

## Analysis Application Compress Warm Water Edged Sponge in Lower Temperature Body on Patient Fever Typhoid

Alamsyah<sup>1\*</sup>, Sulasri<sup>2</sup>, Tut Handayani<sup>3</sup>

Institute Ilmu Kesehatan Pelamonia Kesdam XIV/ Hasanuddin

**Corresponding Author:** Alamsyah [alamakperpelamonia@gmail.com](mailto:alamakperpelamonia@gmail.com)

---

### ARTICLE INFO

*Keywords* : Hyperthermia, Typhoid Fever, Warm Compress of Water Tepid Sponge

*Received* : 06, September

*Revised* : 20, September

*Accepted*: 24, September

©2022 Alamsyah, Sulasri, Handayani:

This is an open access article distributed under the terms of the [Creative Commons Attribution 4.0 International](https://creativecommons.org/licenses/by/4.0/).



### ABSTRACT

Fever typhoid that is disease cystemia caused by tagged bacteria with fever long-lasting incident, body feel weak, sick heavy head, anorexia, and cough no productive. Typhoid fever causes a very high body temperature above the normal temperature and can damage the brain and other vital organs. The purpose of this study was to describe the application of a warm water tepid sponge compress to decrease body temperature in typhoid fever patients. The type of research that can be a type of descriptive research with a case study approach. From the results of the researcher's analysis, the warm compress of the tepid *sponge was* able to reduce the temperature in patients with typhoid fever because it was a direct block compress which was carried out at 5 points that had large blood vessels. This is evidenced by *There was* a decrease in body temperature before and after the application of a warm *water tepid sponge compress* on respondent An. M and An. N. The use of warm compress therapy with water tepid sponge is able to reduce the temperature so that it is used as one of the nurses' independent interventions in dealing with fever when arriving at the ER.

---

## INTRODUCTION

Typhoid fever causes disruption of the thermoregulation system so that the body temperature is very high above its normal temperature when the body temperature is high it can damage the brain and other vital organs. So if this disease is not treated quickly it will cause complications in breathing and circulation such as pulmonary complications that cause pneumonia, epiema, and pleurisy. Cardiovascular complications, namely peripheral circulation failure, myocarditis. Typhoid fever can also cause disruption of electrolyte balance and can even become convulsions due to salmonella typhi infection which attacks the nervous system in the body. can cause shock or can be fatal or lead to death. This condition is one of the diseases that should be wary of such as heart failure, pulmonary TB, fractures, etc (Alamsyah, Sulasri, Hasbullah, A.Fahira Nur, Vidyanto & Wandira, 2019; Alamsyah et al., 2019, 2020; Halimah et al., 2022; Samsir et al., 2020). WHO data (2018) shows that the number of cases related to typhoid fever worldwide is estimated at around 21 million cases, with mortality rates ranging from around 128,000 - 161,000 annually. Most cases of typhoid fever are found in parts of South and Southeast Asia.

Based on data from the Ministry of Health of the Republic of Indonesia (2018) that typhoid fever is among the 10 most common diseases in hospitalized patients, the prevalence of this case is 5.13%. This disease is categorized as having the highest *Case Fatality Rate (CFR)* of 0.67%. According to the Health Office (2015) of South Sulawesi Province, there were 16,743 patients with typhoid fever, 7,925 men and 8,818 women with an incidence rate (2.07). The highest cases in South Sulawesi were in the city of Makassar with 2,325 cases.

The results of research conducted by Mustofa *et al.* , (2020) patients with typhoid fever in children and adolescents based on age were the highest at the age of 5-11 years old, totaling 181 patients (57.1%) and the lowest at the age of 12-25 years, amounting to 136 patients (42.9%). ). Based on the highest age, children aged 8 years amounted to 37 patients (20.4%) and the highest age was in adolescents aged 12 years and 15 years amounted to 16 patients (11.8%).

