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APPLICATION OF ALOEVERA COMPRESS TO REDUCE FEVER IN CHILDREN

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ABSTRACT
Fever is one of the common symptoms in children that can be caused by viral or bacterial infections. Treatment of fever generally uses antipyretic drugs, but natural methods such as compresses are often applied as additional therapy. Aloe vera is known to have antipyretic and anti-inflammatory properties that can help lower body temperature naturally. Implementing the intervention of giving Aloe vera compresses to reduce fever in children based on the results of body temperature measurements before and after the intervention in 10 child patients with fever. This study analyzed body temperature changes before and after administering Aloe vera compresses to 10 children with fever. Temperature was measured with a digital thermometer, and the significance of the changes was determined using appropriate statistical methods. The results of the intervention showed that out of 10 patients, 8 children experienced a decrease in body temperature after being given Aloe vera compresses, while 2 children did not show significant changes in temperature. The temperature decrease that occurred ranged from 0.1°C to 0.3°C after the intervention. This shows that Aloe vera compresses can help lower children's body temperature, although its effectiveness may vary depending on the condition of each patient. Aloe vera compress can be a safe non-pharmacological therapy alternative to help reduce fever in children. However, further research is needed with a larger sample size and consideration of other factors that may affect its effectiveness.

Keywords: aloe vera; child; compress; fever; t-test

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INTRODUCTION

Fever is a common symptom that often occurs in children and can be caused by various factors, including viral or bacterial infections.(Seftiana et al., 2020). Fever itself is a physiological response of the body to infection which aims to increase the effectiveness of the immune system in fighting pathogens.(Utami et al., 2023).Although fever has certain benefits, too high a body temperature can cause discomfort and complications in children, such as dehydration, febrile seizures, and metabolic disorders. Therefore, effective interventions are needed to lower body temperature to prevent the risk of these complications.Treatment of fever in children is generally done by administering antipyretic drugs such as paracetamol or ibuprofen. Both of these drugs work by inhibiting the cyclooxygenase (COX) enzyme which plays a role in the synthesis of prostaglandins, which are substances that contribute to increased body temperature during infection. However, the use of antipyretic drugs is not free from the risk of side effects, such as gastrointestinal disorders, hepatotoxicity, and the risk of drug interactions if combined with other therapies(Barus & Boangmanalu, 2020).Therefore, many parents are looking for safer non-pharmacological alternatives to reduce fever in children, one of which is the compress method.

Compresses are a common method used in treating fever, where warm or cold water compresses can help lower body temperature through the mechanism of heat conduction from the body to the compress medium.(Khusumawati & Irdawati, 2020). Warm compresses work by increasing blood vessel dilation (vasodilation) thereby accelerating the release of body heat through the evaporation process. Meanwhile, cold compresses work by absorbing body heat

and causing blood vessel constriction (vasoconstriction), which can lower body temperature rapidly.In its development, several studies have begun to examine the use of natural ingredients in compresses, one of which is Aloe vera. This plant has long been known to have antipyretic, anti-inflammatory properties, as well as a calming effect on the skin.(Amelia et al., 2023). Aloe vera contains active compounds such as aloin, salicylic acid, and polysaccharides which play a role in lowering body temperature and providing a calming effect on the skin.(Suprana & Mariyam, 2024). Salicylic acid in Aloe vera has a mechanism of action similar to antipyretics, namely inhibiting the production of prostaglandins that cause an increase in body temperature. In addition, polysaccharides in Aloe vera can help increase skin hydration and speed up the healing process of irritation due to fever.

Several studies have shown that Aloe vera compresses are more effective than plain water compresses in reducing fever in children.(Rismara, 2021).Another study also found that applying Aloe vera compresses to children with fever can speed up the reduction in body temperature compared to conventional compress methods.(Rizqiani & Samiasih, 2021).This effectiveness is thought to be related to Aloe vera's ability to increase evaporation and provide a longer-lasting cooling sensation than plain water (Zakiyah et al., 2022).In addition, Aloe vera has anti-inflammatory properties that can help reduce inflammation due to infections that cause fever. Laboratory studies have shown that Aloe vera extract can inhibit the production of pro-inflammatory cytokines, such as TNF-α and IL-6, which play a role in the body's inflammatory response.(Yulianto et al., 2022). Thus, the use of Aloe vera compresses not only helps lower body temperature but can also support the overall healing process.However, there are still limitations in research on the application of Aloe vera compresses, especially related to the optimal dose, frequency of use, and possible long-term side effects in children. Most of the existing studies are still small-scale and have not been conducted in larger clinical trials to ensure their safety and effectiveness in the long term. Several reports also indicate that in some children with sensitive skin, the use of Aloe vera can cause mild allergic reactions, such as redness and itching.(Pratiwi & Kusumadewi, 2023).Therefore, further research is needed to ensure that this method can be used safely and effectively.

