of children's fever at home can use one or two combinations or compare several non-pharmacological measures. The final search found various research methods used, namely one article using the Pre-Experimental method, and eight articles using the quasi-experimental method.

Soak feet in warm water

Parents' management of children's fever at home is soaking feet in warm water. The search identified three articles: (27), (28), and (29). All of these articles use quasi-experiment methods. One of the non-pharmacological methods that is safe, has no side effects, is economical, and easy is soaking feet in warm water (30). The average effect of warm water foot soaking on fever before the intervention was 101.04 ± 0.04 , while after the intervention it was 99.37 ± 0.58 in the experimental group of fever patients (31). Other research also states that soaking feet in warm water can reduce the physiological parameters of children with fever (32).

Shallots Compresses

One article does Shallots Compresses (33) and one article does a combination of Shallots Compresses and Warm Compresses (34). Shallots (*Allium ascalonicum* L.) are generally used by Indonesian people to reduce fever in children (35). The use of shallot compresses has been proven to be more effective in lowering children's body temperature and reaching normal temperature faster compared to warm compresses (36). Shallots Crushed Compresses placed on the skin surface can help control the release of body heat (34). Compounds in shallots, such as alliin, cycloalkanes, and essential oils, function to smooth blood vessels and increase heat loss through evaporation (38). Its effectiveness can be seen from the difference in body temperature before and after using onion compresses (37).

Dadap Serep Leaves Compresses

Two articles found that Dadap Serep Leaves Compresses can be used as an alternative treatment for children (39) and (40). One of the plants that can be used as medicine is dadap serep (*Erythrina subumbrans*) (41). Research shows that dadap serep leaves have a significant effect in suppressing nerve activity, relaxing sympathetic muscles, and acting as a parasympathomimetic (42). Herbal medicines, which are derived from plant materials and have therapeutic effects, have been used for centuries to improve health (43). Dadap spare leaves themselves have various benefits, including anti-inflammatory, antimicrobial, antipyretic, and antimalarial (44). The

average body temperature of respondents before administering dadap serep leaves ranged from 38.00 to 39.50 °C, while after administration, body temperature dropped from 36.20 to 38.70 °C (40). Dadap serep leaf compress can be used as an alternative to reduce fever in children (39).

Aloe vera Compresses

Aloe vera Compresses are also used as non-pharmacological measures which are used to manage children's fever at home (45). Aloe vera contains amino acids, glycoproteins, and aloemodin which accelerate the growth of new cells through regeneration of blood vessel epithelium (46). Additionally, the use of aloe vera in traditional medicine views fever as the body's response to external pathogens, with fever considered an expression of heat (47). Aloe vera also contains saponins and lignin which have a relaxant effect by sending signals to the posterior hypothalamus (48). Research shows that after being given an aloe vera compress, the baby's body temperature decreased by an average of 0.64°C, and 85% of babies reached normal body temperature (49).

Warm Compresses

An article search found non-pharmacological measures for managing children's fever at home, namely Warm Compresses (50) and a combination of various fever management using Warm Compresses (45); (50) and (34). Applying a warm compress to reduce fever can be applied to the axillary area and the edge of the sponge for 30 minutes with water at 37°C (51). Research shows that the combination of warm compresses and antipyretics is less effective in reducing fever in hospitalized children compared to pharmacological measures alone (52). However, another review shows that the warm compress method has a positive effect in reducing fever during the nursing care process (53). Based on the literature reviewed, warm compress intervention should be given to fever patients to help reduce body temperature, whether they are undergoing treatment or not (54). Overall, warm compress intervention has proven to be effective in reducing body temperature (55).

Excessive parental anxiety due to a lack of understanding about fever can result in inappropriate treatment (56), such as the use of high doses of antipyretic drugs (57) or alcohol compresses (58). This research found several non-pharmacological measures that parents can use at home to manage fever. Health professionals must play an important role in educating parents about how to handle fever and febrile illnesses in children (59), one of which is nurses who have an important role in providing education about children's fever management (60). Nurses can provide several actions to increase parents' understanding and knowledge of fever management carried out at home by providing educational interventions (61); (62), education (63), video training (64), and nurses can build empowering

parents by building good relationships with health service providers (65).

This study provides valuable insight into non-pharmacological measures used by parents in caring for children with fevers at home. Although the non-pharmacological therapy presented in this study is considered safe, information about potential side effects or risks associated with such use needs to be clarified. This is important because some natural ingredients or non-pharmacological methods may have contraindications or may cause allergic reactions in some individuals. Future research could focus on a combination of pharmacological and non-pharmacological approaches to reduce fever in children.

CONCLUSION

Non-pharmacological efforts that can be done to reduce children's fever at home include soaking feet in warm water and using compresses of spring onions, dadap serep leaves, aloe vera, and warm compresses, either separately or in combination. The results of the study showed that these non-pharmacological efforts were effective in treating children's fever. Therefore, the application of this non-pharmacological approach can be a safe and effective option to help parents better manage their children's fever. Further research can be conducted on larger scale studies to further validate the efficacy of various non-pharmacological treatments in diverse populations.

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