One of the complaints in patients with typhoid fever is that the body feels warm. If the body feels warm, it can be ascertained that the body temperature is rising above normal temperature. Normal body temperature ranges from 36.5 C - 37.5 C , the older a person is, the lower his normal body temperature is. The fever has a temperature range of > 37.5-38.3 C ( Bachtiar, 2012) . Symptoms that often appear in typhoid fever are body temperature that rises and falls, especially in the evening and night and headaches. As a result of increased body temperature, a person will experience lethargy, drowsiness, and depression. It is also common for confusion, hostility, tachycardia, tachypnea to arise. In children often have seizures. In the end, the body's organs can fail, resulting in unconsciousness and even death. The mechanism of the occurrence of fever is an increase in body temperature caused by the temperature control point ( *set point* ), in the hypothalamus. Regulatory hypothermia is within normal limits. In fever, the increase in body temperature is triggered by pyrogen substances which cause the release of prostaglandin E2 (PGE2) which in turn triggers a systemic response throughout the body causing the effect of

creating heat to adjust the temperature level, which is the body's temperature regulating center which is located in the hypothalamus, like a thermostat. In hyperthermia the temperature regulation center is within normal limits, which means that there is no attempt by the hypothalamus to increase body temperature. However, the body has excess heat as a result of retention and unwanted heat production (Astuti, 2018) .

Handling fever is divided into two, namely pharmacological and non-pharmacological measures. Pharmacological action is the action of giving antipetrik drugs to reduce fever. While non-pharmacological measures are actions to reduce fever by providing therapy such as placing in a room that has good circulation or a room that has a temperature, changing clothes using thin or clothes that easily absorb sweat and giving compresses, the compress given is a warm compress of *Water Tepid Sponge* . *Water Tepid Sponge* is a combination of block technique with wiping to reduce body temperature through evaporation and conduction which aims to reduce body temperature by wiping the whole body with a washcloth and compressing certain body parts that have large blood vessels and provide a sense of comfort and reduce pain. caused by fever (Susetyo et al., 2021).

Based on Berutu's research, (2019) there are differences in the patient's body temperature before and after being given a *tepid water sponge compress* for 15-20 minutes in one treatment in patients with hyperthermia. In addition, it was found that based on research (Wardiyah et al., 2016)the results of the data on the *tepid water sponge* were effective in reducing fever because the tepid water sponge was given at several points, namely the neck, armpits, and groin, as well as in the abdomen and chest. With the average body temperature after 30 minutes of action with a temperature of 37.5°C. Based on the description above, the writer is interested in conducting a case study with the title warm compress of *water tepid sponge* on the decrease in body temperature in patients with typhoid fever.

## LITERATURE REVIEW

Water Edge Sponge is a technique compress warm that combines technique compress block on vessels big like super special with technique wipe Alves , ( 2013 ). Water Edge Sponge is something action procedures that can improve loss control hot on body that goes through evaporation and the conditions experienced fever high . Water Edge Sponge is something action for lower temperature body on moment fever with method soak child to warm water or wiping all over body child with washcloth with compress on part body that has vessels big. Water Edge Sponge is something action where conducted wiping all over body with use warm water with temperature of 32 C to 37 C which aims at for lower temperature the body above normally.

## METHODOLOGY

The method used in this research is descriptive observational approach studies case using 2 respondents with a diagnosis of Typhoid Fever at the Kindergarten Hospital. II Pelamonia Makassar in May 2022. With inclusion criteria: (1) Patients with hyperthermia, (2) Pediatric patients, (3) Typhoid

fever proven by Widal test and exclusion criteria namely: patients with seizures. . The instruments used in this research are, Assessment Sheet, *Informed consent* , Thermos, Thermometer, Standard Operating Procedures that have been prepared by the researcher, *Observation Sheet*.