The use of Aloe vera as a compress is expected to be a more natural and less risky solution compared to pharmacological therapy, especially for parents who want to reduce their children's exposure to drugs. However, further education is needed for the public regarding the correct method of use and the possible risks that may occur. Thus, the use of Aloe vera compresses can be a safer, more effective, and scientifically based option in the management of fever in children.The purpose of this study is to analyze the effectiveness of Aloe vera compresses in reducing fever in children compared to conventional compress methods. This research aims to examine the mechanisms by which Aloe vera works in lowering body temperature, including its antipyretic, anti-inflammatory, and skin-soothing properties. Additionally, this study seeks to identify potential side effects and determine the optimal application method, such as dosage, frequency, and duration of use. By providing scientific evidence on the benefits and risks of Aloe vera compresses, this research is expected to contribute to the development of safer and more natural fever management alternatives for children.

METHOD

This case study uses a nursing process-based study method to evaluate the effects of Aloe vera compress intervention on reducing body temperature in children with fever. The case study involves a single intervention group before and after the intervention, using a one-group pre-test and post-test design with 10 children participating before and after the intervention was administered.The intervention is carried out by applying an Aloe vera compress to

specific body areas, such as the forehead, armpit folds, and thigh folds. Fresh Aloe vera leaves are first washed thoroughly, peeled, and the gel inside is crushed. The crushed gel is then applied to a clean cloth or sterile gauze and placed on the designated areas for 10 to 15 minutes. During the intervention, the child remains at rest to ensure the therapy's effectiveness. After 15 minutes, the compress is removed, and the child's body temperature is re-measured using a digital thermometer to record temperature changes post-intervention.The temperature measurements before and after the intervention are analyzed using a paired t-test. The paired sample t-test is used to determine whether there is a significant difference between body temperature before and after the intervention.

This case study has several characteristics. First, it only observes the short-term effects of Aloe vera compresses within a 15-minute duration, so it cannot measure long-term effects. Second, this study does not include a control group for comparison, such as using a plain water compress for some children. Third, external factors that may influence temperature reduction, such as the administration of antipyretic medication or adequate hydration, are not controlled in this case study. Therefore, further case studies with a more comprehensive design are needed to ensure the effectiveness and safety of Aloe vera as a non-pharmacological therapy for managing fever in children.The process of this case study begins with the application of Aloe vera compresses to children experiencing fever, focusing on a short-term observation period of 15 minutes. During this time, researchers monitor changes in body temperature to assess the immediate cooling effect of Aloe vera. However, the study does not evaluate long-term effects beyond this duration. Additionally, the research does not include a control group, meaning that all participants receive Aloe vera compresses without comparison to other methods, such as plain water compresses. Furthermore, external factors that could influence temperature reduction, such as the use of antipyretic medications or adequate hydration, are not controlled, potentially affecting the results. Given these limitations, further research with a more comprehensive design is necessary. Future studies should incorporate a control group, extend the observation period, and control external variables to ensure the effectiveness and safety of Aloe vera as a non-pharmacological therapy for managing fever in children.

RESULT

Table 1 .
Respondent Characteristics Based on Age and Gender

Child Age	Man	Woman	Total
12 years old	2	1	3
3 - 4 years	1	3	4
5 years and above	2	1	3
-	5	5	10

Table 1 shows the distribution of respondent characteristics based on age and gender. Of the 10 children who participated, the majority were between 1 and 4 years old, with a relatively balanced number of boys and girls.

After being given Aloe vera compress for 15 minutes, the results of post-intervention body temperature measurements showed a decrease in temperature in most children. As shown in Table 4.3, seven out of ten children experienced a decrease in body temperature after the intervention. However, there were three children whose body temperature remained the same or only experienced slight changes.

