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FACTORS INFLUENCING THE QUALITY OF LIFE IN CHILDREN WITH THALASSEMIA: A SCOPING REVIEW

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Abstract

Thalassemia is a chronic disease that poses various challenges both clinically and psychologically because it requires lifelong treatment. The quality of life for thalassemia sufferers, especially in children, is something that must be prioritized. This scoping review aims to and determine the most influential factors on the quality of life of thalassemia patients, especially children. Scoping review is based on PRISMA-ScR, browsing Scopus, ScienceDirect and PubMed databases. The keywords are ("Related Factor" "AND" quality of life" OR "Life Quality" AND Thalassemia) ("Thalassemia"[Mesh]) AND "Quality of Life"[Mesh]. Critical assessment uses the Joanna Briggs Institute (JBI) assessment. 873 articles, have been identified and after review, we obtained 9 articles classified in 3 psychological factors that strongly influence quality of life, including mental health problems reported by 6 articles, compliance to chelation treatment 2 articles and knowledge 1 article. Among the factors influencing the quality of life in thalassemia patients, psychological factors appear to have the most significant impact. Patients with thalassemia often experience anxiety, social dysfunction, and physical changes that can profoundly affect their social roles and overall well-being

Keywords: Thalassemia, Mental Health, Compliance, Knowledge

INTRODUCTION

Transfusion-dependent thalassemia is characterized by an imbalance in the α/β globin chain ratio due to a decrease in globin synthesis, leading to ineffective erythropoiesis and chronic hemolytic anemia. Conventional management involves regular transfusions of red blood cells to suppress ineffective erythropoiesis (Lam et al., 2021). Thalassemia is an inherited hemolytic anemia characterized by a decrease or complete absence of globin chain production (Adam, 2019). The development of severe anemia in TDT requires regular transfusions for optimal survival and growth so that the impact results in excess iron because the body does not have a mechanism to excrete excess iron. Iron accumulation is toxic and can lead to complications such as heart failure, cirrhosis, liver cancer, growth retardation & endocrine abnormalities. Iron chela- tors are then used to remove excess iron from the body (Guidelines, 2013). The rate of transfusion affects the increase in the dose of chelators and the

monitoring of the necessary transfusion iron intake, especially in children, as it will increase the side effects (Poggiali et al., 2012)

Thalassemia is a chronic disease that poses a variety of vere, severe clinical and psychological challenges. The effects of thalassemia on physical health can lead to physical deformities, growth retardation, and delayed puberty (De Sanctis et al., 2006) (Telfer et al., 2005) Its impact on physical appearance, for example, bone deformities and short stature, also contributes to poor self-image (Mikelli & Tsiantis, 2004) (Telfer et al., 2005) Patients with thalassemia have not been regularly evaluated in their quality of life status. (Pakbaz et al., 2005), primary with the increase in basic treatment in thalassemia patients; it is still required to have an effect of all the treatments given to patients.

Previous studies reported that Thalassemia children show a decline in school functioning, physical functioning, emotional functioning & social functioning (Chordiya et al., 2018). This conventional treatment is required for life. The main goal of any chronic lifelong treatment is to maintain a good quality of life. that is as close to normal as possible (Hakeem et al., 2018). Repeated visits to the hospital for regular blood transfusions, chelation therapy costs, and repeated laboratory tests to monitor the therapy and for early detection of any side effects or complications are likely to affect the quality of life (QoL) of these children (Ismail et al., 2018).

Basic management for people with Thalassemia Major is given lifelong transfusion therapy and iron chelators. The transfusion aimransfusion is to correct anemia, and suppressing transfusion aims to correct anemia and suppress ineffective erythropoiesis (Makroo & Bhatia, 2014). Some research results show that chronic conditions such as thalassemia are associated with low quality of life in all domains (Adam et al., 2017). Measuring the quality of life in thalassemia patients is an important thing that must be done as a valuable guide in disease management and treatment decisions. (Arian et al., 2019). The purpose of this scoping review is to conduct a study of factors related to the quality of life of thalassemia patients based on empirical evidence that has been published.

RESEARCH METHODOLOGY

Search Strategy

This review uses a scope review approach to identify the steps to develop a research protocol. The concept of scoping review research was chosen because the reference source used by the researcher is in the form of articles from the official website. Scope review is the usual way of identifying deep and thorough literature obtained from various sources with different research methods related to the topic studied.

