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ORIGINAL ARTICLE

ADOLESCENT FEMALES WITH THALASSEMIA MAJOR: PERCEPTIONS OF BODY IMAGE AND SECONDARY SEXUAL DEVELOPMENT - A QUALITATIVE STUDY

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ABSTRACT

Adolescent females with thalassemia major experience various psychological, emotional, and social behavioral changes that may influence their perceptions of themselves. This qualitative research aimed to explore adolescent females' perceptions of their identity as females in relation to living with thalassemia major. The study employed a descriptive phenomenological design with purposive sampling. The participants were 12 female adolescents with thalassemia major, aged 17–19 years, living in the Jabodetabek area (Jakarta, Bogor, Depok, Tangerang, and Bekasi). Data were collected through 60–80-minute in-depth interviews using a semi-structured interview guide, recorded with participants' consent, and analysed using Colaizzi's seven-step method. The results of this research identified a main theme relating to concerns about body image and secondary sexual development. Adolescent female with thalassemia major experienced fear and anxiety about these aspects since they affected their self-confidence in establishing friendships and participating in social activities. Psychological aspects should be addressed through the integration of body image counselling and puberty education as part of nursing care for adolescents with thalassemia major.

Keywords: *Adolescents girls; body image; puberty; secondary sexual characteristics; thalassemia major; qualitative study*

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BACKGROUND

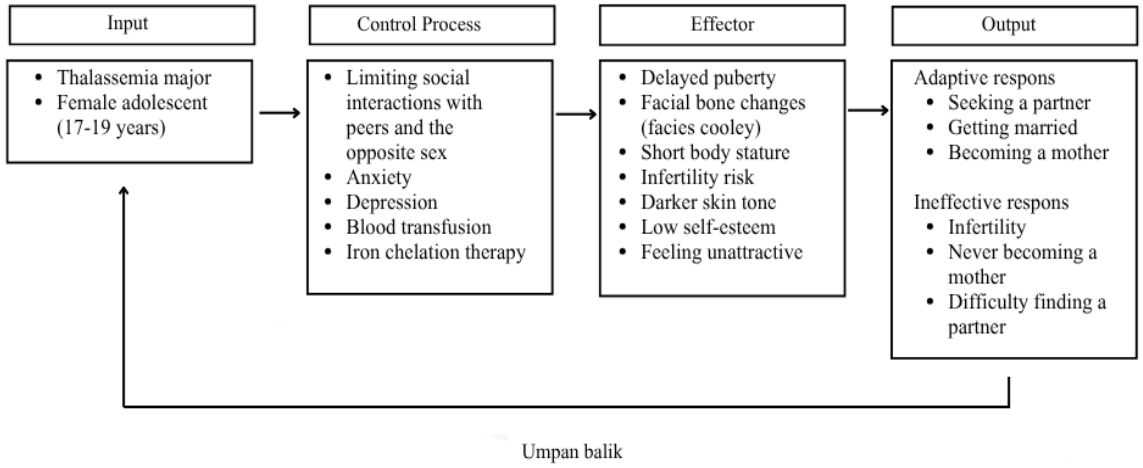
Thalassemia is a group of inherited hematological disorders caused by genetic defects affecting the production of globin chains, which are essential components of hemoglobin (Taylor et al., 2015). This genetic disorder is among the most prevalent inherited blood disorders worldwide and is characterized by the accelerated destruction of red blood cells (hemoglobin, particularly the globin chains) resulting in a reduced red blood cell lifespan of approximately 20–30 days. This condition can lead to a deficiency in blood supply (IDAI, 2022). Thalassemia follows a recessive inheritance pattern based on Mendelian genetics (Wahidiyat, 2017), in which the thalassemia gene is inherited from both parents who carry the thalassemia trait. The prevalence of thalassemia carriers is estimated at 7% worldwide. Annually, approximately 300,000–500,000 infants are born with severe hemoglobin disorders. Furthermore, approximately 50,000–100,000 children die annually due to β-thalassemia, with around 80% of these deaths occurring in developing countries, including Indonesia, which has a high frequency of thalassemia carrier genes, with an estimated prevalence of 3–10% in the general population. Data from the Indonesian Thalassemia Foundation (YTI) in 2021 indicated an increase in the number of thalassemia cases, from 4,896 cases in 2012 to 10,973 cases by June 2021 (Ministry of Health, 2023). The Indonesian Association of Parents of Thalassemia Patients (POPTI) reported that 13,406 people were living with thalassemia in Indonesia in 2024 (West Java Provincial Office of Communication and Informatics, 2025).

