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Effectiveness of warm water foot bath therapy on body temperature in school-age children with typhoid fever

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ABSTRACT

One of the pediatric health problems in Indonesia is typhoid fever. Typhoid fever cases in Indonesia continue to increase every year. Data from one of the health problems experienced by children in Indonesia is typhoid fever. Data from the World Health Organization (WHO) the incidence of typhoid fever is 128,000 to 161,000 deaths each year. Typhoid fever or often called typhus disease is an infectious disease caused by food or drink contaminated with Salmonella typhi bacteria. This studied provide an overview of nursing care in school-age children with typhoid fever who are carried out warm water foot soak therapy to overcome hyperthermia. This research method is qualitative with a case study approach where the author performs warm water footbath therapy, and observes changes in body temperature. The results of the research were changes in body temperature with warm water foot soak therapy measured by observation sheets. The results of nursing care for 5 consecutive days with a duration of 15 minutes in 1 administration, there was a decrease in body temperature with an average decrease of 0.5 ℃. Conclusion: In this research, warm water foot bath therapy can work effectively on changes in body temperature for school-age children with typhoid fever

1. INTRODUCTION

Changes in a child's body condition from healthy to sick result in the body's response to increase body temperature which is called fever (Ratnasari, Cahyaningrum, & Susanto, 2021). Children are more susceptible to fever than adults because the immune system in children is not yet fully mature and the lack of good hygiene such as washing hands, making them susceptible to disease.

Typhoid fever is one of the health problems experienced by children in Indonesia. Typhoid fever is an acute infectious disease that attacks the digestive tract and causes fever for more than 7 days, caused by Salmonella typhi bacterial infection that enters the body through contaminated food (Pereira & Sebastian, 2018).

Hyperthermia that appears in typhoid fever is caused by the entry of microorganisms into the body, so the body will immediately respond with the onset of fever indicated by body temperature

above 37.5 ℃. Efforts are needed in the management of fever in children, so that children do not fall into dehydration. The way that can be done is by providing pharmacological therapy, giving antipyretics such as paracetamol. While examples of non-pharmacological therapies such as warm water foot soak therapy (Wulanningirum & Ardianti, 2021). Warm water foot soak is one type of hydrotherapy non-pharmacological therapy that can reduce pain and muscle tension, widen blood vessels, increase blood circulation which releases heat in the form of sweat (Pereira & Sebastian, 2018). This is evidenced by the results of Pereira & Sebastian's (2018) research, which shows that warm water foot soak therapy for 15 minutes is effective in reducing body temperature in children aged 6-12 years who are feverish. According to research conducted by Wulanningirum & Ardianti (2021) on the effectiveness of warm water foot soak in reducing body temperature in children aged 6-12 years at Karanganyar Regional Hospital, it shows that there is a decrease in the respondent's body temperature for 3 consecutive days after being given warm water foot soak therapy, with the result of a decrease in body temperature of 0.5 ℃. Meanwhile, the results of research conducted by Hidayati & Faozi (2023) on evidence based nursing: upaya penurunan suhu tubuh pada pasien hipertermi dengan terapi rendam kaki air hangat. Based on the application of warm water foot bath for 15 minutes, it was found that there was a change in the patient's thermoregulation towards a good direction with an indicator of a decrease in body temperature from 37.8 ℃ to 37.4 ℃. These results indicate that warm water foot bath can reduce body temperature.

