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Effectiveness of Giving Compress Against Reduction of Body Temperature In Children: Systematic Review

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ABSTRACT

Background: Fever is a clinical manifestation that is often experienced by sick children. Fever can be dangerous if there is a high fever. Seizures can occur as a result of high fever which is not treated early, causing hypoxia of brain tissue and ultimately damage. According to WHO estimates that around 17 million cases of fever worldwide, there are 600,000 deaths each year.

Purpose: This study aimed to find out effective interventions to reduce body temperature in children.

Methods: This research used quantitative descriptive design with systematic review approach. The research instrument uses Duffy's Research Appraisal Checklist Approach.

Results: After searching the article, there were 9 articles related to giving warm compresses, 6 articles with the location of administration in the axilla and tepid songe areas (wiping the whole body), 7 articles by giving compresses for 30 minutes and 10 articles with compressed water temperature 37ºC.

Conclusions: Of the 15 articles that have been traced successfully, the most interventions given were warm compresses in the axilla and tepid sponge areas by giving compresses for 30 minutes and compressed water temperature of 37ºC.

Keywords: Children, Compress, Temperature

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BACKGROUND

Fever is a clinical manifestation that is often experienced by sick children. The high incidence of fever, according to WHO estimates that around 17 million cases of fever cases worldwide with an incidence of 600,000 deaths each year. Pneumonia is the main cause of infant mortality in the world. This disease accounts for 16% of all deaths of children under 5 years, which cause death in 920,136 toddlers, or more than 2,500 per day, or it is estimated that 2 children under five die every minute in 2015 (Lunze, 2017).

Fever can be dangerous if there is a high fever. Seizures can occur as a result of high fever that is not treated early, causing hypoxia of brain tissue and ultimately brain damage. High body temperature causes the brain to be sensitive and prone to cell death. High body temperature is dangerous because it results in local bleeding and parenchymatic degeneration throughout the body, this disorder will cause disruption of cell function. Fever occurs as the body's response to an increase in set points, but there is an increase in temperature due to excessive heat formation but not accompanied by an increase in set points (Hall, 2016).

Compress is a method of maintaining body temperature by using fluids or tools that can cause warm or cold to the parts of the body that need it. There are two types of compresses, warm compresses and cold compresses. The purpose of a warm compress is to facilitate blood circulation, reduce pain, provide warmth, comfort, and calm to the client, expedite exudate expenditure, stimulate intestinal peristalsis. Areas of hot and cold compresses can cause systemic responses and local responses. This stimulation sends peripheral implants to the hypothalamus which then becomes a normal body temperature sensation (Murakami, 2015).

Optimum body temperature is essential for cell life to function effectively. Extreme changes in body temperature can be harmful to the body. Therefore, nurses must try to be able to maintain the client's body temperature to remain normal (Yunianti, 2019). There have been many studies on compresses, but to find out the type of compresses and the location of the most effective compresses is not widely known, so the authors intend to conduct a systematic study review study related to giving compresses to decrease body temperature in children.

OBJECTIVE

This study aimed to find out effective interventions to reduce body temperature in children.

METHODS

This research uses a quantitative descriptive design with a systematic review approach. This study uses a systematic review approach to find out effective intervention strategies to prevent children from stunting / reduce the incidence of stunting in children. Literature search through database: *PubMed, Science Direct, Google Scholar, Portal Garuda, Journal Of Islamic Nursing (JOIN), Rumah Jurnal UIN Alauddin, Emerald, International Journal of Science and Research, Oxford serta Springer.*

The inclusion and exclusion criteria in this study are the inclusion criteria: articles published in 2015-2019; full text articles that fit the purpose of the research namely effective intervention strategies to prevent stunting / reduce the number of stunting in children; there is ISSN or DOI or Volume; research using human subjects; limits of experimental research. Exclusion criteria include: articles that are double publications and articles that have a low quality rating of articles based on Duffy's score.

After collecting data and information, all of the data and information is selected by using Duffy's Research Appraisal Checklist Approach with the problem being examined. To present the problem to be discussed, the data collected is analyzed descriptively.