### THE RESULT

Results assessment which obtained on second respondent could seen on table 1 under this:

Table 1. Result Assessment

Data	Respondent 1	Respondent 2
Name	an. M	an. N
Age	3 years	4 years
Religion	Islam	Islam
Current Complaint	Fever since 4 days ago Fever is often felt in the morning and evening accompanied by vomiting and diarrhea, the patient looks restless, weak, the body feels warm and there are reddish spots.	Fever since 5 days ago, the fever is often felt at night accompanied by vomiting, nausea, dizziness, heartburn and diarrhea, the respondent looks restless, the respondent looks weak and the body feels warm. Respondents do not have history health
Signs vital	TD 100/70 mmHg Pulse 123X/Minute Breath 20X/Minute Temperature 38.0°C	TD 112/78 mmHg Pulse 106X/Min Breath 20X/Min Temperature 38.5°C
Laboratory Results	Salmonella Typhi-O 1/320*, Salmonella paratyphi-CO 1/80*, Salmonella Typhi H 1/160*, Salmonella Paratyphi-CH 1/160*, LED 45 mm/hour.	Salmonella paratyphi-BO 1/80*, WBC 2, 14* 10 <sup>3</sup> /μL.

After conducted assessment, researcher then To do contract to respondent and family for implementation is carried out. The application of a tepid *water sponge warm compress* was carried out on respondents who had been diagnosed with typhoid fever which was carried out for 1 day in the ER TK Hospital. II Pelamonia Makassar against An. M and An. N on May 12.

Body temperature before application conducted and second body temperature respondent after conducted application could seen in table 2:

Table 2. Body Temperature Comparison Before and After Application

Respondent	Before Application		After Application		N Average Score
	Time	Temperature	Time	Temperature	
an. M	13:10	38.0 °C	13:50	37.5 °C	0.5 °C
an. N	16:00	38.5 °C	16:40	37.7 °C	0.8 °C

## DISCUSSION

Based on table 1 above, the two respondents in both studies are female, where the first respondent is An. M is 3 years old, while the second respondent is An. N is 4 years old. Both respondents have the same gender, but gender does not affect body temperature. This is in accordance with the theory put forward by Potter & Perry (2005) which suggests that gender does not affect body temperature but can be influenced by hormone levels. In women, the frequency of temperature varies more than in men. Women who experience an increase in the hormone progesterone during menstruation will increase their body temperature to a threshold even above normal. At the time of ovulation a woman's body temperature can increase from 0.3 to  $0.5^{\circ}\text{C}$ .

Age-related research according to Afrah *et al.*, (2017) age is one of the factors that affect body temperature, children have an immature body temperature so it can rise quickly. Temperature regulation is not stable until children reach puberty and the normal temperature range decreases gradually in old age. This is in line with research conducted by Rahmaningrum (2017) which states that at the age of 3-19 years the chance of getting typhoid fever is greater, people at that age tend to have a lot of physical activity, pay less attention to hygiene and food sanitation. At these ages, people will tend to choose to eat outside the home or snack anywhere that does not pay attention to hygiene and food sensitivity. The greatest incidence of typhoid fever occurs in school children, related to hygiene factors. *Salmonella typhi* germs multiply in foods that are not hygienically maintained.

The two respondents are An. M and An. N was both diagnosed with typhoid fever. However, the two children experienced differences in body temperature and different complaints, where in An. M body temperature before the application of  $38.0^{\circ}\text{C}$  with complaints of fever since 4 days ago, fever is often felt in the morning and evening accompanied by vomiting and diarrhea, respondents seem restless, respondents look weak while in An. N body temperature before application was  $38.5^{\circ}\text{C}$  with complaints of fever since 5 days ago, fever was often felt at night accompanied by vomiting, nausea, dizziness, heartburn and diarrhea, respondents looked restless, respondents looked weak. This is in line with the theory put forward by Wowor *et al.*, (2017) which states that there are differences in body temperature in each individual because it is influenced by different disease processes from each individual, and differences in external temperature determine temperature differences in children. This is also in line with the theory put forward by Widodo (2014) which states that the symptoms of typhoid fever vary widely, at the beginning of this disease period, typhoid fever sufferers experience a fever where the fever increases slowly, especially in the afternoon until the evening.

