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Effect of swedish massage on the quality of sleep of thalassemia beta major children

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ABSTRACT

The highest prevalence of thalassemia genes is found in certain tropical countries. This study aimed to determine the effect of Swedish massage on the sleep quality of children with beta-thalassemia. This study employed quasi-experimental research with a non-equivalent control group design before and after the experimental design. All thalassemia beta children treated at Gunung Jati Hospital in Cirebon were included in this study. This study employed the purposive sampling technique because the researcher determined the selection criteria for the sample. The results concluded that Swedish massage improved sleep quality in children with beta-thalassemia

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INTRODUCTION

Chronic illness is a condition where a person's activities are disrupted for approximately three months to 1 year. Chronic illness in children is a condition experienced by a child that requires hospitalization for at least one month within one year. Children who experience chronic diseases usually take treatment for a long time to affect their physical and psychological conditions. In the end, the child's activity becomes limited.

One of the chronic diseases that occur in children is thalassemia. This disease is a blood disorder caused by impaired hemoglobin production, so the number of hemoglobin decreases (Rund & Rachmelewitz, 2005). Abnormal hemoglobin in thalassemia children causes erythrocytes to be easily destroyed so that the age of red blood cells becomes shorter than the age of red blood cells in normal children, which is 120 days. This causes anemia and decreases the ability of hemoglobin to increase oxygen. Early symptoms include paleness, weakness, no appetite, lack of sleep, and anemia (Rudolph, Hoffman & Rudolph, 2007).

Thalassemia disease is found worldwide, with the highest prevalence of thalassemia genes in several tropical countries (TIF, 2008). Based on its spread, thalassemia is experienced by many children in the Mediterranean and Middle East regions. The highest prevalence of thalassemia in the world is in the Maldives, with a percentage of the population carrying the thalassemia gene (thalassemia carrier), 18% (WHO, 2011). The incidence of thalassemia is also the highest in Southeast Asia (Surapolchai, Satuyasai, Sinlapomongkolkul, & Udomsubpayakul, 2010). One of them is in

Indonesia, where the prevalence of thalassemia gene carriers in Indonesia ranges from 6-10% of the total population. There are 9,121 thalassemia major patients in Indonesia (Kemenkes, 2016). Based on Riskesdas data, the prevalence of thalassemia sufferers in Indonesia is 3-10% of the total population of Indonesia. (Kemenkes, 2016).

Currently, thalassemia is a serious disease that threatens the health of children around the world. The threat of thalassemia worldwide is very large because every year, there is an increase in the number of new sufferers. The prevalence of congenital thalassemia or carriers in Indonesia is around 3-8 percent, the birth rate per 1000 of 240 million Indonesians. (Kemenkes, 2014), It is estimated that there are around 3,000 new babies with thalassemia each year.

Data from the Eikman Institute in 2014 showed the incidence of alpha thalassemia in Indonesia is around 2.6 - 11%, and beta thalassemia is found to be an average of 3 - 10% with the most carriers. The 2015 Basic Health Research of the Ministry of Health (Riskesdas) showed 7,029 cases of thalassemia sufferers in Indonesia. This data has increased from 2014 with 6,647 cases. The facts regarding this matter are supported by data from the National Education General Hospital (RSUPN), Dr. Cipto Mangunkusumo Jakarta. According to data from RSUPN Dr. Cipto Mangunkusumo, in 2016, there were 1,637 thalassemia patients, with new patients reaching 50 to 60 patients per year. Thalassemia is the fifth cause of death in children after heart disease, kidney disease, and cancer in children treated there (Bagian IKA RSUPN Dr. Cipto Mangunkusumo, 2016).

Types of thalassemia in children are classified based on the amino acid chain affected, and there are two main groups. The first group is alpha-thalassemia (involving alpha chains), most often found in black people, with at least 25% carrying the gene. The second group is beta-thalassemia (involving beta chains) Beta-thalassemia is often found in people in the Mediterranean region and Southeast Asia.