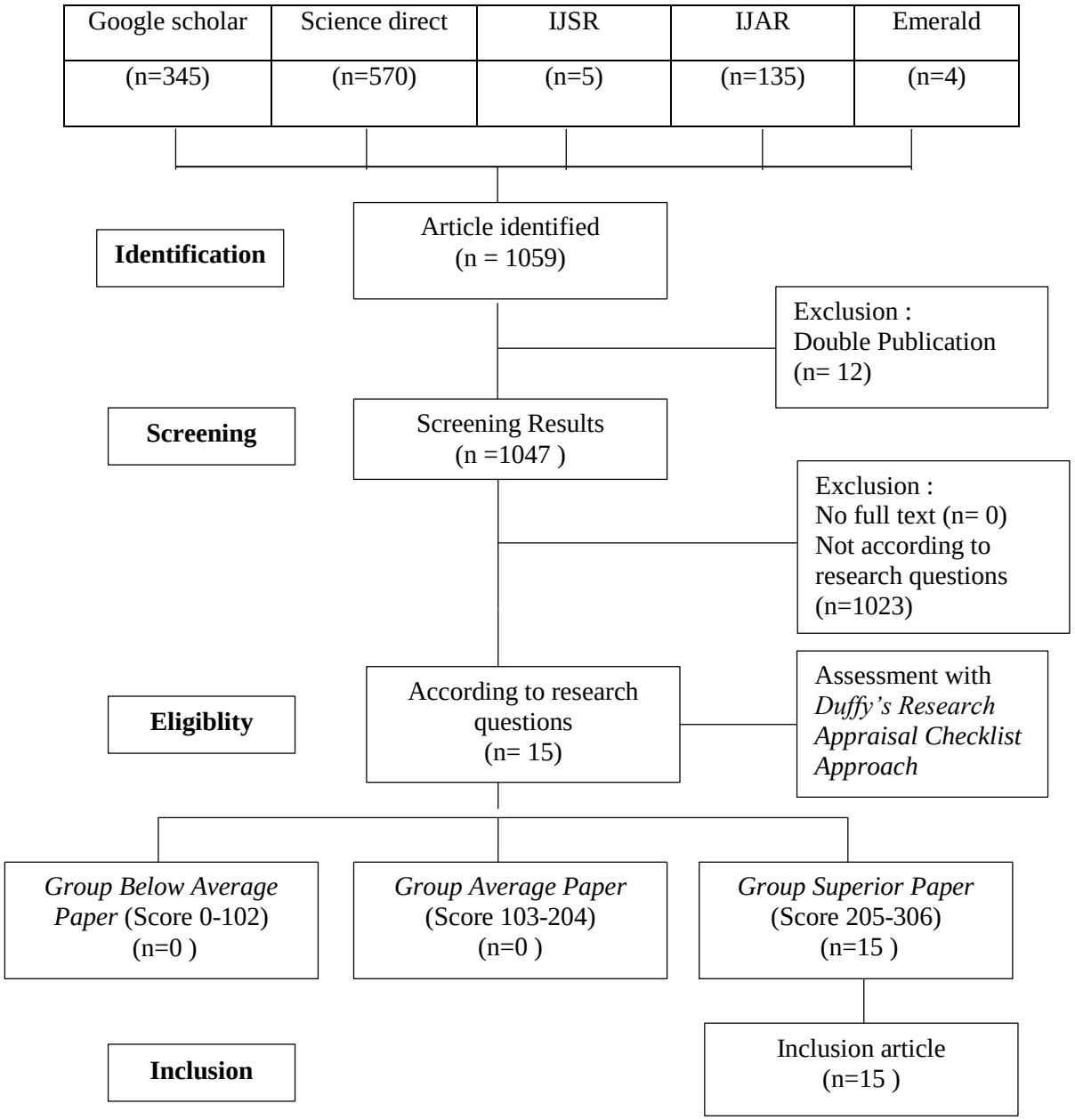

Figure 1. Flow Chart for Study Selection and Inclusion

RESULTS

1. Type of intervention given
   Based on the results of an analysis of 15 articles, 9 articles (60%) were obtained using a warm compress intervention to reduce body temperature in children, then an onion and pelster compress intervention was obtained with the same value of 2 articles (13.3%) and obtained vinegar compress intervention and aloe vera with the same value of 1 article (6.7%).

Tabel 1.1 Frequency Distribution of Effective Interventions Against Decrease in Body Temperature

Intervention	Journal article	Percentage (%)
Aloe vera	1	6.7%
Vinegar Compress	1	6.7%
Plaster compresses	2	13.3%
Shallot	2	13.3%
Warm compresses	9	60%
Total	15	100%

2. The location of the intervention
   Based on the analysis of 15 articles, it was found that 6 articles were mostly given to the axilla area (40%) and the tepid sponge technique (40%) foot to ankle area (6.67%).

