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FACTORS ASSOCIATED WITH BLOOD TRANSFUSION COMPLIANCE IN CHILDREN WITH THALASSEMIA

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ABSTRACT
Thalassemia reduces hemoglobin production, making blood transfusions the primary treatment. Compliance is essential during treatment. To determine the factors associated with compliance with blood transfusion in children with thalassemia.This study used a cross-sectional design involving 57 children with thalassemia at Bhayang Setukpa Lemdikpol Hospital in Sukabumi City, selected using total sampling. Data were collected using a validated structured questionnaire. Data were analyzed using chi-square and logistic regression to determine the relationship between each variable. The results showed a significant relationship between family support (p-value = <0.001), knowledge (p-value = 0.007), and duration of illness (p-value = <0.001) with blood transfusion compliance in children with thalassemia. There was a simultaneous relationship between family support, knowledge, and duration of thalassemia with blood transfusion compliance in children with thalassemia (R Square 0.732). There is a significant relationship between family support, knowledge, and duration of thalassemia with blood transfusion compliance in children with thalassemia.

Keywords: compliance; duration of suffering; family support; knowledge; thalassemia

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INTRODUCTION

Thalassaemia is a disease that arises due to a genetic disorder (Tiara et al., 2023). Approximately 7% of the world's population is estimated to be carriers of thalassaemia, with the number of child deaths due to this disease reaching 50,000 to 100,000 cases, of which about 80% occur in developing countries. Indonesia is included in the region known as the thalassaemia belt, with the number of carriers of this disease ranging from 3–8% of the total population. According to data from the Indonesian Thalassaemia Foundation, the number of thalassaemia sufferers has increased significantly since 2012, from 4,896 cases to 8,761 cases in 2018 (Kepmenkes RI, 2018).

Thalassaemia is a hereditary disease caused by a deficiency of one of the substances that form haemoglobin, resulting in reduced production. Thalassaemia is also referred to as a quantitative defect in the haemoglobin synthesis process. Clinically, thalassaemia is divided into two types: thalassaemia minor and thalassaemia major (Tiara et al., 2023). Thalassaemia occurs due to the inability of the bone marrow to produce the protein needed to produce haemoglobin properly (Immawati et al., 2024). The main treatment for children with thalassaemia is blood transfusions. Blood transfusions are given to maintain haemoglobin levels between 9 and 10 g/dl. Regular and routine blood transfusions for patients with thalassaemia will maintain their health and stamina, so that children with thalassaemia can continue to carry out their activities (Yuliastati et al., 2022).

Compliance is the extent to which a person's behaviour conforms to the instructions given by health professionals. Compliance with the transfusion schedule also aims to prevent various long-term effects. Non-compliance with the transfusion schedule will affect the effectiveness of iron chelation

therapy, which is a treatment to reduce iron accumulation due to frequent transfusions (Pratiwi et al., 2025). Many factors influence compliance levels, including family support, knowledge, and duration of illness (Sari et al., 2025).

The factor associated with blood transfusion compliance in children with thalassaemia is family support. Family support has an influence on increasing compliance with blood transfusions in children with thalassaemia. Support in the form of psychological encouragement and active involvement of family members in the treatment process will increase compliance among children with thalassaemia in undergoing treatment (Palupi et al., 2023).

Another factor related to blood transfusion compliance in children with thalassaemia is knowledge. A good level of knowledge related to compliance will also shape good behaviour. The better a person's level of knowledge, the greater the impact on the individual's cognitive potential to maintain their health. This encourages individuals with good knowledge to seek treatment so that they can maintain good health (Swandani et al., 2024).

The next factor is the duration of suffering associated with blood transfusion compliance in children with thalassaemia. Children who have undergone transfusions for many years tend to show a decline in enthusiasm, complain more often, or even begin to refuse transfusion schedules because they feel bored and do not see significant changes from the treatment they are undergoing (Purnamasari et al., 2025). The purpose of this study was to determine the factors associated with blood transfusion compliance in children with thalassaemia at Bhayangkara Setukpa Lemdikpol Hospital in Sukabumi City.

METHOD

This study used a correlational research design with a cross-sectional approach. The population and sample in this study consisted of all pediatric patients with thalassemia at Bhayangkara Setukpa Lemdikpol Hospital in Sukabumi City, totaling 57 respondents, using total sampling technique. Data collection was conducted using a questionnaire. The research instrument for the family support variable referred to the Perceived Social Support Questionnaire Family (PSS-Fa) instrument, which has been declared valid with a calculated r value > r table (0.361) (Mardiyah et al., 2019 dalam Mariatul et al., 2024). For the knowledge variable and blood transfusion compliance variable, a Guttman scale was used, which has been declared valid with all instrument items having a p-value < 0.05. Data analysis used chi-square and logistic regression. In this study, ethical principles, including generosity, confidentiality, and fairness, were strictly upheld. Ethical approval was granted by the Ethics Committee of the Sukabumi College of Health Sciences with approval number 002248/KEP STIKES SUKABUMI/2025. All participant information was kept confidential and used exclusively for research purposes.