Based on the results of interviews, data on the incidence of typhoid fever at BLUD RSU Banjar City, researchers obtained data on the number of pediatric patients aged 6-12 years who suffered from typhoid fever from January to March 2024, showing that around 8 children, 5 children were male and 3 children were female. The data shows that typhoid fever is still a problem in school-age children. During treatment, patients are only given fever-reducing drugs without being assisted by the provision of non-pharmacological therapies. This happens because parents lack information on how to overcome fever in children, especially through warm water foot baths. It is hoped that the provision of this therapy can be an alternative for parents and nurses in reducing fever in children by applying warm water footbath therapy

2. METHODS

The writing design in this study is qualitative with a case study approach. The location of data collection and application of warm water foot soak therapy was carried out in the Melati room of BLUD RSU Banjar City. The application time of warm water foot bath therapy was carried out for 5 consecutive days, with a duration of 15 minutes in 1 administration. After evaluation on day 5 as a form of a series of research activities

3. FINDINGS AND DISCUSSION

The research conducted was the application of warm water foot soak therapy intervention on 2 respondents of school-age children with typhoid fever. The first subject was intervened on April 15, 2024 to April 19, 2024 and the second subject on April 16, 2024 to April 20, 2024. the author conducted warm water foot soak therapy for 5 consecutive days as much as 1 time administration in each day, carried out for 15 minutes each intervention. The results obtained are as follows:

General description of the study

Based on the results of research on 2 respondents of school-age children with typhoid fever, there is a description of the characteristics of each respondent.

Table 3. 1 Characteristics of respondents

Characteristics	Respondent 1 (An. R)	Respondent 2 (An. I)
Gender	Boy	Girl
Age	6 years old / January 1, 2018	11 years old / July 1, 2012
Diagnoses	Typhoid fever	Typhoid fever
Perceived	– Assessment : The mother said that her child had had an up and down fever for 8 days, the fever occurred at night accompanied by not defecating for 4 days and complaining of not feeling well. – Physical examination : the client is weak, pale, dry lip mucosa, warm palpable acral. – Vital sign : Blood pressure : 90/60 mmHg, Pulse : 87 x/menit, Respiration : 22 x/menit, Temperature : 37,9℃, Weight : 19,7 kg, Height : 135 cm.	– Assessment : The mother said that her child has had a fever up and down for 7 days, the fever occurs at night accompanied by nausea not accompanied by vomiting, decreased appetite, and complains of not feeling well and has not defecated for 2 days. – Physical examination: the client is weak, pale, dry lip mucosa, warm palpable acral. – Vital sign : Blood pressure : 100/70 mmHg, Pulse : 94 x/menit, Respiration : 23 x/menit, Temperature : 38℃, Weight : 35 kg, Height : 148 cm.
Laboratory results	Laboratory results April 15, 2024. Leukosit : 4.3 ribu/mm³, Trombosit : 140 ribu/mm³, Tubex TF : 6 (positive).	Laboratory results April 16, 2024. Leukosit : 4.1 ribu/mm³, Trombosit : 135 ribu/mm³, Tubex TF : 8 (positive).

Thermoregulatory features before and after receiving warm water foot bath therapy on An. R and An. I

Table 3. 2 Overview of thermoregulation before and after getting warm water foot bath therapy on An. R and An. I

Day –, Date, Clock	Respondent 1 An. R		Day –, Date, Clock	Respondent 2 An. I	
	Before	After		Before	After
1. 04/15/24 (19.00 WIB)	37,9 ℃	37,1 ℃	1. 04/16/24 (17.25 WIB)	38 ℃	37,3 ℃
2. 04/16/24 (18.20 WIB)	37,9 ℃	37,2 ℃	2. 04/17/24 (18.10 WIB)	37,7 ℃	37,3 ℃
3. 04/17/24 (19.10 WIB)	37,7 ℃	37 ℃	3. 04/18/24 (16.55 WIB)	37,7 ℃	37,4 ℃
4. 04/18/24 (18.50 WIB)	37,8 ℃	37,2 ℃	4. 04/19/24 (19.05 WIB)	37,8 ℃	37,4 ℃

5. 04/19/24 (18.00 WIB)	37,8 ℃	37 ℃	5. 04/20/24 (19.10 WIB)	37,8 ℃	37,5℃

Based on table 3.2 above shows that thermoregulation before and after getting warm water footbath therapy for 15 minutes obtained changes in thermoregulation in both respondents. This shows that the application of warm water foot bath therapy can reduce the body temperature of children with fever.