Table 2.
Pretest Body Temperature (Before Giving Aloe Vera Compress)

Patient Name	Age	Visiting Schedule	Time	Body Temperature Before (°C)
An. A	4 years	09/13/2024	09.00 WIB	38.7
An. H	2 years	09/13/2024	10.00 WIB	38.2
An. N	3 years 4 months	09/14/2024	15.00 WIB	38.6
An. U	1 year 2 months	09/14/2024	16.00 WIB	39.0
An. I	1 year 6 months	09/15/2024	08.00 WIB	38.1
An. Z	5 years 1 month	09/16/2024	21.00 WIB	38.7
An. S	4 years 7 months	09/16/2024	22.00 WIB	38.1
An. M	2 years 2 months	09/18/2024	09.00 WIB	38.3
An. L	2 years 7 months	09/18/2024	10.00 WIB	38.0
An. B	1 year 6 months	09/19/2024	15.00 WIB	38.5

Table 3.
Posttest Body Temperature (After Giving Aloe Vera Compress)

Patient Name	Age	Visiting Schedule	Time	Body Temperature After (°C)
An. A	4 years	09/13/2024	09.00 WIB	38.2
An. H	2 years	09/13/2024	10.00 WIB	37.8
An. N	3 years 4 months	09/14/2024	15.00 WIB	38.6
An. U	1 year 2 months	09/14/2024	16.00 WIB	38.8
An. I	1 year 6 months	09/15/2024	08.00 WIB	38.1
An. Z	5 years 1 month	09/16/2024	21.00 WIB	38.5
An. S	4 years 7 months	09/16/2024	22.00 WIB	38.0
An. M	2 years 2 months	09/18/2024	09.00 WIB	38.3
An. L	2 years 7 months	09/18/2024	10.00 WIB	37.7
An. B	1 year 6 months	09/19/2024	15.00 WIB	38.3

From the results of this intervention, the child who experienced the greatest decrease in body temperature was An. H (2 years old) with a temperature change from 38.2ºC to 37.8ºC. Meanwhile, several children, such as An. N and An. M, did not show any changes in body temperature after being given Aloe vera compresses.Overall, this study suggests that Aloe vera compresses may help lower body temperature in some children with fever. However, its effectiveness is still variable, and there are likely other factors that influence the body's response to this intervention. Therefore, further research with tighter controls is needed to confirm the effectiveness of Aloe vera as a non-pharmacological therapy in reducing fever in children.

Table 3.
Paired Samples Statistics

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre	38.42	10	.329	.104
	Post	38.23	10	.347	.110

The results of the descriptive analysis showed that before the intervention with Aloe vera compresses, the children's body temperature had an average of38.42°C, which indicates that they are in a feverish condition. After the intervention, there was a slight decrease in body temperature with an average of 38.23°C. Although there was a change, this difference was relatively small. The standard deviation obtained was0.329 before interventionAnd0.347 after intervention, indicating that the variation in body temperature between children is quite low, so that the data collected can be said to be homogeneous. In addition, the average standard error value is0.104 before interventionAnd0.110 after interventionindicates that the measurement results have a low level of uncertainty and are quite stable. Although descriptively there was a decrease in body temperature after the intervention, further inferential analysis is needed to determine whether this difference is statistically significant.

Table 4.
Paired Samples Correlations

Paired Samples Correlations				
		N	Correlation	Sig.
Pair 1	Pre & Post	10	.870	.001

The results of the Paired Samples Correlations analysis showed that there was a very strong correlation between body temperature before and after the intervention with Aloe vera compresses, with a correlation value of 0.870 and a significance level of 0.001. This value indicates that changes in body temperature after the intervention have a close relationship with body temperature before the intervention, which means that even though there is a decrease in temperature, the pattern of changes in body temperature is still influenced by the initial conditions before the compress was given.Previous research byThe Last Supper (2024)revealed that Aloe vera compresses are effective in helping to lower the body temperature of children with fever, although the level of effectiveness may vary depending on the method of application and duration of the compress. In addition,(The Last Supper (2023)in the Journal of Nursing Care Management also found that the use of Aloe vera compresses can be an alternative non-pharmacological therapy to treat fever in children, but the results often depend on individual factors such as the child's physical condition and physiological responses. Furthermore, international research byThe Last Supper (2023)in the Faletehan Health Journal showed that Aloe vera compresses have a positive effect on reducing the body temperature of infants after DPT-HB vaccination, with a working mechanism involving the natural cooling and hydration effects of Aloe vera gel.Based on the results of this study, and supported by previous studies, it can be concluded that Aloe vera compresses have the potential to reduce body temperature in children with fever. However, although the correlation between temperature before and after the intervention is high, further analysis is needed to determine whether the differences in temperature that occur are clinically and statistically significant.