RESULT

Based on Table 1, it is known that the majority of respondents are aged 10-14 years (31 respondents, 54.4%), female (32 respondents, 56.1%), have an elementary school education (21 respondents, 36.8%), are accompanied by their father/mother (53 respondents, 93%), and do not have a history of thalassemia in the family (36 respondents, 63.2%). The majority of the respondents' companions are aged ≤49 years (30 people, 52.6%), have a high school education (24 people, 42.1%), are employed (55 people, 96.5%), and have an income above the minimum wage (50 people, 87.7%).

Table 1.
Respondent characteristics (n= 57)

Respondent characteristics	f	%
Age (years)		
10-14	31	54.4
15-18	26	45.6
Gender		
Male	25	43.9
Female	32	56.1
Education		
Elementary School	21	36.8
Junior High School	17	29.8
Senior High School	19	33.3
Companion to the Hospital		
Father/Mother	53	93.0
Other Relatives	4	7.0
Family History of Thaassemia		
Father	4	7.0
Mother	3	5.3
Siblings	14	24.6
None	36	63.2
Companion Age (years)		
≤49	30	52.6
>49	27	47.4
Last Education of Companion		
Elementary School	15	26.3
Junior High School	12	21.1
Senior High School	24	42.1
University	6	10.5
Employment Status of Companions		
Employed		
Unemployed	55	96.5
	2	3.5
Income		
>Minimum Wage	50	87.7
≤Minimum Wage	7	12.3

Based on Table 2, it is found that the majority of respondents have a supportive family (63.2%), high knowledge (61.4%), have suffered for >5 years (68.4%), and have compliance in blood transfusions (66.7%).

Table 2.
Univariate Analysis

Variable	F	%
Family Support		
Support	36	63.3
Do not support	21	36.8
Knowledge		
High	35	61.4
Low	22	38.6
Duration of Suffering		
>5 years	39	68.4
≤5 years	18	31.6
Blood Transfusion Compliance		
Compliant	38	66.7
Non-compliant	19	33.3

Based on table 3, the results of the chi-square statistical test show a p-value <0.05, which means that family support, knowledge, and duration of suffering are closely related to compliance with blood transfusions in children with thalassemia.

Table 3.
Bivariate Analysis

Variable	Cateory	Blood Transfusion Compliance				Total	%	p-value
		Compliance	%	Non-compliance	%			
Family Support	Supportive	32	88.9	4	11.1	36	100	<0.001
	Not Supportive	6	28.6	15	71.4	15	100	
Knowledge	High	28	80.0	7	20.0	35	100	0.007
	Low	10	45.5	12	54.5	22	100	
Duration of Suffering	>5 years	32	82.1	7	17.9	39	100	<0.001
	≤5 years	6	33.3	12	66.7	18	100	

Based on Table 4, the R Square value is 0.732 (Nagelkerke R Square), which means that family support, knowledge, and duration of suffering contribute 73.2% to blood transfusion compliance in children with thalassemia, while the remaining 26.8% is influenced by other factors not examined in this study. The results of the multivariate logistic regression analysis show that all variables, namely family support, knowledge, and disease duration, have a significant effect on blood transfusion compliance in children with thalassemia. The variable that most dominantly influences blood transfusion compliance in this study is family support with an OR=53.780, meaning that respondents with supportive families are 53.780 times more likely to comply with blood transfusions compared to respondents with unsupportive families.

Table 4.
Multivariate Analysis

Variable	B	P-Value	OR
Family Support	3.985	0.001	53.780
Knowledge	-2.558	0.015	0.077
Duration of Suffering	3.825	0.003	45.839
Constant	-2.969	0.011	0.051

R Square = 0,732

DISCUSSION

The Relationship between Family Support and Blood Transfusion Compliance in Children with Thalassemia