Medical management of children with thalassemia is given as supportive, curative, experimental, and long-term therapy. Supportive therapy includes blood transfusions and iron chelation, such as deferioxamine, deferiprone, or deferasirox. Curative therapy is in the form of hematopoietic stem-cell transplantation (bone morrow) and experimental therapy in the form of antioxidants and erythropoietin. Meanwhile, long-term therapy is given as gene therapy (Rund & Rachmelewitz, 2005).

Based on research conducted by Rejeki et al. (2012), the descriptive epidemiological study of thalassemia shows that around 87.5% of thalassemia sufferers have blood transfusions once in 1 month. Recent studies have evaluated the benefit of maintaining Hb levels above ten g/dl, a goal requiring transfusion therapy every three weeks. The advantages of doing this therapy include improving physical and psychological health because the child can participate in normal activities (Wong, 2009). Anemia and long-term transfusions in thalassemia children affect physical function and psychological, emotional integrity, and behavior. (Wahyuni, Ali, Rosdiana, & Lubis, 2011). Research conducted at Sanglah Hospital Bali proved that 37.5% of children with chronic illnesses experienced behavioral problems, besides that the clinical manifestations experienced by children would affect behavior (Adji, Soetjiningsih, & Windiani, 2010). This will also impact children's sleep needs because usually, children with thalassemia seem tired easily, so children rest and sleep more. Iqbal (2014) conducted research on the Description of Sleep Disorders in Thalassemia Children at the Central Installation of Thalassemia and Hemophilia RSUD dr. Zainoel Abidin Banda Aceh explained that condition thalassemia children experienced sleep disturbances of 9.7%.

Approximately 74% of children with thalassemia who undergo treatment will survive for five years after diagnosis (Hockenberry & Wilson, 2009). Thalassemia disease brings many problems for patients and their families, ranging from blood disorders and various organs of the body due to the disease process and due to treatment because beta-thalassemia patients will need blood transfusions for the rest of their lives. Clinically, thalassemia can be divided into thalassemia major and minor. Regular transfusion therapy is needed to maintain Hb around ten g% allowing better growth and development and also suppressing endogenous erythropoiesis to avoid ineffective

erythropoiesis, thereby reducing hepatomegaly due to extramedullary hematopoiesis, bone deformity, and enlarged heart so that thalassemia sufferers can live almost child-like lives which certainly improves the quality of life (Hockenberry & Wilson, 2009).

According to research conducted by Taraisuk et al. (2013), children and adolescents with beta-thalassemia have sleep disturbances caused by Periodic Limb Movement. In addition to the results of research, Roohaingz et al. (2010), in patients with thalassemia major, found Restless Legs Syndrome. The incidence of Restless Legs Syndrome is not related to ferritinin and iron levels.

As professional health workers, nurses are responsible for providing quality nursing services (Banunaek et al., 2021; Kowaas, 2019) to deal with problems and complaints in children with thalassemia. Currently, various types of interventions address the need for rest in children with sick conditions—the intervention.

One of the nursing intervention approaches given can be complementary therapy. Various complementary therapies that can be performed in nursing interventions include traditional healing, such as ayuweda and acupuncture; physical therapy, such as chiropractic, massage, and yoga; homeopathy or herbs, utilization of energy, such as polaristic therapy or reiki; relaxation techniques, including meditation and visualization. Nurses can intervene in patients' holistic function by providing safety and comfort as actors of complementary therapy.