To date, thalassemia remains incurable, particularly thalassemia major, which requires lifelong and continuous management, including regular blood transfusions to maintain hemoglobin levels above 10 g/dL. However, a significant complication in children with thalassemia is iron accumulation in various organs, including the liver, heart, endocrine glands, and others (Wahidiyat, 2017). This iron overload can lead to considerable morbidity, such as

impaired growth, delayed pubertal development, and multiorgan dysfunction (Mohamadian et al., 2018). Singh and Seth (2018) also reported that female adolescents with thalassemia major are at risk of pubertal disorders (delayed puberty) despite receiving optimal transfusion and iron chelation therapy. The prevalence of delayed puberty ranges from 30 to 70% and may contribute to an increased risk of infertility.

The adverse effects of thalassemia major treatment may also influence adolescents' physical appearance, including the development of bone deformities and short stature (Yacobovich & Tamary, 2014). Facial bone deformities, referred to as Cooley's facies, includenarrow eyes, frontal bossing, increased distance between the eyes, maxillary hypertrophy, and dental malocclusion (IDAI, 2022). Therefore, these conditions may negatively affect body image, contribute to psychosocial problems, and reduced the quality of life among adolescents (Behdani et al., 2015).
Adolescents with thalassemia face various challenges, as previously described. Therefore, nurses paly a crucial role as counselors in addressing the psychological needs of these adolescents, including supporting their acceptance of the condition and helping them cope with differences compared to their peers. A study conducted by Behdani et al. (2015) reported that 80% of children with thalassemia major had at least one psychiatric disorder. The most common psychiatric disorder among these children is depression, with approximately 26.7% of adolescents with thalassemia major experiencing depressive symptoms. These psychological issues can significantly impact their adherence to treatment, self-management, and expected treatment outcomes. Consequently, psychological counseling may be necessary to prevent the development of psychological problems and psychiatric disorders (Mohamadian et al., 2018).

These problems also stem from an individual's ability to adapt to their circumstances, as humans are holistic and adaptive systems. As a result, the researcher employed the adaptation theory approach proposed by Sister Callista Roy, as illustrated in the following diagram.



Scheme 1. Conceptual Framework

This research aimed to explore and understand the perceptions of female adolescents with thalassemia major in the Greater Jakarta area (Jakarta, Depok, Bekasi, Bogor, and Tangerang/Jabodetabek) regarding their body image and secondary sexual development. This focus is important because the needs and experiences of adolescents differ from those of adults, with each developmental stage presenting unique challenges. Moreover, these challenges may also vary among individuals. Therefore, the findings of this research can serve as baseline data to inform care strategies for female adolescents with thalassemia major, ensuring that their psychological needs are met and alleviating their concerns as they develop their identities as women.

METHOD

Study design

This research employed a descriptive phenomenological approach.

Participants

This research was conducted in the Jabodetabek area of Indonesia, where the prevalence of thalassemia continues to increase, highlighting the need to explore the perceptions of female adolescents with thalassemia regarding their body image and secondary sexual development. The participant recruitment process was initiated by the researcher through contact with POPTI representatives in the Jabodetabek area. Participants were selected by POPTI using purposive sampling based on the following inclusion criteria: female adolescents diagnosed with thalassemia major, aged 17–19 years, undergoing regular blood transfusion therapy, and unmarried. These criteria were chosen because female adolescents with thalassemia major have typically begun to recognize the impact of changes in their body image and secondary sexual development.

Data collection

The researcher introduced herself and established a trusting relationship with the participants and their parents through digital communication. The researcher explained the purpose and objectives of the study, as well as the procedures involved. The participants were asked to provide their willingness to participate by giving informed consent. Subsequently, the researcher obtained the prospective participant's addressess and scheduled face-to-face meetings at their residence. An informed consent form was then provided to the participants' parents for signing.

Face-to-face interviews were conducted in a private, enclosed room at the participants' homes, ensuring adequate lighting, a quiet atmosphere, and minimal noise disturbance to maintain confidentiality. A semi-structured interview guide was employed for this research. The entire interview process

was audio-recorded using a recording device, with an average duration of 60 to80 minutes. Data collection concluded upon reaching data saturation with the 12th participant, as redundancy indicated that adequate depth of data had been obtained.