The results of the study show that there is a significant relationship between family support and blood transfusion compliance in children with thalassemia. These results are in line with Himawan et al. (2025) and supported by Rizakiah et al., (2025), who describe a meaningful relationship between family support and blood transfusion compliance in children with thalassemia. Blood transfusion compliance is the active behavior of patients and parents or guardians to consciously make decisions and take actions to obtain blood transfusions (Ernawaty & Utami, 2023). One factor that influences blood transfusion compliance is family support. Family support is the attitude, actions, and acceptance of the family towards the patient (Siagian et al., 2023). The presence of family can ease the burden on children who must undergo lifelong treatment, including routine blood transfusions, by providing encouragement, a sense of security, and care. Families who provide moral support will foster children's motivation to comply with therapy, even if the transfusion procedure is performed repeatedly (Rizakiah et al., 2025). Conversely, negative family support, such as criticism, excessive control, or lack of empathy, can cause feelings of depression, stress, and low self-esteem in children. This condition has the potential to reduce children's motivation to undergo regular blood transfusions (Adini et al., 2021).

The Relationship between Knowledge and Blood Transfusion Compliance in Children with Thalassemia

The results of the study indicate that there is a relationship between knowledge and blood transfusion compliance in children with thalassemia. These results are in line with Nandeswari et al. (2021) and Purwoko (2021), who stated that there is a relationship between knowledge and blood transfusion compliance in children with thalassemia. Another factor that can influence blood transfusion compliance in children with thalassemia is knowledge. Knowledge is the result of human perception or a person's understanding of an object obtained through the five senses (Faraski et al., 2023). Good knowledge will help children understand the purpose of blood transfusions and realize the consequences if the therapy is not carried out regularly. Children who understand the importance of regular blood transfusions tend to be more motivated and willing to undergo therapy according to schedule (Oktaria & Kurniawati, 2020). his is in line with Lawrence Green's theory, which states that compliance behavior is influenced by knowledge. In children with thalassemia, good knowledge about the disease and the importance of blood transfusions will shape compliant behavior in undergoing therapy (Nurhanani et al., 2023).

The Relationship between Duration of Illness and Blood Transfusion Compliance in Children with Thalassemia

The results of this study indicate that there is a relationship between duration of illness and blood transfusion compliance in children with thalassemia. These results are similar to those of Susanto et al (2023) and supported by Astuti et al (2024) who stated that there is a relationship between duration of illness and blood transfusion compliance in children with thalassemia. Duration of illness is another significant contributing factor to blood transfusion compliance in children with thalassemia. Duration of illness is the length of time since a person was diagnosed (Ali et al., 2021). Children who have had thalassemia for a long time are usually more accustomed to treatment procedures, understand the benefits of regular transfusions, and are aware that non-compliance can lead to serious complications (Susanto et al., 2023). Children with a longer duration of thalassemia will have a better understanding, encouraging them to be more prepared in anticipating possible complications that may arise if they do not undergo regular transfusions (Astuti et al., 2024).

Simultaneous Relationship between Family Support, Knowledge, and Duration of Suffering with Blood Transfusion Compliance in Children with Thalassemia

The results of the study show that there is a simultaneous relationship between family support, knowledge, and duration of suffering with blood transfusion compliance in children with thalassemia. The role of the family in providing support is very important for children with thalassemia, because the success of compliance with blood transfusions is not only determined by the child himself, but also by the extent to which the family accompanies and motivates him. Family support can take the form of attention, monitoring the transfusion schedule, accompanying the child to the hospital, and encouraging the child so that they do not feel burdened by their condition. With family support, children will feel more cared for and have stronger motivation to undergo regular blood transfusions (Ajul et al., 2024).

Knowledge can also influence blood transfusion compliance. Children with good knowledge will better understand the benefits of blood transfusions in maintaining their physical condition, preventing complications, and improving their quality of life. High knowledge will also encourage children to be more compliant with their transfusion schedule, as they are aware of the risks that can occur if transfusions are neglected (Purnamawati et al., 2023).

The duration of thalassemia also influences blood transfusion compliance. The longer a child has thalassemia, the more likely they are to develop awareness and adaptive behaviors in maintaining their health. The duration of the disease also provides an opportunity for children to adapt

physically and psychologically, resulting in better compliance with blood transfusions due to a deeper understanding of the consequences of neglecting treatment (Rosalinda & Nugraheni, 2023).

CONCLUSION

There is a simultaneous relationship between family support, knowledge, and duration of suffering with blood transfusion compliance in children with thalassemia at Bhayangkara Setukpa Lemdikpol Hospital in Sukabumi City.