Massage is one of the nursing interventions carried out by a nurse in providing nursing care and comfort to patients. Children with comfortable conditions improve the quality of their sleep and improve their quality of life of children. This is corroborated by research conducted by (Kulsum, Mediani, & Bangun, 2017) mentioned that conservative therapy using Swedish massage performed on children with leukemia could reduce pain in the muscles, increase relaxation, reduce heart rate, blood pressure, depression, and improve sleep quality (Kulsum, Mediani, & Bangun, 2017). Normal sleep in children is complex. Sleep patterns in children follow a characteristic developmental sequence, with a gradual increase in sleep depth and regular sleep cycles. Childhood is a time marked by rapid physiological and neurocognitive growth in which any description of sleep patterns must be encompassed by relatively large-scale epidemiological studies examining normal sleep and wakefulness in children and objective measures of sleep. (Hocckenberry, M.J., & Wilson, 2011).

Swedish Massage Therapy is effective for other pediatric populations with health conditions and even chronic disease conditions, including premature babies and those affected by HIV, children with asthma, cystic fibrosis, rheumatoid arthritis, lowering blood sugar levels in children with type 1 diabetes mellitus, and 2, as well as holistically beneficial to the body system (Haun et al., 2009). Until now, the authors have not received any research that examines massage interventions in children with thalassemia. Therefore, the authors are interested in researching the effect of Swedish massage on the sleep quality of thalassemia children.

RESEARCH METHOD

This study uses a quasi-experimental research type with a non-equivalent control group design, before and after design. This design is the meaning of research that provides treatment or experimentation in two or more groups. These groups will be observed before and after treatment. In the non-equivalent control group study, group selection was not made randomly (Notoatmodjo, 2010).

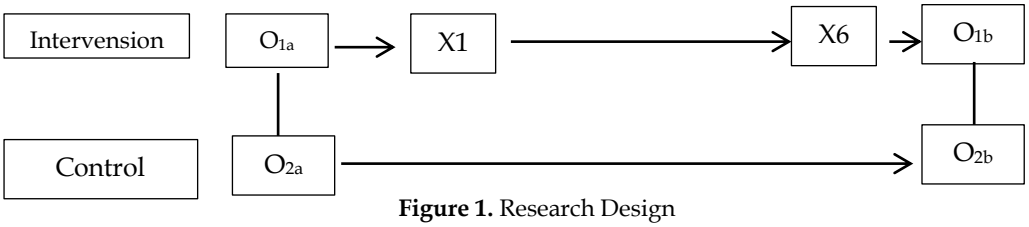

Figure 1. Research Design

The population in this study were all children with beta-thalassemia who were treated at Gunung Jati Hospital, Cirebon City. This study used a purposive sampling technique because the researcher had determined the criteria for the selected sample. The sample criteria determined in this study are as follows:

Inclusion criteria : Not an alpha thalassemia patient; Has no history of trauma, neck, chest, back, or extremities fractures; Do not have infectious diseases in the extremities and back area; Have no trauma to the back, chest, and extremities; There is no history of surgery within the last month; Able to move in supine and prone positions; Residing in the city of Cirebon and not planning to leave the city during the research; Willing to be a respondent. Exclusion criteria : Conditions of hypoglycemia, hypotension, shortness of breath, fever, or persistent pain; During the study, there were invasive back, chest, and abdomen procedures.

Determining the size of the sample in this study, the researchers determined based on the opinion Hernandez–Reif (2007, in Olney, 2007), an expert massage researcher who believes taking a smaller sample size would be appropriate because the effect size of massage on variables tends to be larger. Therefore 15 subjects per group were set to achieve significance. To avoid dropping out, the researcher did the calculations Lemeshow et al. (Notoatmodjo, 2010) with an estimated number of respondents dropping out 10% (L) in the formula:

$$n' = \frac{n}{1-L} = \frac{15}{1-10\%} = 16{,}667\ (17\ respondent)$$

Researchers, including one, will carry out data collection) Data on the characteristics of respondents using instruments consisting of personal data such as age, sex, history of thalassemia, frequency of blood transfusions, type of transfusion, medication, and vital signs. 2) Sleep quality data is measured using the Sleep Disturbances Scale for Children (SDSC) designed by Bruni et al. (1996). Data analysis consisted of univariate and bivariate. The bivariate and multivariate analyzes used in this study were determined by taking into account the types of variables and data distribution. The bivariate analysis uses a parametric test (paired t-test and independent t-test) if the data is normally distributed. In contrast, the data analysis uses a non-parametric test if the data is not normally distributed

RESULTS AND DISCUSSIONS

The results of the univariate analysis in this study presented the characteristics of the respondents, such as age, gender, frequency of transfusion, blood type of transfusion, blood pressure, respiration, pulse temperature, and sleep score before and after massage.