Other accompanying systemic symptoms are headache, malaise, anorexia, nausea, myalgia, abdominal pain and sore throat. Gastrointestinal symptoms in cases of typhoid fever vary widely. Patients may also complain of diarrhea and feel weak. This is also in line with the theory put forward by Widodo (2014) which states that typhoid fever is a complex process that goes through several stages. *Salmonella typhi* and *salmonella paratyphi* enter the body

through contaminated food. After *salmonella typhi* is ingested, the bacteria can survive stomach acid and enter the body through the intestinal mucosa in the terminal ileum. If the gut humoral immune response is not good, the bacteria will penetrate the intestinal epithelial cells and lamina propina. In the lamina propina germs multiply and are phagocytized by phagocytic cells, especially macrophages.

Primary bacteremia occurs at this stage and is usually asymptomatic and blood cultures are usually still negative. This inclusion period lasted for 7-14 days. Bacteria in these blood vessels will spread throughout the body and colonize in the organs of the reticuloendothelial system, namely the liver, spleen, and bone marrow. Germs can also do relaxation in macrophages. After the replication period, the bacteria will be spread back into the circulatory system and cause secondary bacteremia as well as marking the end of the incubation period. Secondary bacteremia causes clinical symptoms such as fever, headache and abdominal pain. Bacteremia can persist for several weeks if not treated with antibiotics. The bacteria are found in the liver, intestines and bone marrow and gallbladder. Recurrence can occur if the bacteria still remain in the organs of the reticuloendothelial system and have the opportunity to proliferate again.

The results of the analysis of the researchers that there are differences in body temperature in the two respondents. That is the temperature at An.M 38°C and An.N 38.5°C. The body of each individual is different because it can be influenced by activities or daily life of each individual such as clean and healthy living behavior, habits of consuming unhealthy food or drinks and can also be influenced by the immune system, disease processes, and external temperature.

An M and An N both applied a warm compress of *water tepid sponge*. In the implementation of the application of the tepid *water sponge warm compress*, first measure the respondent's body temperature, then explain to the family and respondents that the application of the tepid *water sponge warm compress* is to compress with warm water at five points, namely the neck, axillae and groin as well as the abdomen and chest. aims to lower the child's body temperature, then ask the respondent to undress while covering with a blanket, then discuss the washcloth/sponge with warm water and place it on the neck, axilla and groin as well as stomach and chest for 15 minutes. Next, after three minutes, take the washcloth/sponge that is on the child's body, then advise the child to reuse his clothes and measure the child's body temperature again. This is in line with research conducted by Berutu (2019), there are differences in the patient's body temperature before and after being given a *tepid water sponge compress* for 15-20 minutes in one treatment in patients with hyperthermia. This is also in line with research conducted by Wardiyah *et al.*, (2016) which stated that the *Tepid Water Sponge* is effective in reducing fever because the *Perid Water Sponge* is given at several points, namely the neck, axilla, and groin as well as the abdomen and chest.

From the results of the researcher's analysis, the warm compress of the *water tepid sponge* was carried out for 15 minutes because the temperature

resistance of the washcloth could last up to 15 minutes depending on the room temperature. Where within 15 minutes there is a decrease in body temperature through the evaporation process which causes the body temperature outside to be warm so that the body interprets that the temperature outside is very hot, so the body will lower the temperature control control in the brain so as not to increase the body temperature regulator, with a warm outside temperature it will This causes the peripheral blood vessels in the skin to widen and vasodilation occurs so that the skin pores will open and facilitate heat dissipation, resulting in a decrease in body temperature. In addition, *the water tepid sponge compress* is carried out at 5 points because it is based on the theory put forward by Wardiyah (2016) which states that the five points have large blood vessels which result in increased circulation and capillary pressure and can accelerate peripheral blood vessel vasodilation throughout the body. so that heat is released from the body through the skin faster than a warm compress which only relies on the hypothalamic stimulation reaction.