Table 1.2 Frequency Distribution of Location for Intervention

Intervention Location	Number of Locations	Percentage (%)
Forehead	1	6.66%
Axilla	6	40%
Thigh	1	6.67%
Leg area to ankle	1	6.67%
Tepid sponge	6	40%
Total	15	100%

3. Duration of Giving compress
   Based on the analysis of 15 articles, there were 7 articles with a duration of compressing for 30 minutes (46.7%), there were 5 articles with a duration of compressing for 15 minutes (33.3%), there were 2 articles with a duration of compressing for 20 minutes (13.3%) and found an article with a duration of compressing for 10 minutes (6.7%).

Tabel 1.3 Distribution Frequency of Duration of Compress

Duration of Giving	Number of Articles	Percentage (%)
10 minute	1	6.7%
15 minute	5	33.3%
20 minute	2	13.3%
30 minute	7	46.7%
Total	15	100%

4. Temperature of applying compresses
   Based on the analysis of 15 articles, there were 10 articles with 37^0C (66.7%) compressing temperature, 2 articles with 20^0C and 40^0C (13.3%) compressing temperatures and 1 article with 43^0C compressing temperature (6.7%).

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Tabel 1.4 Distribution Frequency of Compress Water Temperature

Giving Temperature	Number of Articles	Percentage (%)
20 ^{o}C	2	13.3%
37 ^{o}C	10	66.7%
40 ^{o}C	2	13.3%
43 ^{o}C	1	6.7%
Total	15	100%

DISCUSSION

Based on the 15 articles identified. There are interventions, locations, duration of compressing and temperature given to a decrease in body temperature in children, namely:

1. Type of intervention given

   Based on the results of the most frequent interventions given are warm compresses. Warm water compresses can reduce body temperature through the evaporation process. Compress with warm water causes the body temperature outside to be warm so the body will interpret that the temperature outside is hot enough, eventually the body will lower the temperature control in the brain so as not to increase the temperature of the body regulator, with the temperature outside warm will make the blood vessels in the skin edge widening and experiencing vasodilation so that the skin pores will open and facilitate heat dissipation so that there will be a decrease in body temperature (Dewi, 2016). In line with the results of Aminatul Fatayati's study which stated there was an effect of warm compresses on decreasing body temperature in febrile children (Fatayati, 2010).
2. The location of the intervention

   Based on the results of the frequency of the location of the most intervention given at the axilla location and tepid sponge technique (by wiping the entire body). In the axilla area, from several locations giving warm compresses it was found that the axilla area was more effective than the location of the groin and forehead folds. This shows, giving warm compresses to the axilla as an area with the location of large blood vessels is an attempt to provide stimulation in the hypothalamic preoptic area in order to reduce body temperature. The occurrence of spending more body heat through two mechanisms, namely peripheral blood vessel dilation and sweating (Potter & Perry, 2016).
3. The duration of the compress

   Based on the duration of the compress from the 15 most articles in 30 minutes. Based on Sunarti's research (2018), by giving warm compresses and measuring body temperature 3 times, before the action, 15 minutes after the action and 30 minutes after the action. Obtained a decrease in body temperature every minute. In line with research conducted by Putra (2018), the administration of a warm compress is given for 30 minutes. There was a decrease, before the intervention was given, the average body temperature of the respondent was 38.1^{0}C and after the intervention was given the average body temperature of the respondent was 37.2^{0}C with a decrease in temperature of 0.9^{0}C.
4. Temperature of applying compresses

   Based on the analysis of 15 articles, there were 10 articles with a temperature of 37^{0}C compress. in line with research conducted by Antono (2015) with the provision

of a counter carried out at 37^0C. in line with research conducted by Putra (2018) giving compresses at 37^0C to children who have a fever.

The provision of compress shallots according to Cahyaningrum (2017), which suggests that the greater the mass of onion given, the less amount of time needed to reduce the temperature of the mixture, so that the more effective in lowering body temperature.

CONCLUSION

Based on the results of the analysis of 15 articles found, namely: Intervention of giving compost to a decrease in body temperature in children. Compress is an intervention that is commonly known to be associated with handling fever in children. However, based on the analysis of 15 articles that were received, the most intervention given was warm compresses. Warm water compresses can reduce body temperature through the evaporation process. Compress with warm water causes the temperature of the body outside to be warm so the body will interpret that the temperature outside is hot enough, eventually the body will lower the temperature control in the brain so as not to increase the temperature of the body regulator, with the temperature outside warm will make the peripheral blood vessels in the skin widening and experiencing vasodilation so that the skin pores will open and facilitate the removal of heat so that there will be a decrease in body temperature. The location where most interventions were given was the axilla location and tepid sponge technique (by wiping the whole body). Based on the duration of the compress from the 15 most articles in 30 minutes. From 15 articles, there were 10 articles with temperatures of 37^0C compresses.

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