Characteristics of respondents

An overview of the characteristics of respondents based on age, gender, frequency of transfusion, blood type of transfusion, blood pressure, respiration, pulse, and temperature can be seen in table 1 below:

Table 1. Characteristic distribution of respondents based on age, sex, frequency of transfusion, blood type of transfusion, blood pressure, respiration, pulse, and temperature in the intervention and control groups in the HOT Room of Gunung Jati Hospital, Cirebon City,

Variable	Group				Total	%
	Intervention	%	Control	%		
Ages (years)						
5-12	10	58.8%	10	58.8%	20	58.8%
>12-18	7	41.2%	7	41.2%	14	41.2%
sex						

Male	5	29.4%	11	64.7%	16	47.1%
Female	12	70.6%	6	35.3%	18	52.9%
Transfusion Frequency						
1 time	5	29.4%	7	41.2%	12	35.3%
2 time	12	70.6%	10	58.8%	22	64.7%
Blood type						
PRC	11	64.7%	9	52.9%	20	58.8%
WE	6	35.3%	8	47.1%	14	41.2%
Blood pressure						
Hypotension	4	23.5%	3	17.6%	7	20.6%
Normal	13	76.5%	14	82.4%	27	79.4%
Respiration						
Normal	17	100.0%	17	100.0%	34	100.0%
Pulse						
Normal	17	100.0%	17	100.0%	34	100.0%
Temperature						
Normal	17	100.0%	17	100.0%	34	100.0%

Table 1 shows that the most age proportion of respondents were children, 20 people (58.8%), with the same distribution of 10 people (50%) in the intervention group and the control group, female sex as many as 18 people (52.9%,) with a distribution of 12 people (70.6 %) in the intervention group and six people (35.3%) in the control group. In the history of the frequency of transfusion, 22 respondents (64.7%) transfused two times in one month, with a distribution of 12 people (70.6%) in the intervention group and ten people (58.8%) in the control group. At the same time, the highest proportion of respondents who received transfusions with PRC blood type were 20 people (58.8%), with a distribution of 11 people (64.7%) in the intervention group and nine people (52.9%) in the control group. Measurement of vital signs in children with tkasemia before and after treatment showed that blood pressure showed the highest in normal conditions in as many as 27 people (79.4%), with a distribution of 13 people (76.5%) in the intervention group and 14 people (82.4%) in the control group. While respiration, pulse, and temperature showed 34 (100%) respondents, either control or normal respondents.

Sleep score before and after massage

Respondents' sleep scores were measured using the SDSC (Sleep Disturbances Scale for Children) instrument by measuring sleep scores before and after the massage intervention. Sleep scores were divided into 3, namely sleep disturbances (total score > 70), borderline (total score 50 - 70), and no sleep disturbance (total score <50). The sleep score indicates whether the respondent has sleep disturbances or not. If the sleep score is small, it indicates no sleep disturbance. The measurement results can be seen in table 2 below:

Table 2. Distribution of sleep quality scores before and after massage in the intervention and control groups in the HOT Room of Gunung Jati Hospital, Cirebon

Variabel	Group				Total	%
	Intervention	%	Control	%		
Sleep score before *Massage*						

<70	4	23.5 %	4	23.5%	8	23.5%
50-70	9	52.9 %	13	76.5%	22	64.7%
<50	4	23.5 %	0	.0%	4	11.8%
Sleep score after *Massage*						
<70	0	.0%	3	17.6%	3	8.8%
50-70	3	17.6 %	11	64.7%	14	41.2%
<50	14	82.4 %	3	17.6%	17	50.0%