The steps taken in this study refer to Arksey & O'Malley (2005), which has been modified by Levac, Colquhoun and O'Brien which contains identifying research questions clearly and objectively, identifying relevant articles, selecting relevant literature from papers and data extraction, organizing Summarize and analyze and report results. (Arksey, H., & O'Malley, 2005). PRISMA-ScR = Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews.

Inclusion and Exclusion Criteria

The article was used to analyze the factors related to the quality of life of thalassemia patients and published in Indonesian or English. Subjects aged 5-35 years with a diagnosis of Thalassemia Major TDT. The analysis used is multivariate. The factors analyzed were (age, ferritin, maternal education, hepatitis C and thalassemia face). The exclusion criteria are Thalassemia after stem cell transplant or gene therapy. The analysis shown is univariate. The subject was < 35 years old.

Critical Appraisal Assessment

Assessment of the quality of the articles in this study aims to obtain articles relevant to the research objectives—Evaluation of the quality of the article using the Joanna Briggs Institute (JBI) assessment. JBI assessment is by giving a score to the statements provided by JBI. Journals were analyzed using the JBI critical assessment method, with good article standards to be used if above 70% based on criteria and topic relevance (Table 1 and Table 2).

Quality Assessment Strategy and Data Synthesis

This scoping review was conducted using a protocol conducted by Arkesey and O'Malley (2005) (Arksey, H., & O'Malley, 2005). A systematic search was carried out through the electronic databases of Scopus, ScienceDirect and PubMed to identify articles relevant to the research question. The articles were selected based on the research period of 2017-2022. The keywords used for searches using Booleon in Scopus, ScienceDirect and PubMed databases are ("Related Factor"s"AND"quality of life" OR "Life Quality" AND Thalassemia) ("Thalassemia"[Mesh]) AND "Quality of Life"[Mesh].

Three authors, differences and duplicates. The process of searching and selecting articles as literature using Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) was created manually by the author (Aromataris & Riitano, 2014).

