Psychological manifestations in adolescents with thalassemia

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Objective

Beta-thalassemia major and its complications have a significant psychological impact, causing emotional burden, hopelessness, and difficulty with social integration.

Patients and methods

This study was an observational analytical case–control study that included 30 adolescents with a diagnosis of thalassemia, 'Cases', and another group of 30 adolescents from the gastrointestinal outpatient clinic, 'Controls'. All participants were subjected to a semistructured interview, the Patient Health Questionnaire, the Hospital Anxiety Depression Scale, the Middlesex Hospital Questionnaire, and the McGill Quality of Life Questionnaire.

Results

Thalassemic adolescents showed statistically significant higher depressive symptoms ($P<0.001$) and higher anxiety symptoms ($P<0.001$) compared with adolescents from the gastrointestinal outpatient clinic. There was a highly significant difference in the results of the Middlesex Hospital Questionnaire ($P<0.001$). Thalassemic adolescents showed significantly higher levels of anxiety, phobia, obsession, somatization, depression, and hysteria. Thalassemic adolescents showed significantly lower levels in different aspects of quality of life, total, general, physical, and emotional, with regard to the McGill Quality of Life Questionnaire ($P<0.001$).

Conclusion

Depressive and anxiety symptoms were more prevalent among adolescents with thalassemia. In addition, in the same group, there was a higher degree of free floating anxiety, phobic anxiety, obsessive symptoms, somatic symptoms, depressive symptoms, and hysteria. Quality of life was highly affected among adolescents with thalassemia.

Keywords:
adolescents, depression, thalassemia

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Introduction

Thalassemia was first described by Cooley and Lee in 1952 in several Italian children as a severe anemia with spleen and liver enlargement, skin discoloration, and bony changes. Great strides in management and intervention have not been matched by progress in psychosocial rehabilitation [1].

Thalassemia is one of the most common genetic disorders worldwide [2].

Beta-thalassemia major is a disorder characterized by the defective production of hemoglobin and excessive destruction of red blood cells. Hemoglobin comprises four protein subunits, that is, two α and two β. Genetic mutations in the gene encoding for the β subunits of the protein result in reduced or totally absent synthesis of the globin β-chains, leading to the formation of abnormal hemoglobin or even to the absence of β hemoglobin. This defect causes an abnormal development of red blood cells and ultimately anemia, which is the characteristic symptom of thalassemia. The disease is prevalent among Mediterranean individuals, the highest frequency is found in the Greek islands, Italy (lower Pò valley, Sicily, and Sardinia), and Asia, whereas the highest concentration of individuals carrying the genetic mutations underlying thalassemia is found in the Maldives [3].

Rapid physical changes are accompanied by significant psychological changes relating particularly to the way in which the adolescent perceives himself or herself, this can be a turbulent time. Parents and others, especially sports coaches and teachers, who work with adolescents must be very sensitive to both the physical and the psychological changes taking place during this period [4].

For an adolescent with an infirmity or chronic illness, and for his family, there exist specific problems in addition to those encountered by a healthy adolescent. The painful awareness of social, professional, and relational barriers is reactivated. The feeling of failure and helplessness, low selfesteem, and anger at being a victim represent a supplementary affective burden for the adolescent and his family [5].

Thalassemia is one of the inherited hemoglobinopathies responsible for a large number of chronic illnesses throughout the world. The clinical picture of thalassemia

presents a wide range of problems. The treatment involves periodic red blood cell transfusion, daily iron chelation, and sometimes spleenectomy. It poses a very severe burden for patients with thalassemia and their families [6].

Beta-thalassemia is a chronic illness that poses excessive psychological burden to children and their families as clinical manifestations usually develop early in life and invasive procedures cause considerable suffering [7].

Especially in children, β-thalassemia major and its complications have a significant psychological impact, causing emotional burden, hopelessness, and difficulty with social integration [8].

Patients with thalassemia feel different from their peers and develop negative thoughts about their life, a sense of guilt, increased anxiety, and low selfesteem; their behavioral profile is similar to normal individuals, but many of them may develop severe psychosocial problems because of difficulties in complying with the painful chelation; male patients, in particular, show oppositional defiant disorder. Within the family, concerns for the future of a thalassemic child may contribute to worsening of relationships among members, and to increase marginalization and isolation [9].

In addition, quality of life (QoL), which is defined as an individual's perception of their position in life in the context of the culture and value systems in which they live, and in relation to their goals, and expectations, is often limited by the chronic illness [10].