The difference in the decrease in body temperature before and after giving warm water foot bath therapy to An. R and An. I

Table 3. 3 The difference in the difference in the decrease in body temperature before and after getting warm water footbath therapy on An. R and An. I. R and An. I

Day-	Decreased Body Temperature (℃)	
	Respondent 1	**Respondent 2**
1	0,8	0,7
2	0,7	0,4
3	0,7	0,3
4	0,6	0,4
5	0,8	0,3
Average	0,7	0,4
Average difference	0,3	

Based on table 3.3 shows that both respondents experienced a decrease in body temperature with an average decrease in body temperature in respondent 1 was 0.7 ℃, while in respondent 2 the average decrease in body temperature was 0.4 ℃, the difference in the average decrease in body temperature in these two respondents was 0.3 ℃.

DISCUSSION

Based on the results of the application of warm water footbaths from the two respondents with hyperthermia problems, it can be concluded that there is a decrease in body temperature after the intervention of giving warm water footbaths to school-age children with typhoid fever. This discussion aims to interpret the data from the application and then compare it with the theoretical concepts from previous research.

Respondent 1 is 6 years old, while respondent 2 is 11 years old. This shows that both respondents fall into the category of school-age children, the results of this study are in accordance with the theory which states that school age has a high risk of typhoid fever. This is in line with Dwi Cahyani's (2021) research that school-age children are vulnerable to typhoid fever, because school-age children usually pay less attention to their personal hygiene or hygiene which may be due to their ignorance that careless food snacks can cause typhoid fever.

According to Rahmat et al., (2019) typhoid fever patients are characterized by complaints of increased body temperature> 37.5 ℃ for more than 1 week. Based on the theory that in patients with typhoid fever the main nursing problem that often arises is hyperthermia and in both respondents it is in accordance with existing theory, the results of Parapat's (2020) research also show that nursing care in patients with typhoid fever which is the main nursing problem is hyperthermia nursing problems, because if hyperthermia is not treated it can cause dehydration. Hyperthermia can cause dehydration because the body tries to overcome an abnormal increase in body temperature by increasing sweat production. If sweat cannot be evacuated effectively, the lost body fluids cannot be

replaced quickly, coupled with reduced fluid intake, causing dehydration. Dehydration that is not overcome can cause hypovolemic shock (Dwi Cahyani et al., 2021).

The provision of warm water foot bath therapy is carried out for 5 consecutive days, given for 15 minutes using warm water with a temperature of around 38 ℃-40 ℃ as much as ± 500 ml. According to research by Wulanningirum & Ardianti (2021) states that the provision of warm water foot bath therapy can reduce body temperature, because the transfer of heat from warm water to the body causes dilation of blood vessels in the foot area so that blood flow to the skin surface increases and increases the body's ability to radiate heat to the surrounding environment, which results in a decrease in overall body temperature. As a result, there is a change in body temperature to the normal range (Ruspandi, 2023). After the implementation of warm water foot bath therapy, a response to a decrease in body temperature was obtained in both patients or it could also be continued with the administration of antipyretic drugs.

The results of the research evaluation obtained data on a decrease in body temperature in the two respondents who had a fever. After being given warm water footbath therapy for 5 consecutive days with a duration of 15 minutes each administration to the two respondents, there was a decrease in body temperature. In respondent 1 An. R, the average decrease in body temperature was 0.7 ℃. While the average decrease in body temperature of respondent 2 An. I 0.4℃, with the average difference between the two being 0.3℃. The average decrease in body temperature of the two respondents who were given warm water foot bath therapy for 5 consecutive days was 0.5 ℃, meaning that it was proven that warm water foot bath therapy could reduce the body temperature of the two respondents

4. CONCLUSION

By comparing the results of the study with the theory in the discussion, it can be concluded that the provision of warm water footbath therapy in school-age children with typhoid fever provides effectiveness and there are changes in body temperature within normal limits. The provision of warm water foot bath therapy can be applied as a complementary therapy in the treatment of children who have fever.

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