RESULT

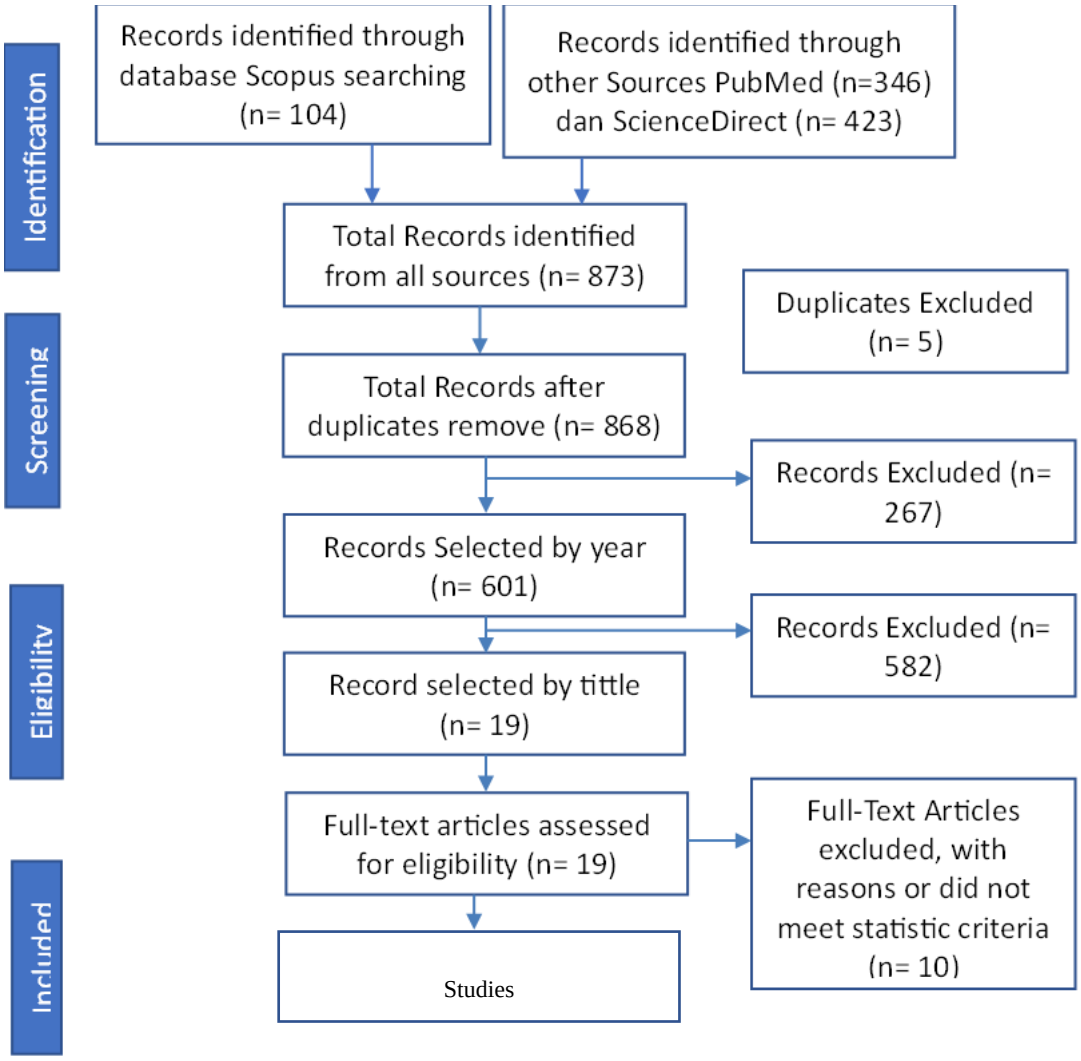

Diagram 1. PRISMA flow diagram of studies search

It	Author, Year	Country / region of focus	Study Population	Aim of the Study	Methodology	Results
1	(Hassan, 2016)	Egypt	23 adolescent thalassemia patients Age 8-18 years	Analyze the influence of health instruction on quality of life and psychological problems in children with thalassemia.	Experimental quasy	The results of this study showed that more than two-thirds of the children studied scored moderately on physical function and school. In addition, there was no significant difference in the health of children with thalassemia in the related quality of life domain after the health instruction session where the $p > 0.05$. Also the findings of this study show that 60% of children experience very severe anxiety and 43.5% of them experience major depression. However, the post-health instruction session of these findings showed a statistically significant decrease where the $p = 0.001$ and 0.000 values respectively.
2	(Yasmeen H, 2018)	Pakistan	200 pediatric thalassemia patients	Identify the quality of life determinants in children with thalassemia	Cohort Prospective	The determinants of QoL were family function and support (39.70 ± 18.4). Age, income, education, pre transfusion hemoglobin (Hb), serum ferritin level, pain, death due to β-thal, monetary issues and pain were significantly associated with TranQoL scores.
3	(Rafii, 2016)	Iran	55 patients	Analyze the effect of the orientation program applied by nurses on the quality of life of thalassemia patients	Experimental quasy	The quality of life of thalassemia patients was not significantly affected by anxiety, emotions, and social dysfunction (P=0.588; p value 0.917)
4	(Babaei, 2019)	Iran	30 patients with thalassemia major	Investigate the effects of stress management and resilience psychological well-being training for thalassemia patients in Kerman.	Experimental quasy	The results of this study show that the quality of life in thalassemia patients is significantly influenced by psychological factors in the form of self-acceptance (0.009) and psychological well-being which is characterized by good relationships or ease of interacting with a person (0.019).
5	(Madmoli, 2018)	Iran	40 patients with thalassemia major	Investigated the effect of Orem self-care on the mental health of	Experimental quasy	The results showed that there was a significant difference in the level of mental health (emotion, and improvement of self-acceptance) in pretest and posttest in thalassemia

				patients with thalassaemia major.		patients (P<0.005). The mean score (SD) of mental health in the group before the start of the self-care model was 74.32 (3.23) and three months after the intervention was 79.08 (2.34).
6	(Dehnoalian, 2017)	Iran	20 thalassemia patients	Evaluate the influence of educational counseling quality of life program for thalassaemia patients in the city of Neyshabur in 2016	Experimental quasy	The study showed that the quality of life of adolescent thalassemia patients was significantly determined by mental factors (p value 0.005), including: mental health (p value < 0.001), social functioning (p value < 0.001) and lack of role due to social problems (p value 0.002).
7	(El-Said Zaghamir, 2019)	Egypt	50 children with thalassemia	Analyze the effect of providing education on iron chelation.	Quasy experimental	The quality of life of the patient is greatly influenced by the knowledge of the patient/child suffering from thalassemia (p value 0.001).
8	(Taheri, 2020)	Iran	40 patients with thalassemia	Determine the effect of individual psychotherapy by focusing on self-efficacy on quality of life in patients with thalassemia major	Experimental quasy	The quality of life of thalassemia patients was significantly affected by social function (p value 0.002) and mental health (p value 0.005).
9	(Trachtenberg, 2014)	USA	258 teenagers	Testing the stability of health-related quality of life (HRQOL) in thalassemia and adherence to chelation therapy over time, especially after changes in chelator options.	Cohort longitudinal	Mental health improved when iron loads is low, but excess iron was negatively associated with social functioning. Compliance did not change significantly during the follow-up period except for improvement after the change from deferoxamine infusion (DFO) to oral deferasirox (p = 0.03). Predictors of low adherence in adults/adolescents at follow-up included side effects, smoking, younger age, problems preparing for DFO, increased number of days per week of prescribed DFO, and lower physical quality of life.