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REFERENCES

Adini, S., Indriani, N., & Februanti, S. (2021). Hubungan dukungan keluarga dengan kepatuhan minum obat kelasi besi pada anak thalasemia. 6(2), 51–56. https://doi.org/https://orcid.org/0000-0001-7329-9507

Ajul, K., Windahandayani, V. Y., Surani, V., & Pranata, L. (2024). Dukungan Keluarga terhadap Kepatuhan Gaya Hidup Sehat Penderita Hipertensi. Holistik Jurnal Kesehatan, 18(7), 874–880. https://doi.org/10.33024/hjk.v18i7.520

Ali, H. M., Muhyi, A., & Riastiti, Y. (2021). Hubungan Usia, Kadar Hemoglobin Pretransfusi dan Lama Sakit terhadap Kualitas Hidup Anak Talasemia di Samarinda. Jurnal Sains Dan Kesehatan, 3(4), 441–447. https://doi.org/10.25026/jsk.v3i4.368

Astuti, A. A., Samidah, I., & Rustandi, H. (2024). Hubungan Karakteristik Demografi dan Lama Menderita Sakit dengan Kepatuhan Pasien DM Type II Mengontrol Kadar Gula Darah di RSUD Rupit Kabupaten Muratara Tahun 2023. Journal Student Scientific, 2(1), 49–60. https://doi.org/10.37676/ssj.v2i1.4881

Ernawaty, J., & Utami, S. (2023). Education Via Mobile Phones to Change Parental Behavior Related to Transfusion Adherence and Iron Chelation Consumption in Children with Thalassemia. Jurnal Pengabdian Kesehatan Komunitas, 2(3), 247–254. https://doi.org/10.25311/jpkk.Vol2.Iss3.143

Faraski, K., Rohima, W., & Rianissa Putri, S. (2023). Hubungan antara Tingkat Pendidikan dan Pengetahuan Orangtua dengan Kualitas Hidup Anak Talasemia Mayor di RSUD dr. M. Yunus Bengkulu Tahun 2017. Syntax Idea, 5(11), 1992–2011. https://doi.org/10.46799/syntax-idea.v5i11.2705

Himawan, F., Purwaningsih, T., Utomo, D., & Hermawan, D. (2025). Gambaran Tingkat Kepatuhan Minum Obat Kelasi Besi pada Penyandang Thalassemia. Juru Rawat (Jurnal Update Keperawatan), 5(1), 172–177. https://doi.org/10.31983/juk.v5i1.13124

Immawati, I., Utami, I. T., Nurhayati, S., & Supardi, S. (2024). Edukasi Perawatan Diri Pada Anak Thalasemia: Literatur Review. Jurnal Wacana Kesehatan, 9(1), 31. https://doi.org/10.52822/jwk.v9i1.651

Keputusan Menteri Kesehatan Republik Indonesia Nomor HK.01.07/Menkes/1/2018 Tentang Pedoman Nasional Pelayanan Kedokteran Tata Laksana Thalasemia.

Mariatul, Dhian Ririn Lestari, & Eka Santi. (2024). Hubungan Dukungan Sosial Keluarga Dengan Efikasi Diri Remaja Di SMAN 1 Banjarmasin. Journal of Nursing Invention, 5(1), 53–64. https://doi.org/10.33859/jni.v5i1.551

Nandeswari, V., Indriansari, A., & Latifin, K. (2021). Pengetahuan Orang Tua Merawat Anak Penderita Thalasemia. Jurnal Keperawatan Fakultas Kedokteran Universitas Sriwijaya, 155–162. https://doi.org/https://conference.unsri.ac.id/index.php/SNK/article/view/2389

Nurhanani, R., Susanto, H. S., & Udiyono, A. (2023). Hubungan Faktor Pengetahuan dengan Tingkat Kepatuhan Minum Obat Antihipertensi. JURNAL KESEHATAN MASYARAKAT (e-Journal), 8(1). https://doi.org/https://doi.org/10.14710/jkm.v8i1.25932

Oktaria, V., & Kurniawati, D. (2020). Hubungan Pengetahuan Talasemia Dengan Kepatuhan Keluarga Membawa Anak Menjalani Tranfusi Darah. Jurnal Ilmiah Kesehatan, 9(2), 94–97. https://doi.org/10.52657/jik.v9i2.1236

Palupi, A., Djamaludin, D., Novikasari, L., & Setiawati, S. (2023). Faktor-faktor yang berhubungan dengan kepatuhan orang tua dalam membawa penderita talasemia untuk menjalani transfusi darah selama pandemi covid. Holistik Jurnal Kesehatan, 17(4), 315–326. https://doi.org/10.33024/hjk.v17i4.10830