Table 2 illustrates that the sleep scores before a massage in the intervention group experienced borderline sleep disturbances in as many as nine people (52.9%). In contrast, in the control group, 13 people experienced borderline sleep disturbances (76.5%). Sleep score after massage in the intervention group, 14 people (82.4%) did not experience sleep disturbances, while in the control group, 11 people (64.7%) experienced borderline sleep disturbances. The highest total score before the massage was 22 people (64.7%) with borderline disorders, while the total score after the massage was 17 people (50%) who did not experience sleep disturbances.

Bivariate Analysis

The average difference in sleep quality scores before a massage in the intervention group and the control group

A comparison of the average difference in sleep scores before the intervention in the intervention group and the control group can be seen in table 3 below:

Table 3. Comparison of the average sleep quality score before intervention in the intervention and control groups in the HOT Room of Gunung Jati Hospital, Cirebon, 2018

Variable	Group	Average	Standard Deviation	*p-Value*
sleep score before intervention	Intervention	59.9	9.91	0.075
	Control	65.4	5.05	

The average sleep score in the intervention group before being given massage was 59.9, with a standard deviation of 9.91. The control group's average sleep score on the first measurement was 65.4, with a standard deviation of 5.05. Further analysis using the independent t-test shows that the p-value is greater than the value of ɲ (p>ɲ). These results indicated no significant difference in the sleep score of the first measurement (before the massage intervention) in the control and intervention groups (p-value = 0.075).

The average difference in sleep quality scores after massage in the intervention group and the control group

A comparison of the average sleep score after the intervention of giving massage in the intervention group and the control group can be seen in table 4 as follows:

Table 4. Comparison of average sleep quality scores after intervention in the intervention and control groups in the HOT Room of Gunung Jati Hospital, Cirebon City, 2018

Variable	group	Rata-rata	Standard Deviation	*p-Value*
Sleep score after intervention	Intervention	33.8	3.83	0.0383
	Control	59.3	8.16	

The average sleep score in the intervention group after giving a massage was 33.8, with a standard deviation of 3.83, while in the control group that was not given a massage, the average sleep score was 59.3, with a standard deviation of 8.16. Further analysis showed that there was a significant/significant difference in the average sleep score after the intervention between the group that was given a massage and the group that was not (p-value = 0.0383). Therefore it can be concluded that at a 95% confidence level, it is believed that there is a significant difference between sleep scores in the control group and the intervention group after giving a massage (p-value = 0.0383).

The average difference in sleep quality scores between the intervention group and the control group

The following presents a comparison of the average difference in sleep scores between scores after the intervention minus the scores before the intervention in the two groups based on the independent t-test.

Table 5. Perbandingan rerata skor kulitas tidur anak thalassemia di Ruang HOT RSUD Gunung Jati Kota Cirebon Tahun 2018

Variabel	Kelompok	Rata-rata	Standar Deviasi	*p-Value*
Selisih skor tidur	Intervensi	0.76	0.43	0.05
	Kontrol	1.00	0.61	

The table above shows the average difference in sleep scores between the two groups before and after the intervention. The intervention group had a difference of 0.76 with a standard deviation of 0.43. In the control group, the average difference in sleep scores resulted in a value of 1.00 with a standard deviation of 0.061. The results of the further analysis showed significant differences in sleep scores between the intervention group and the control group. Based on the test results, it can be concluded that at a 95% confidence level, massage intervention effectively reduces sleep problems in thalassemia children, with an average decrease of 0.76.