Table 2. Critical appraisal for Quasi-experimental

Criteria	(Hassan, 2016)	(Rafii, 2016)	(Babaei, 2019)	(Madmoli, 2018)	(Dehnoalian, 2017)	(El-Said Zaghamir, 2019)	(Taheri, 2020)
Is it clear in the study what is the 'cause' and what is the 'effect' (i.e. there is no confusion about which variable comes first)?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Were the participants included in any comparisons similar?	Yes (one group)	Yes	Yes	Yes	Unclear	Yes (one group)	Yes
Were the participants included in any comparisons receiving similar treatment/care, other than the exposure or intervention of interest?	Yes	Yes	Yes	It	Unclear	Yes	Yes
Was there a control group?	It	Yes	Yes	Yes	It	It	Unclear
Were there multiple measurements of the outcome both pre and post the intervention/exposure?	Yes	It	Yes			Yes	Yes
Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analyzed? (multivariate analyze / analyze characterized with outcome)	Unclear (not mention lost to follow up)	Yes	Unclear (not mention lost to follow up)	Unclear	Unclear	Yes	Yes
Were the outcomes of participants included in any comparisons measured in the same way?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Were outcomes measured in a reliable way?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Was appropriate statistical analysis used?	It	It	It	Unclear	Yes	Yes	Yes
Total Score	6.5/9	7/9	7.5/9	7/9	6.5/9	8/9	8.5/9

Table 3. Critical appraisal for Cohort studies

Criteria	(Yasmeen H, 2018)	(Trachtenberg, 2014)
Were the two groups similar and recruited from the same population?	Yes	It
Were the exposures measured similarly to assign people to both exposed and unexposed groups?	Yes	Yes
Was the exposure measured in a valid and reliable way?	Yes	Yes
Were confounding factors identified? (characteristic or others)	Yes	Yes
Were strategies to deal with confounding factors stated? (multivariate analysis or analyze characteristic with outcome)	Yes	Yes
Were the groups/participants free of the outcome at the start of the study (or at the moment of exposure)?	Unclear	Unclear
Were the outcomes measured in a valid and reliable way?	Yes	Yes
Was the follow up time reported and sufficient to be long enough for outcomes to occur?	Unclear	Yes
Was follow up complete, and if not, were the reasons to loss to follow up described and explored?	Unclear	Unclear
Were strategies to address incomplete follow up utilized?	Yes	Yes
Was appropriate statistical analysis used?	It	Yes
Total score	9/11	9/11

DISCUSSION

This scoping review has identified several key factors influencing the quality of life (QoL) in adolescent thalassemia patients. The primary factors identified include mental health issues, compliance with treatment, and knowledge about the disease and its management.

The influence on the quality of life of adolescent thalassemia patients. These factors include mental health problems reported by 6 articles (Hassan, 2016) (Rafii, 2016) (Madmoli, 2018) (Dehnoalian, 2017) (Taheri, 2020). Compliance factors reported by (Trachtenberg, 2014) and knowledge (Yasmeen H, 2018).

The articles that will be discussed are published from various countries, including 1 article from developed countries with good service quality (Trachtenberg, 2014) and 8 articles reported from developing countries such as Iran, Egypt and Pakistan. The articles obtained were dominated by a quasi-experimental type of 7 articles with interventions that led to educational modeling for the improvement of mental health status, knowledge and compliance involving the participation of families, schools and health workers. 2 articles with longitudinal cohort design that identified the effect of adherence in the

consumption of chelation drugs that were able to affect quality of life. Based on the review, the researchers will discuss in more detail the influence of these factors and possible interventions that can improve the quality of life of adolescent thalassemia patients.

Psychological factors

The results of the scoping review showed that 6 articles reported that the quality of life of thalassemia patients was greatly influenced by psychological factors, including emotions (Hassan, 2016), anxiety due to social dysfunction and physical changes (Rafii, 2016) and also mental health due to lack of social role (Dehnoalian, 2017) (Taheri, 2020).