Data analysis
Verbatim transcripts were analyzed using Colaizzi's method through several sequential steps. The researchers repeatedly read the participants' complete descriptions to develop a comprehensive understanding of their experiences and to interpret their meanings. This process enabled the researchers to identify key statements relevant to the research objectives. The researchers then highlighted significant statements that represented key words from the participants' accounts to facilitate the categorization process. Subsequently, the researchers reviewed each key word to unsure a comprehensive understanding, allowing them to formulate appropriate meanings and organize these into relevant categories. The researchers combined the significant meanings and grouped them into thematic clusters. At this stage, the researchers classified categories with similar or related meanings to develop sub-themes and and overarching themes.

The themes identified by the researchers were presented as the study's findings, reflecting perceptions of female adolescents with thalassemia major regarding changes in body image and secondary sexual development. To validate these themes, theresearchers conducted follow-up meetings with the participants to validate accurately represented the adolescents' actual perceptions and were agreed upon by them. During these sessions, researchers received feedback, including additional keywords that supported a categories or sub-themes. Subsequently, the researchers revised the keywords obtained from the validation process, reanalyzed the data, and integrated the findings into the appropriate themes.

Trustworthiness
Credibility
Member checking was conducted by asking participants to review and provide feedback on the interpretative notes developed by the researchers based on data obtained through face-to-face discussions.

Dependability
A high level of dependability was achieved through consultation with experts in the relevant field, who carefully reviewed and analyzed the research finding regarding female adolescents with thalassemia major.

Confirmability
Reflexivity in this research was ensured by verifying the results against relevant literature and consulting experts in the field to achieve a shared understanding and consensus on the interpretation of the results.

Transferability
Transferability was achieved by varying the selection of participants, including adolescents with thalassemia major from diverse ethnic backgrounds and with different durations of blood transfusion. This approach allowed the research findings to be applied and transferred to other situations or participants.

Ethical considerations
A participant consent form was provided to the parents obtain written confirmation that they permitted their child to participate in the research and agreed to allow their child to provide information after receiving an explanation of the study.

Accent was also obtained from the adolescents in this research as an indication of their agreement to participate as research participants. The confidentiality of the data and information provided by the participants was maintained by securely storing all documents (informed consent forms, audio recordings, demographic information, and transcripts) on a secure data storage device accessible only to the researchers. In-depth interviews conducted during data collection carried out in accordance with the participants' comfort levels. Participants were not obligated to answer any questions posed by the researchers, thereby preventing potential physical or psychological harm.

RESULT

The 12 participants in this study were female adolescents diagnosed with thalassemia major. The mean age of the participants was 18 years (n = 7), with two participants aged 17 years and three aged 19.. All participants were unmarried. Two were currently attending school, nine had completed their education, and one was enrolled at a university. Additionally, all participants experienced delayed menarche and were undergoing iron chelation therapy during the study. Regarding blood transfusions, three participants received transfusions weekly, five every two weeks, and four every three weeks. Five participants reported having siblings who were thalassemia carriers, while the remaining seven did not have siblings with carrier status.

Table 1. Participant Characteristics

Parti-cipant	Age	Ethnicity	Status	Highest Education Level	Age at Menarche	Age at First Transfusion	Age at Initiation of Iron Chelation Therapy	Type of Iron Chelation Therapy	History of Splenectomy	Frequency of Blood Transfusions	Number of Siblings with Thalassemia Carrier Status
P1	18 years	Betawi	Unmarried	SMK	15 years	9 months	9 months	tablet	none	Every 3 weeks	0
P2	18 years	Sunda	Unmarried	High School	15 years	3 months	9 months	injection	none	Every 3 weeks	2

Parti-cipant	Age	Ethnicity	Status	Highest Education Level	Age at Menarche	Age at First Transfusion	Age at Initiation of Iron Chelation Therapy	Type of Iron Chelation Therapy	History of Splenectomy	Frequency of Blood Transfusions	Number of Siblings with Thalassemia Carrier Status
P3	18 years	Betawi	Unmarried	Currently Attending School	18 years	5 years	5 years	tablet	none	Every 2 weeks	0
P4	18 years	Jawa	Unmarried	High School	16 years	2 years	10 years	injection	none	Every 2 weeks	2
P5	18 years	Jawa	Unmarried	Vocational High School	17 years	4 years	5 years	tablet	none	every week	1
P6	17 years	Jawa	Unmarried	Currently Attending School	15 years	3 years	5 years	tablet	none	Every 2 weeksi	1
P7	19 years	Sunda	Unmarried	Vocational High School	16 years	1 years	7 years	tablet	none	every week	2

This research identified one main theme: feeling distressed about body image and secondary sexual development, which occurred among female adolescents with thalassemia major and affected their body image. The categories derived from this theme were: (1) disturbances of body image, and (2) disturbances of hormonal function and secondary sexual development. The relationship between the theme, categories, and keywords is presented in the following diagram.