The evaluation is carried out after 10 minutes of applying a warm *water tepid sponge compress* because 30 minutes-1 hour after the action, antipyretic drugs will be given. Where there is a difference in body temperature before and after application . Before applying the *Tepid Water Sponge* to An. M, the body temperature was 38.0 ° C, while after the application of the *tepid water sponge* , the body temperature was 37.5 ° C. In An. Before the application of the *Tepid Water Sponge* , the body temperature was 38.5 ° C, while after the application of the *Tepid Water Sponge* , the body temperature was <sup>37</sup> . This is in line with research conducted by Maling *et al.*, (2012) that the *tepid water sponge* has an effect on decreasing body temperature in hyperthermic patients. This is also in line with research conducted by Wardiyah *et al.* , (2016) which states that giving warm compresses can reduce body temperature in children with fever. Warm compresses on areas of the body will send signals to the hypothalamus via the spinal cord. When heat-sensitive receptors in the hypothalamus pass through the spinal cord. When heat-sensitive receptors in the hypothalamus are stimulated, the affector system signals to initiate sweating and peripheral vasodilation. Changes in the size of blood vessels are regulated by the vasomotor center in the medulla oblongata of the brain stem, under the influence of the anterior hypothalamic so that vasodilation occurs. This vasodilation causes heat loss or heat loss through the skin to increase, resulting in a decrease in body temperature. This is also in line with the theory put forward by Potter & Perry (2010) which states that giving a *tepid water sponge* can reduce body temperature through the evaporation process and can accelerate blood circulation, so that blood will flow from internal organs to the body surface by carrying heat. The skin has many blood vessels, especially the hands, feet, and ears. Blood flow through the skin can account for up to 30% of the blood pumped by the heart. Then heat moves from the blood through the walls of the blood vessels to the surface of the skin and is lost to the environment, resulting in a decrease in body temperature.

From the results of the researcher's analysis, there is an effect of applying a warm *water tepid sponge compress* on typhoid fever patients because it is a

direct block compress which is carried out at 5 points that have large blood vessels. This is evidenced by a drop in temperature body before and after the application of a warm *water tepid sponge compress* on respondent An. M and An. N.

## CONCLUSIONS AND RECOMMENDATIONS

Both respondents had a medical diagnosis of typhoid fever with complaints in An. M fever is often felt in the morning and evening accompanied by vomiting and diarrhea, the respondent looks restless, the respondent looks weak and in An. Fever is often felt at night accompanied by vomiting, nausea, dizziness, heartburn and diarrhea, respondents seem restless, respondents look weak.

There is a difference in body temperature before and after the application of a warm *water tepid compress sponges*. Where it was obtained before the application of a warm *water tepid sponge compress* on An. M 38, °C and at An. N 38.5°C while after applying a warm compress of *water tepid sponge* on An. M 37.5° C and at An. N 37, 7° C.

## FURTHER RESEARCH

For study next should using a different approach model or research model quantitative.

## ACKNOWLEDGEMENT

The author would like to thank all those who have supported and helped in this The preparation of this article is one of the Pelamonia Institute of Health Sciences Makassar which always give support and has facilitate the way study until publication, as well as respondent and family which has ready taking the time and participation in study this.