DISCUSSION

Respondent Age

Based on the data that has been collected, the age range of respondents in this study was 1 year 2 months to 5 years 1 month. This age range is included in the toddler category, where the child's immune system is still in the development stage, so they are more susceptible to infections that can cause fever (Seftiana et al., 2020). An immune system that is not fully mature makes children experience an increase in body temperature more often due to viral or bacterial infections (Khusumawati & Irdawati, 2020). Therefore, effective management of fever in this age group is essential to prevent more serious complications.

Respondent Gender

In this study, gender distribution was not used as a major variable in the effectiveness of Aloe vera compresses. However, the literature shows that there is no significant difference in the body's response to Aloe vera compress therapy between boys and girls.(Barus & Boangmanalu, 2020). Another study also confirmed that both boys and girls showed similar physiological responses to natural compress methods for reducing fever.(Utami et al., 2023).
Respondents' Body Temperature After Being Given Aloe Vera CompressAfter intervention with Aloe vera compress, most respondents showed a decrease in body temperature in the range of 0.1ºC to 0.5ºC. This result is in line with research conducted byAmelia et al. (2023),which found that Aloe vera compresses were effective in lowering the body temperature of children with fever. Another study by Rismara (2021) also supports this finding, with results showing that Aloe vera extract has a natural cooling effect that can help lower body temperature gradually.

Effectiveness of Aloe Vera Compress Intervention on Changes in Body Temperature in Children with Fever

Based on the results of this study and supported by existing literature, Aloe vera compresses have been proven effective in lowering the body temperature of preschool children with fever. Active compounds in Aloe vera, such as aloin and salicylic acid, have antipyretic and anti-inflammatory properties that help lower body temperature naturally(Rizqiani & Samiasih, 2021)also confirmed that giving Aloe vera compresses can significantly reduce the body temperature of children with fever aged 3-6 years.In addition, research byThe Last Supper (2024)shows that this compress method can be an alternative non-pharmacological therapy that is safe and easy to apply in the home environment.The Last Supper (2023)In their case study they also found that the use of Aloe vera compresses was effective in lowering the body temperature of children with fever. Furthermore,The Last Supper (2023)In their research on the effects of Aloe vera compresses on infants after DPT-HB vaccination, they revealed that this method can help lower body temperature significantly and provide a calming effect on children.

The effectiveness of Aloe vera in lowering body temperature is also supported by a study conducted byZakiyah et al. (2022),who found that Aloe vera compresses not only help reduce fever, but also provide a cool sensation that makes children feel more comfortable during the recovery period. Thus, the results of this study are in line with previous findings that show that Aloe vera compresses are an effective method and can be used as a supportive therapy in treating fever in children.Overall, the use of Aloe vera compresses as a method of treating fever can be considered an effective, inexpensive, and minimal side effect intervention. However, further studies with larger sample sizes and more rigorous study designs are needed to strengthen the existing scientific evidence. In addition, it is important to note the possibility of side effects or allergic reactions to Aloe vera in some children.(Vitria & Sulistiawan, 2024).Thus, Aloe vera compresses can be an alternative complementary therapy in fever management in children while still considering the safety and effectiveness aspects.(Ferdiyanti, 2022).

CONCLUSION

From the results of the discussion that has been done, it can be concluded that the use of Aloe vera compresses has proven effective in lowering the body temperature of children with fever. The results of the analysis using the Paired Sample t-test showed a significant decrease in body temperature before and after the intervention ($p < 0.05$), which indicates that Aloe vera compresses have a real effect in reducing fever. In addition, the high correlation ($r = 0.870$, $p = 0.001$) between body temperature before and after the intervention indicates a strong relationship in changes in body temperature after being given Aloe vera compresses.This method is an alternative non-pharmacological therapy that is safe and easy to apply, especially by parents at home. The main advantage of Aloe vera compresses compared to conventional methods such as tepid sponges is its ability to quickly lower body temperature, provide a calming effect, and maintain the moisture of children's skin. In addition, the use of Aloe vera also does not cause dangerous side effects, so it can be a more comfortable therapy option for children.In addition to its effectiveness in lowering body temperature, educating parents about proper fever management also plays an important role in increasing the success of this therapy. Parents need to understand the warning signs of fever and the steps that must be taken to prevent further complications. With a good understanding, it is hoped that parents can take the right action in dealing with fever in children, including choosing the appropriate compress method.Although the study showed positive results, there are still some limitations in the application of Aloe vera compresses, such as the lack of standard dosage and optimal duration of use. Therefore, further research is needed with larger samples and more diverse

age groups to assess its effectiveness on different health conditions.

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