The results of this study showed that the highest number of respondents was the children's age group (5-12 years). The results of this study follow research conducted by Syarifunama Dewi at H. Adam Malik General Hospital Medan in 2009 with a total of 120 cases for three years, which found that the most age of thalassemia sufferers was 6-15 years old, namely 79 people (65.8%). The results of this study follow the results of research by Deby Anggororini and friends (2010) at Hasan Sadikin General Hospital, Bandung, with the criteria of research subjects aged 10-18 years; of the 30 samples, the most age was obtained, namely aged 10-14 years, 24 people (81 %). In this study, there were no patients over 18 years because it is rare to find thalassemia sufferers who can survive into adulthood. Clinical symptoms of thalassemia have been seen at the age of 2 years. However, patients with thalassemia only started treatment at the age of 4-6 years because they were getting paler, resulting in the sufferer requiring periodic transfusions. (Kurniati et al., 2020)

The results of the univariate analysis showed that there were more female respondents with thalassemia (52.9%) than male respondents. Thalassemia is a genetic disease caused by an autosomal recessive single allele cell factor, not a genetic disease caused by an allele factor linked to sex chromosomes. (Kurniati & Sari, 2018; Safitri et al., 2015). This is following the theory that the beta thalassemia gene is inherited according to Mendel's Law in an autosomal recessive manner, so that the child of a gifted pair has a 25% chance of being normal, 50% of being a carrier of talent and a 25% chance of being a sufferer, this possibility does not depend on sex, where synthesis The beta-globin polypeptide chain occurs only in cells of the erythroid series. However, beta globin genes are also present in the chromosomes of other cells. (Bulan, 2009)

The data shows that the greatest frequency of giving blood transfusions is two times in one month, with a total of 22 people (64.7%). This is because life expectancy in children with major thalassemia increases with transfusion and iron chelation. Therefore comprehensive management of children with thalassemia major is needed in a special thalassemia unit. The duration of the transfusion is between 2 and 6 weeks, depending on weight, age, activity, and school schedule. The purpose of blood transfusion is to maintain Hb levels due to severe anemia. The patient's Hb is maintained between 8g/dl to 9.5, which will provide adequate bone marrow suppression. Blood is given as PRC 3 ml/kg for each increase in Hb 1g/dl. Transfusions are usually every two to three weeks depending on the child's condition.

The results of observations of the use of blood products used for blood transfusions in thalassemia respondents mostly used PRC (Packed Red Cell) in as many as 20 people (58.8%). The use of PRC was caused because thalassemia sufferers had abnormalities or deficiencies in the hemoglobin chain. The disorder results in damage to the blood vessels' red blood cells so that the erythrocytes' life span is shortened (less than 120 days) (Ganie, 2008). The need for blood in one patient with another differs depending on the pre-transfusion hemoglobin that is checked when undergoing a blood transfusion. Blood transfusions are given to patients with Hb levels ≤ 10 g/dL (Rojas & Wahid, 2020). They gave blood in the form of PRC 3 ml/kg BW for each increase in Hb 1 g/dL (Rejeki et al., 2014). Children with thalassemia do blood transfusions to maintain hemoglobin levels so anemia does not occur. One PRC bag (150 – 300 ml) consists of 100 – 200 ml of erythrocytes. This blood product is used in conditions that require the addition of red blood cells only.

The results obtained from measuring pulse, temperature, and respiration found that most respondents experienced slight changes in pulse, temperature, and respiration after blood transfusions but were still within normal limits. This is probably the result of blood transfusions that have been done to maintain hemoglobin levels. Hemoglobin carries 97% oxygen diffused to the tissues (Perry, 2005). Therefore the need for oxygen in the body can be met so that there is an increase in metabolism in the body, which increases pulse, temperature, and respiration to meet the needs of the body.

The results of the research that has been done found that in children with thalassemia before Borderline blood transfusions, 17 people (42.5%), sleep disturbances were eight people (20%), while after Borderline blood transfusions, 15 people (37.5%), disturbances sleeping 0 people (0%). It can be seen that there are children with thalassemia who experience sleep disturbances before blood transfusions, as to the results of research that Iqbal has conducted (2014) regarding the Description of Sleep Disorders in Thalassemia Children at the Central Installation of Thalassemia and Hemophilia RSUD dr. Zainoel Abidin Banda Aceh stated that children with thalassemia who experienced sleep disturbances were 9.7%, borderline 35.5%, and not disturbed sleep 54.8%.