The psychological problems reported in this review were caused by decreased physical functioning, limitations in role-playing for physical reasons, vitality, social functioning and anxiety due to uncontrolled emotional management. People with thalassemia major may have more limitations and problems than others, which may affect their lives. Patients with thalassemia in their teens often have low self-confidence. All these thoughts and self-deficiencies can result from misinterpretation due to their ability to understand illness and lack of knowledge. The existence of such cases and the relationship between psychological responses (stress, anxiety, and depression) and quality of life leads to a decrease in mental health levels and, ultimately, a decrease in quality of life (Anie KA, 2015). When individuals find ways to overcome mental problems and become aware of their abilities, they will gain strength and trust that can make them determined to do many things and remove many obstacles in life so their quality of life will improve (Behnam Vashani H, 2015).

Various alternative interventions have been carried out in providing psychological support to thalassemia adolescents, such as the first psychological program with a continuous care program (CCM) approach, which is carried out individually for 14 weeks (Salehipour S, 2021) where this therapy has proven to be effective as a nursing care intervention in improving the quality of life. In addition, the second psychological intervention that can be carried out is individual psychotherapy (cognitive-behavioral therapy) (Taheri, 2020), and this intervention has succeeded in improving quality of life and reducing longevity. The third psychological intervention is commitment acceptance therapy (Jabbarifard F, 2019) where participants are taught strategies, assessment methods and prevention of complementarity from control therapy, in addition to that participants are also trained to solve problems, accept, identify egos and develop strategies to achieve goals, this intervention can significantly reduce stress, increase resilience and improve the quality of life of people with thalassaemia.The fourth intervention is Resillience and Stress Management (SMART) (El-Said Zaghamir, 2019), in this intervention participants were asked to increase awareness about stress, physical signs of stress and the perceived impact of stress. And after being given this intervention, the fibers effectively reduce stress, increase straps, increase endurance, build adaptive coping fans improve quality of life.

Knowledge Factors

The importance of knowledge in influencing QoL was highlighted in a study by (Yasmeen H, 2018) this study stated that Age, income, education, pre-transfusion hemoglobin (Hb), serum ferritin levels, pain, β-thal mortality, monetary problems, and pain were significantly associated with TranQoL scores. Quality of life is not only determined by clinical conditions but also by life changes, social relationships and psychological events.

Good knowledge about thalassemia can improve the quality of life, so various alternative interventions have been carried out to provide education to improve knowledge and quality of life in people with thalassemia. Nurses have a role as educators in providing information about diseases, the impact, and the treatment that must be carried out. Some of the educational programs carried out are Educational Program Therapy is education that uses the method of lectures, demonstrations, and group quizzes to show an increase in knowledge so that patients experience a significant increase in quality of life (Samra OA, 2015), another educational program is education about iron chelation therapy with methods provided through group discussions and presentations of discussion results, this intervention has been proven to be effective in improving knowledge so that it has an impact on improving the quality of life of people with thalassemia (Andodo C, 2019). Another intervention that can improve knowledge is to use telenursing using SKEDit (Aboelela E, 2018).

Compliance factors

Compliance to chelation treatment has been reported to affect quality of life. This is complications both from diseases and chronic conditions of a person that will reduce the quality of life. Life expectancy is directly related to the quality of chelation therapy, and poor adherence to treatment increases the risk of complications that indirectly reduce the quality of life (Trachtenberg, 2014). Other studies have previously reported adherence and success of chelation therapy will improve the quality of life of thalassemia patients even up to 8 years (Arian, 2019)

Blood transfusion treatment is the only way to prevent death in thalassemia patients, blood transfusions aim to maintain hemoglobin levels of 9-10g/dl (12), so that the life expectancy of thalassemia patients is increasing, thalassemia patients must comply with thalassemia treatment for life, because by carrying out medication and adherence management can improve the quality of life. The intervention program carried out to improve compliance is by providing multidimensional intervention where the results of increasing the compliance of thalassemia children to Kelation therapy33, in addition to other interventions that can improve compliance is Computer and Mobile Technology Intervention where the intervention can improve individual independence, organizational skills or change compliance behavior (Palermo, 2019).

CONCLUSION

Among the factors influencing the quality of life in thalassemia patients, psychological factors appear to have the most significant impact. Patients with thalassemia often experience anxiety, social dysfunction, and physical changes that can profoundly affect their social roles and overall well-being. Addressing these psychological challenges through targeted interventions can substantially improve these patients' quality of life. Therefore, psychological support should be prioritized in the comprehensive care of thalassemia patients to enhance their ability to cope with the disease and improve their overall quality of life.

Conflict of Interest

The authors declare that they have no conflict of interests.

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