Many neurotic symptomatologies have been found in children with thalassemia major in different surveys. Depressive moods and anxiety were diagnosed in children with thalassemia major [5].

Screening for anxiety and depression in patients with thalassemia is essential. Thus, appropriate treatment of these conditions may improve patients' health-related QoL [11].

The impact of thalassemia major and intermedia and their associated complications of QoL are largely known [12].

Psychological support therefore seems to help reduce the emotional burden of children with β-thalassemia major and their families [13].

Psychosocial support aimed at reducing emotional distress, improving compliance to chelation therapy, and strengthening the coping strategies for better integration into daily life is therefore necessary. Aydinok *et al.* [13] found that the frequency of psychopathology is higher in patients with thalassemia compared with the normal population, this supports the need for lifelong psychological support to prevent mental health issues among patients with thalassemia and their parents.

The recognition and management of the psychological problems that accompany chronic physical illnesses including thalassemia would optimize treatment outcomes and QoL [14].

In Egypt, thalassemia is considered the most common genetically determined hemolytic disease. Its high prevalence causes a significant burden on health resources. A few studies of children with thalassemia have shown a heightened risk of developmental and behavioral problems. However, the results vary from mild behavioral problems to obvious psychiatric disorders.

The objectives of this study were as follows: (a) to study in depth the psychological effect of thalassemia; (b) to evaluate the presence of psychiatric symptoms (including depressive symptoms, anxiety, phobic anxiety, obsessive symptoms, somatic symptoms, and hysteria) among adolescents with thalassemia; and (c) to analyze QoL of adolescents with thalassemia.

Patients and methods

Patients

This is an observational analytical case–control study, which includes 30 adolescents with a diagnosis of thalassemia, 'Cases', (patients regularly undergoing transfusion every 3 weeks and receiving regular oral chelation treatment) and another group of 30 adolescents from a gastrointestinal outpatient pediatric clinic who complained of acute gastroenteritis, 'Controls'. Patients in this study were selected from the outpatient pediatric clinic one day per week in the period from January to May 2010. Clearance from the research ethics committee was obtained and all enrolled children provided consent to participate in addition to legal guardian written consent.

Inclusion criteria

The inclusion criteria in this study were as follows:

(1) Both sexes;
(2) Age between 12 and 19 years;
(3) Agreeing to participate in this study, by obtaining an informed consent from the legal guardian and the child's consent to participate.

Exclusion criteria

The exclusion criteria in this study were as follows:

(1) Legal guardian or child Refusal to participate in this study;
(2) Current psychiatric disorder and other chronic medical conditions.

Hemoglobin fetal was determined in all participants included and cases were defined as being hemoglobin fetal positive, and controls were confirmed as being hemoglobin fetal negative.

Methods

Participants of this study were subjected to the following:

Semistructured interview

Patients and controls were interviewed using a psychiatric history-taking sheet designed at the Department of Psychiatry, Cairo University (Egypt). It includes detailed

developmental, family, educational, and past history. It also includes a mental state examination.

Patient Health Questionnaire [15]
The Patient Health Questionnaire (PHQ) is a self-administrative version of the PRIME-MD diagnostic instrument for common mental disorders. The PHQ-9 is the depression module, which scores each of the Diagnostic and Statistical Manual of Mental Disorders? - IV criteria as 0 (not at all) to 3 (nearly every day). It has been validated for use in Primary Care. It is a highly valid tool. Validity has been assessed against an independent structured mental health professional interview; a PHQ-9 score greater than 10 has a sensitivity of 88% and a specificity of 88% for major depression.

Hospital Anxiety and Depression Scale [16]
The Hospital Anxiety and Depression Scale (HADS) is a 14-item selfreport measure to assess anxiety and depressive symptoms in a simple way. Statements 2, 4, 6, 8, 11, 12, and 14 are for anxiety symptoms and statements 1, 3, 5, 7, 9, 10, and 13 are for depressive symptoms. Each statement scores from 3 (yes definitely) to 0 (not at all) (the score is reversed for statements 7 and 10), with higher scores reflecting a higher occurrence of symptoms of anxiety and depression.

Middlesex Hospital Questionnaire [17]
The Middlesex Hospital Questionnaire comprises 48 items grouped into six subscales covering the following psychiatric symptoms: free floating anxiety, phobic anxiety, obsessive symptoms, somatic symptoms, depressive symptoms, and hysteria. The items are answered as Yes, No, Sometimes, Never, and Little. The response to each item is scored as 2, 1, or 0. A total score of 9 or more in any subscale is considered sufficient to indicate that the patient has clinically significant psychiatric symptoms. It was translated into Arabic by Al Rakhawi *et al.* [18].