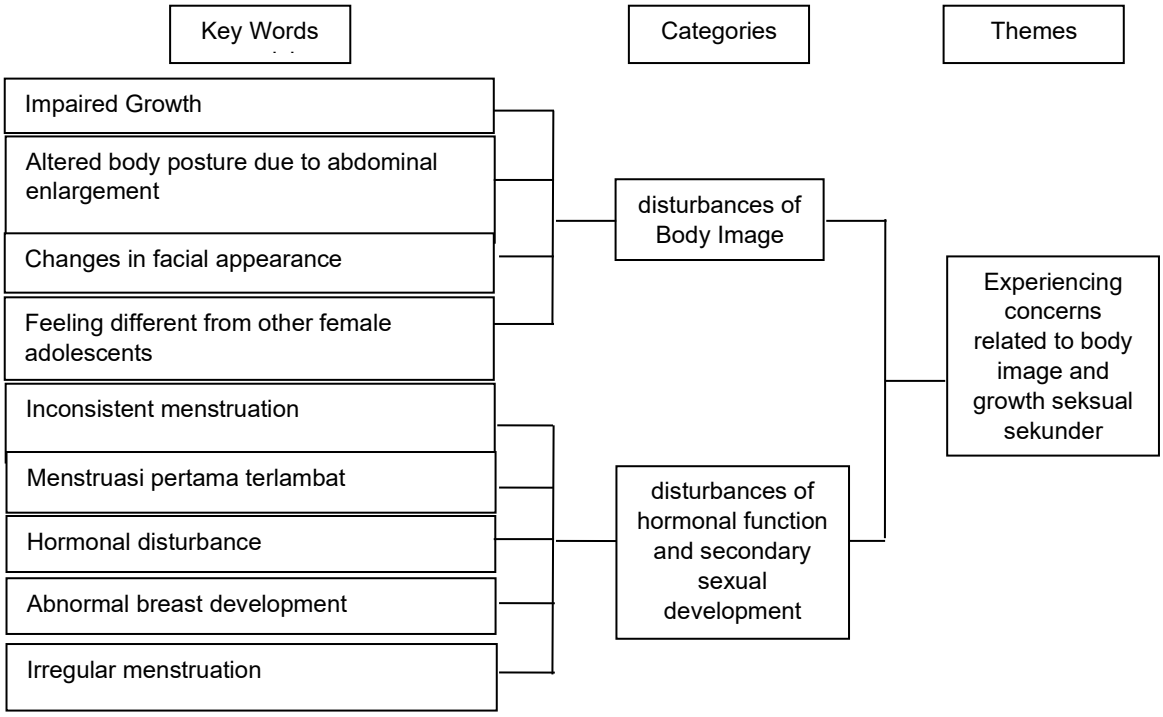


Figure 2. Thematic Tree Diagram
Experiencing concerns related to body image and and the development of secondary sexual characteristics

The above theme comprised two categories. The first category described the perceptions of adolescents with thalassemia major who experienced disturbances in their body image. These perceptions fostered self-awareness among adolescents with thalassemia major regarding differences in physical development compared to their peers. Six participants in this study reported that they perceived their growth as impaired. For example, the adolescents reported difficulties in increasing their height and described themselves as having a shorter stature. These conditions made them feel different from other adolescents in general. The participants expressed sadness when sharing these experiences because they wished to be like their peers. An example of a participant's statement is as follows:

> *"... my growth was delayed. When I was younger, I was small. When I was in junior high school, I looked like a fifth-grade elementary school student; I was small..." (P1, P2)*

Adolescents also perceived that their body posture differed from that of their peers due to abdominal enlargement. This condition occurred because adolescents with thalassemia experienced splenomegaly, which affected their posture and made them appear different from other adolescents. These visible physical changes heightened their awareness of the differences between their bodies and those of their peers. As a result, adolescents with thalassemia often felt and reluctant to interact with their peers or their surrounding environment. Two participants expressed this experience in the study, as illustrated by the following quote:

> *"...the body posture is also affected when iron levels become too high, causing the abdomen to appear increasingly enlarged..." (P1)*

Female adolescents with thalassemia major also experienced changes in facial appearance. These changes result from disturbances in facial structure, including prominent cheekbones and a flattened nasal bridge. This condition causes the facial features of adolescents with thalassemia to become similar to one another. These alterations not only represent physical manifestations of the disease but also affect how adolescents perceive and interpret changes in their bodies. During adolescence, particularly among females, physical appearance plays a crucial role in the development of identity and self-acceptance. Therefore, changes in facial appearance experienced by adolescents with thalassemia major can be become a sensitive issue. Two participants in this study expressed this experience, as illustrated by the following quote:

> *"...you know, the facial features include prominent cheekbones and a flattened nose..." (P4)*

This condition caused female adolescents with thalassemia major to feel different from their peers. They perceived that other adolescents generally had attractive facial features, fair and clear skin, a desirable body shapes, and a healthy appearance. n contrast, these adolescents experienced living with the disease, which resulted in darker skin and a thin body appearance. Consequently, they felt less appreciated by others, particularly male peers. This situation made them feel sad and increasingly insecure about forming relationships with the opposite sex. Three participants expressed this experience, as illustrated by the following quote:

> *"...my skin is darker because I often go to the hospital, and my body is thin even though I eat a lot. Well, other normal women are often noticed and appreciated. Men, as you know, usually prefer women who are normal, with a sexy body shape, fair and clear skin, and a beautiful face..." (P10)*

The second category pertained to disturbances in hormonal function and secondary sexual development. Adolescents with thalassemia in this study experienced oligomenorrhea, characterized by irregular and infrequent menstruation. This condition indicated impaired reproductive function in adolescents living with thalassemia major. Irregular and inconsistent menstruation was a physical experience recognized by the adolescents, distinguishing their menstrual patterns from those commonly experienced by their peers. These findings demonstrate that thalassemia not only affects general physical health but also significantly impacts adolescents' experiences during reproductive development. This condition was expressed by two participants in this research, as illustrated by the following statement:

> *"...my menstruation is not regular; it is more like spotting because my menstruation is not consistent..." (P2)*

All adolescents included in this study also experienced delayed menarche, with a mean age of 16 years at onset. Furthermore, two adolescents had experienced primary amenorrhea, as they had not menstruated by the time of the study, despite the typical age of menarche being approximately 12 years. These findings indicate that delayed menarche was a common occurrence among female adolescents with thalassemia major in this research. Clinically, menarche usually occurs during early to mid-adolescence; therefore, the average age of 16 years at menarche among participants reflects a significant delay in pubertal development.

The adolescents revealed that they initially felt confused upon realizing that their friends had already begun menstruating while they had not.. This situation caused them to feel embarrassed in front of their peers, as they feared of being perceived as different. One adolescent reported that she even lied to her friends about having her first menstruation to feel the same as others, despite not having actually experienced it. These experiences were reflected in the adolescents' statements, as illustrated by the following quote:

> *"...I was in the third year of junior high school, so I was around 16 years old. My friends had already gotten their first menstruation, while I was the one who experienced it later. I felt different from them..." (P4, P7, P8, P11)*

Three adolescents reported that thalassemia significantly impacted their hormonal function, which in turn affected their pubertal development. According to these adolescents, this condition also contributed to impaired growth. The hormonal disturbances they experienced caused delays the onset of menarche; consequently, their physicians prescribed hormonal medication by their physicians to support normal hormonal function. This finding was noteworthy because it reflects the causal relationship perceived by the adolescents between thalassemia, hormonal disturbances, and delayed development. The adolescents did not perceive delayed menarche as an isolated phenomenon but rather associated it with their underlying disease. This suggests that the adolescents were aware of the changes occurring in their bodies and attempted to understand the differences in their development compared to their peers. The adolescents

described this experience through statements such as the following:

> *"...I was given hormonal medication by my doctor. I took it for about three months, and then I immediately got my menstruation..." (P5)*