Pratiwi, A. S., Lusiani, E., Amalia, M., Studi, P., Keperawatan, S., & Kesehatan, I. (2025). Hubungan Tingkat Kepatuhan Transfusi Darah Dengan Status Nutrisi Pada Anak Usia Sekolah Dengan Thalassemia. Jurnal Keperawatan, 17(1), 175–184. https://doi.org/https://www.jurnal.akperdharmawacana.ac.id/index.php/JWC/article/view/762/536

Purnamasari, I., Rahayu, C. D., Susanto, T., Peperawati, P. R., & Supriyati, A. (2025). Factors Affecting the Quality of Life of Children With Transfusion-Dependent Thalassemia: A Cross-Sectional Study. Acta Medica Academica, 54(2), 100–111. https://doi.org/10.5644/ama2006-124.486

Purnamawati, D. A., Amelia, L., Puspita, D., Rahayu, I. D., & Mardiyani, R. (2023). Pengetahuan dan Kepatuhan Kontrol Pasien Hipertensi di Puskesmas Sungai Raya. Jik Jurnal Ilmu Kesehatan, 7(2), 242. https://doi.org/10.33757/jik.v7i2.707

Purwoko, M. (2021). Kepatuhan Orang Tua dalam Membawa Penderita Thalassemia untuk Menjalani Transfusi Darah selama Pandemi COVID _ 19. Jurnal Kesehatan Vokasional, 6(3), 159–166. https://doi.org/h5ps://doi.org/10.22146/jkesvo.65847

Rizakiah, Nurvinanda, R., & Lestari, I. P. (2025). Faktor-Faktor yang Berhubungan dengan Kepatuhan Transfusi Darah pada Anak dengan Thalassemia Betamayor di RSUD Depati Hamzah Pangkalpinang Tahun 2025. 6(2). https://doi.org/https://doi.org/10.46668/jurkes.v6i2.368

Rosalinda, J., & Nugraheni, A. Y. (2023). Faktor-Faktor yang Mempengaruhi Tingkat Kepatuhan Pengobatan Pasien Diabetes Melitus Tipe 2 di Puskesmas Kotagede II Yogyakarta. Health Information : Jurnal Penelitian, 15(2), 1–16. https://doi.org/https://myjurnal.poltekkes-kdi.ac.id/index.php/hijp/article/view/1323

Sari, D. A., Badriyah, J., Kadang, Y., & Elizabeth, B. (2025). Hubungan Kepatuhan Transfusi Darah dengan Kualitas Hidup pada Pasien Anak Thalasemia Mayor di Rumah Sakit Sentra Medika Cibinong. PREPOTIF : Jurnal Kesehatan Masyarakat, 9(3), 10544–10552. https://doi.org/https://repository.medikasuherman.ac.id/xmlui/handle/123456789/7584

Siagian, I. O., Siboro, E. N. P., & Julyanti. (2023). Hubungan Dukungan Keluarga dengan Kepatuhan Minum Obat pada Pasien Skizofrenia (Relationship between Family Support and Compliance with Medication in Schizophrenic Patients). Jurnal Kesehatan Dan Kebidanan Nusantara, 1(2), 60–65. https://doi.org/10.69688/jkn.v1i2.50

Susanto, A., Purwantiningrum, H., & Saff, M. J. A. (2023). Paparan Informasi dan Lama Waktu Menderita dengan Kepatuhan Minum Obat pada Penderita Hipertensi Address : Phone : Window of Health : Jurnal Kesehatan, 6(3), 227–236. https://doi.org/https://doi.org/10.33096/woh.vi.118

Swandani, D., Suyamib, S., & Dhian S.b, A. (2024). Hubungan Pengetahuan Orang Tua Dengan Kepatuhan Membawa Transfusi Darah Pasien Thalasemia di Ruang One Day Care (ODC) Thalasemia RSUP dr. Soeradji Tirtonegoro. MJS Medical Journal of Soeradji, 1(1), 34–45. https://doi.org/10.70605/c3fqvv56

Tiara, T., Mariani, D., & Herliana, L. (2023). Asuhan Keperawatan Anak Thalasemia Dalam Penerapan Terapi Bermain Terhadap Peningkatan Kepatuhan Minum Obat Kelasi Besi Di Ruang Melati Rsud Kota Banjar. Tasikmalaya Nursing Journal, 1(1), 1–6. https://doi.org/10.37160/tnj.v1i1.273

Yuliastati, Pursitasari, I., Nur Halimah, S., & S Sahat, C. (2022). Pengaruh Terapi Bermain Kelompok Terhadap Konsep Diri Anak Thalasemia di Kota Bogor. Jurnal Kesehatan Masa Depan, 1(2), 140–149. https://doi.org/https://doi.org/10.58516/t4s7kq57