Children with thalassemia, before doing blood transfusions, look tired and tired. According to (Perry, 2005), one that causes a person sleep disturbance is fatigue. Fatigue also affects a person's sleep patterns. The more tired a person is, the shorter the first REM (paradoxical) sleep period. The condition of thalassemia children who are tired due to a lack of hemoglobin levels in the blood may cause sleep disturbances before blood transfusions.

The condition of children with thalassemia who have undergone blood transfusions using PRC is that it is possible that the hemoglobin level in the blood can be fulfilled so that oxygen can be distributed to all parts of the body, which is marked by pulse, temperature, respiration within normal limits, this condition supports the child to sleep better.

As stated by (Hocckenberry, M.J., & Wilson, 2011; Murphy & Begley, 2009), The advantages of doing this blood transfusion therapy include improving children's physical and psychological health because children can participate in normal activities. Sleep is one of the normal activities carried out by children in general and children with thalassemia

The other analysis showed a significant difference in sleep quality scores (p-value 0.05) between the intervention and control groups. Based on the test results, it can be concluded that the 95% degree of confidence that the Swedish massage intervention is effective in reducing or reducing sleep disturbances in children with thalassemia with an average decrease of 0.76. Thus it can be said that giving massage therapy affects the decrease in sleep scores. In this study, respondents who previously experienced sleep disturbances after being given massage therapy no longer experienced sleep disturbances. Based on the confession of the respondent's parents, after having a massage for six consecutive days, the child did not experience sleep disturbances. The results of research conducted by Roohangiz et al. (2010) in Iran showed that 58 thalassemia major respondents had Restless Legs Syndrome (RLS). Restless Legs Syndrome (RLS) is the etiology underlying sleep disturbances in patients with thalassemia major. During this period, it becomes very important to require supportive care, such as Swedish massage therapy, to reduce complaints and side effects from treating thalassemia or accompanying secondary diseases. (Kulsum, Mediani, Bangun, et al., 2017)

The effect of massage therapy on the sleep quality of thalassemia children follows the statement (Ayu, 2009) that one of the direct benefits of massage is overall relaxation and tranquility, which can provide comfort during sleep. This is because massage works directly on the skin, where the skin is the largest organ of the human body and is filled with nerve endings. Massage can also trigger the release of endorphins, brain chemicals (neurotransmitters) that produce feelings of well-being. Whereas (Pristiyani & Mujahid, 2020) states that the direct mechanical effect of the rhythmic pressure and movements used in massage dramatically increases blood flow.

Other factors that influenced the effectiveness of Swedish massage therapy in the intervention group included the beliefs of children and parents when they first received Swedish massage therapy as a treatment that can reduce some physical complaints. The biggest support factor shown by parents is the basis for children to have hope for a longer life. In addition, this therapy requires a process of closeness (building trust) between nurses and children who tend to feel afraid if treated, and this success becomes a step that makes it easier for health workers in efforts to improve health promotion.

CONCLUSION

Thalassemia is a group of inherited hematological disorders due to defects in synthesizing one or more globin chains. Usually, thalassemia sufferers require supportive therapy to maintain their condition. One of the supportive therapies besides transfusion and iron chelation performed on thalassemia patients is massage, a nursing intervention for thalassemia children. Massage in children with thalassemia is carried out to break down sleep disturbances in children so that children rest and sleep more. Sleep is a process of changing consciousness repeatedly over a certain period. Sleep disorders are a collection of conditions characterized by disturbances in an individual's amount, quality, or timing of sleep. One of the methods used for screening sleep disturbances is the SDSC (Sleep Disturbances Scale for Children). The results of the study concluded that there was an effect of Swedish massage on sleep quality in beta-thalassemia children.

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