Adolescents also reported that their breast development did not meet their expectations.. One adolescent described experiencing abnormal breast development, characterized by relatively small breast size. The perception of having smaller breasts not only reflected concerns about body appearance but also suggested that physical development perceived as different from that of peers could become a source of worry and diminish self-confidence. Breast development is an important indicator of puberty among female adolescents. Concerns about breast size may indicate that delayed pubertal development among adolescents in thalassemia major has the potential to negatively impact body image and self-concept. Changes in secondary sexual characteristics, particularly breast development, represent an important and meaningful aspect of the body for female adolescents with thalassemia major. This experience can be illustrated by the following statement from a participant:

> *"...like breast development. Because I am not like the others, and I am also afraid because of that. Although people say that breasts will become larger during pregnancy, I am still worried..." (P4)*

The adolescents in this study also experienced irregular menstruation. This condition may be linked to hormonal dysfunction, raising concerns about their overall health. The adolescents expressed fear when their menstruation was irregular, worrying that it might signal the onset of other health problems or the development of a new disease. These findings suggest that changes in menstrual patterns have psychological meanings for adolescents. One participant expressed this experience as follows:

> *"...normally, menstruation happens once a month, but for me, it sometimes happens only every two or three months..." (P11).*

DISCUSSION

The theme identified inthis research was concerns related to body image and secondary sexual development. Female adolescents with thalassemia major expressed particular worries about their body image, especially difficulties in achieving height growth. This experience was reported by all female adolescents with thalassemia major who participated in this study. According to Singh and Seth (2018), the prevalence of growth failure and short stature among children with thalassemia ranges from approximately 30 to 50%. This finding aligns with research conducted by Laxmikant Basavraj Dama and SB (2015), which reported that among 123 children with thalassemia major, approximately 80% of patients experienced delayed growth. This condition is associated with hypersplenism, poor muscle development, reduced body fat, fatigue, and poor appetite. In addition, female adolescents with thalassemia major in this study also experienced changes in body posture, such as abdominal enlargement caused by splenomegaly due to iron accumulation in the body.

Similar findings were reported by Naderi et al. (2021), who demonstrated that adolescents with thalassemia major often have negative perceptions of their body image. Conditions such as hepatosplenomegaly growth impairment, and delayed or absent puberty can alter physical appearance, leading to noticeable differences compared to their peers. Consequently, these factors may significantly impact body image among adolescents with thalassemia major. In this study, the adolescents expressed feelings of embarrassment about their short stature, pale complexion, enlarged abdomen, and changes in facial features.

The facial changes observed in female adolescents with thalassemia major in this study included prominent cheekbones and a flattened nasal bridge. One participant stated that the facial features of individuals with thalassemia were tended to be similar. These findings align with those of Yacobovich and Tamary (2014), who reported that treatment for thalassemia major can have adverse effects on adolescents' appearance, such as facial bone deformities and short stature. Facial bone deformities, known as Cooley's facies, includenarrow eyes, frontal bossing, increased distance between the eyes, maxillary hypertrophy, and dental malocclusion (IDAI, 2022).

Growth disturbances experienced by female adolescents with thalassemia major in this study led them to perceive themselves as different from their peers. Physical characteristics such as darker skin pigmentation, thin body stature, short height, and less attractive facial appearance contributed to a negative body image. Consequently, these conditions may diminish their overall body satisfaction. This finding aligns with Behdani et al. (2015), who reported that physical changes in female adolescents may influence their body image, subsequently leading to psychosocial problems and a declined quality of life.

Body image is defined as adolescents' perception of themselves and their thoughts about their physical appearance and physical attractiveness (Mardhiyah et al., 2023). This perception can influence their self-esteem, which reflects the need to feel valued. Therefore, female adolescents with thalassemia major in this study also desired to be valued like peers. Nevertheless, they felt less appreciated by males compared to other female adolescents because they perceived their physical appearance as being different, with lacking an attractive body shape, fair and healthy-looking skin, and a beautiful facial appearance. They believed that males were generally attracted to these physical characteristics, while they considered themselves less physically appealing. Furthermore, female adolescents with thalassemia major may also experience hormonal disturbances.

Delayed menarche was identified as one of the hormonal disturbances experienced by female adolescents with thalassemia major in this study. All female participants with thalassemia major reported experiencing this condition. The average age at menarche was approximately 15 years, although some participants had not attained menarche even by the age of 18. This condition is associated with significantly elevated serum ferritin levels in adolescents with thalassemia major compared to age-matched peers undergoing normal pubertal development. These findings suggest that iron overload plays a critical role in the pathogenesis of delayed menarche. Clinically, delayed puberty and hypogonadism result from iron-induced cytotoxic effects on the hypothalamic–pituitary–gonadal axis (Alshammari et al., 2026).