## REFERENCES

- Afrah, RAN, Fahdi, FK, & Suhaimi Fauzan. (2017). *The Effect of Tepid Sponge on Changes in Body Temperature of Pre-School and School Age Children with Fever At Sultan Syarif Mohamad Alkadrie Hospital, Pontanak City* . 549 , 40-42.
- Alamsyah, Sulasri, Hasbullah, A.Fahira Nur, Vidyanto, H., & Wandira, B. A. (2019). *Penderita Jantung Koroner (Pjk) Dengan Gangguan Kebutuhan Oksigenasi*. 5(3), 38-44.
- Alamsyah, A., Sulasri, S., Hasinda, H., & Handayani, T. (2020). Familiarisasi Bantuan Hidup Dasar Bagi Orang Awam Di Desa Romangloe Kecamatan Bontomarannu Kabupaten Gowa. *Jurnal Kreativitas Pengabdian Kepada Masyarakat (Pkm)*, 3(April), 39-45.
- Alamsyah, Mirayanti, J., & Alhidayat, N. S. (2019). Pengaruh Motivasi Melalui Aplikasi Whatsapp Terhadap Pengurangan Jumlah Batang Rokok Yang Dihisap Oleh Perokok Aktif. *Jurnal Media Keperawatan: Politeknik Kesehatan Makassar*, 10(2), 85-91.
- Astuti, puji. (2018). Penerapan Water Tepid Sponge ( Wts ) Untuk Mengatasi Demam Tipoid Abdominalis Pada An.Z. *Jurnal Keperawatan Karya Bhakti*, 4, 20-29.
- Bachtiar. (2012). *Manajemen Peningkatan Suhu Tubuh*.
- Berutu, H. (2019). Pengaruh Kompres Tepid Water Sponge Terhadap Penurunan Suhu Tubuh Pada Anak Yang Mengalami Hipertermi Di Ruang Melur Rumah Sakit Umum Daerah Sidikalang Heriaty. *Jurnal Kesehatan Bukit Barisan*, III, 32-38.
- Dinkes. (2015). *Profil Kesehatan Provinsi Sulawesi Selatan*.
- Halimah, N., Alhidayat, N. S., & Handayani, D. E. (2022). Karakteristik Pasien Gagal ginjal Kronik Dengan Continuous Ambulatory Peritoneal Dialysis Di RS TK II Pelamonia. *Garuda Pelamonia Jurnal Keperawatan*, 4(1), 14-28.
- Maling, B., Haryani, S., & Syamsul Arif. (2012). Pengaruh Kompres Tepid Sponge Hangat Terhadap Penurunan Suhu Tubuh Pada Anak Umur 1-10 Tahun Dengan Hipertermia. *Ecos*, 22(3-4), 94-98.
- Mustofa, F. L., Rafie, R., & Salsabilla, G. (2020). Karakteristik Pasien Demam Tifoid pada Anak dan Remaja. *Jurnal Ilmiah Kesehatan Sandi Husada*, 12(2), 625-633. <https://doi.org/10.35816/jiskh.v12i2.372>
- Potter, P. ., & Perry, A. . (2005). *Buku Ajar Fundamental Keperawatan Konsep, Proses dan Praktik. Edisi 4, Volume1*. EGC.
- Potter, & Perry. (2010). *Fundamental Of Nursing: Consep, Proses and Practice Edisi 7 Vol. 3*. EGC.

- Rahmaningrum, Z. . (2017). *Hubungan antara Status Gizi (Stunting dan tidak Stunting) dengan Kemampuan Kognitif Remaja di Sukoharjo, Jawa Tengah.*
- Samsir, Alamsyah, & Hasbullah. (2020). Efektivitas Pemberian Posisi Semi Fowler pada Pasien Tuberculosis Paru dengan Gangguan Kebutuhan Oksigenasi. *Jurnal Kesehatan Tadulako*, 6(2), 14–18.
- Susetyo et al. (2021). *Prosiding Seminar Nasional Kesehatan 2021 Lembaga Penelitian dan Pengabdian Masyarakat Penerapan Tepid Water Sponge Terhadap Penurunan Suhu Tubuh Pada Anak Usia 1 – 5 Tahun : Prosiding Seminar Nasional Kesehatan 2021 Lembaga Penelitian dan Pengabdian Masy.* 1285–1290.
- Wardiyah et al. (2016). Perbandingan Efektifitas Pemberian Kompres Hangat dan Tepid Sponge terhadap Penurunan Suhu Tubuh Anak yang Mengalami Demam di Ruang Alamanda Rsud Dr. H. Abdul Moeloek. *Jurnal Kesehatan Holistik*, 10(1), 36–44.
- Widodo, D. (2014). *Demam Tifoid. Buku Ajar Ilmu Penyakit Dalam Universitas Indonesia Edisi 6.*
- Wowor, M. S., E.Katuuk, M., & Vandri D.Kallo. (2017). Efektivitas Kompres Air Suhu Hangat dengan Kompres Plester terhadap Penurunan Suhu Tubuh Anak Demam Usia Pra-Sekolah di Ruang Anak RS Bethesda GMIM Tomohon. *E-Journal Keperawatan (EKp)*, 5, 5.