Iron accumulation results from repeated blood transfusions received by adolescents with thalassemia major since early childhood. Serum ferritin levels reaching 1,000 ng/mL are

commonly observed after 10–12 blood transfusions and are widely considered the threshold for initiating iron chelation therapy (Qaiser et al., 2020). This condition can affect endocrine gland function because endocrine gland have high levels of transferrin receptors, which facilitate iron accumulation, thereby interfering pubertal development and causing delayed menarche. Female adolescents with thalassemia are also at risk of experiencing primary amenorrhea. The prevalence of pubertal disturbances in adolescents with thalassemia has been reported to range from 30% to 70% (Singh & Seth, 2018).

Pubertal disturbances, including delayed puberty, are considered major factors contributing to growth retardation in adolescents with thalassemia major. A study of an Italian cohort involving 250 adolescents aged 12–18 years, who had received iron chelation therapy for 7–10 years, reported that 38% of female adolescents and 67% of male adolescents exhibited an absence of secondary sexual development (Abdelaziz et al., 2022). A similar condition was observed in this study, as all participants experienced delayed pubertal development. Female adolescents with thalassemia major also reported menstrual irregularities, including irregular and inconsistent menstrual flow, along with impaired breast development. Delayed puberty and primary amenorrhea are common complications among individuals with thalassemia major who receive frequent blood transfusions. During puberty, adolescents with thalassemia major exhibit lower luteinizing hormone (LH) pulsatility for their pubertal stage compared with their healthy peers, and their follicle-stimulating hormone (FSH) evels are lower than expected. However, 12% of adolescents showed elevated FSH levels, suggesting early gonadal failure (Mays et al., 2021).

Female adolescents with thalassemia major may be treated with gonadotropin-releasing hormone therapy to address delayed puberty and sexual maturation, with treatment success rates reported to be as high as (Yacobovich & Tamary, 2014).

A similar experience was reported by an adolescent girl with thalassemia major in this study. The participant stated that her physician had prescribed hormonal therapy due to the absence of menarche. The hormonal treatment was administered for three months, after whichshe attained menarche.

The growth disturbances and hormonal changes experienced by adolescents in this study may be understood through Roy's Adaptation Model as physiological responses to chronic illness stimuli involving the regulator coping subsystem. According to Roy's Adaptation Model, the regulator subsystem is an automatic physiological coping mechanism that encompassess neurological, chemical, and endocrine processes functioning to maintain an individual's physiological integrity. Therefore, growth disturbances and hormonal changes do not directly constitute the regulator coping subsystem; rather, they are manifestations or physiological responses that emerge during the body's adaptation to encountered stimuli.

Disease stimuli in female adolescents with thalassemia major are chronic and associated with various complications that may disrupt physiological balance and the endocrine system. This condition can be identified by delayed growth, delayed pubertal development, altered breast development, delayed menarche, and irregular menstruation. The results of this research indicate that the body's regulatory mechanisms continue to attempt to maintain internal balance; however, these responses are not yet fully effective in achieving optimal physiological adaptation. This occurs because thalassemia, as a chronic stimulus, not only affects adolescents' biological functions but also impairs their ability to adapt to bodily changes and personal development.

CONCLUSION AND RECOMMENDATION

Conclusion

Female adolescents with thalassemia major experienced concerns related to impaired body image and hormonal dysfunction, which contribute to changes in their secondary sexual development. These issues lead to reduced self-confidence and difficulties in forming social relationships, as these adolescents perceive their growth as different from that of their peers.

Therefore, the results of this research provide psychological insights and an deeper understanding of the perceptions experienced by female adolescents with thalassemia major in the delivery of nursing care. Care should extend beyond physical aspects to address adolescents' psychological needs, as these concerns significantly influence their ability to cope with the disease and undergo treatment. Providing body image counseling, puberty education, and adolescent-friendly psychosocial support is recommended.

Recommendation

Healthcare providers, particularly nursing professionals, are encouraged to conduct more in-depth assessments, and implement psychological approaches in nursing care for children with chronic illnesses, especially female adolescents with thalassemia major, to improve effectiveness of the treatment and care because in reality the most significant and challenging concern among adolescents lies in their psychological Well-being, as the profound growth disturbances they experience may lead to a decline in quality of life when not properly managed.

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