McGill Quality of Life Questionnaire [19]
The McGill Quality of Life Questionnaire comprises two multiitem scales. These include three subscales: general, physical, and emotional. It includes 17 questions. Each question in this questionnaire begins with a statement, followed by two opposite answers. Numbers extend from one extreme answer to its opposite. Higher scores indicate a higher (better) level of QoL. Thus, a high score for the general and emotional subscales and a high score for the physical subscale represent a high level of symptomatology/problem.

All scales were applied in the Arabic language; first, all scales were translated into Arabic and then back translated into English and revised by the study team. Tools were applied on 10 patients in a pilot study by two senior medical doctorate (MD) staff separately.

Statistical analysis
Data were collected, coded, and analyzed using SPSS software (Statistical Package for the Social Sciences; SPSS Inc., Chicago, Illinois, USA)(version 16) under Windows XP. The χ^2-test was used for the analysis of categorical data. The Pearson product–moment correlation coefficients '*r*' were calculated for the different parameters investigated [20]. The level of significance was set at $P<0.05$.

Results
Sociodemographic and clinical data
Age
The age distribution in both the groups is shown in Table 1.

Sex
The sex distribution in both groups is shown in Table 2.

Education
Education distribution in both groups is shown in Table 3.

Family history of psychiatric illness
The family history of psychiatric illness distribution in both groups is shown in Table 4.

Table 1 Age distribution in both groups

Age (years)	Minimum	Maximum	Mean	Standard deviation	*P*
Patients	12.00	15.00	13.03	1.13	1.18
Controls	12.00	15.00	12.67	0.96	

Table 2 Sex distribution in both groups

	Patients	Controls	
Sex	Number (%)	Number (%)	*P*
Female	14 (46.7)	19 (63.3)	0.194
Male	16 (53.3)	11 (36.7)	
Total	30 (100)	30 (100)	

Table 3 Education distribution in both groups

Education	Patients Number (%)	Controls Number (%)	*P*
Illiterate	6 (20)	2 (6.7)	0.047
Primary students	8 (26.7)	18 (60)	
Preparatory students	16 (53.3)	10 (33.3)	
Total	30 (100)	30 (100)	

Table 4 Family history of psychiatric illness distribution in both groups

	Patients	Controls	
Psychiatric illness	Number (%)	Number (%)	*P*
Negative family history	27 (90)	28 (93.4)	0.503
Family history of mood disorder	2 (6.7)	1 (3.3)	
Family history of psychotic disorder	0 (0.0)	1 (3.3)	
Family history of mental retardation	1 (3.3)	0 (0.0)	
Total	30 (100)	30 (100)	

Psychometric data

Patient Health Questionnaire-9

The PHQ-9 distribution in both groups is shown in Table 5

Hospital Anxiety Depression Scale

The HADS distribution in both groups is shown in Table 6.

Middlesex Hospital Questionnaire

The Middlesex Hospital Questionnaire distribution in both groups is shown in Table 7.

McGill Quality of Life Questionnaire

The McGill Quality of Life Questionnaire distribution in both groups is shown in Table 8.

Table 5 Patient Health Questionnaire-9 distribution in both groups

	Patients	Controls	
PHQ-9	Number (%)	Number (%)	*P*
No depression	0 (0.0)	28 (93.3)	<0.001
Mild depression	4 (13.3)	2 (6.7)	
Moderate depression	16 (53.4)	0 (0.0)	
Moderate-to-severe depression	9 (33.3)	0 (0.0)	
Severe depression	0 (0.0)	0 (0.0)	
Total	30 (100)	30 (100)	

PHQ-9, Patient Health Questionnaire-9.

Table 6 Hospital Anxiety Depression Scale distribution in both groups

	Patients	Controls	
	Mean ± SD	Mean ± SD	*P*
HADS total	18.70 ± 3.41	0.30 ± 1.15	<0.001
HADS anxiety	8.63 ± 1.65	0.30 ± 0.183	<0.001
HADS depression	10.07 ± 2.12	0.28 ± 1.03	<0.001

HADS, Hospital Anxiety Depression Scale; SD, standard deviation.

Table 7 Middlesex Hospital Questionnaire distribution in both groups

	Patients	Controls	
	Mean ± SD	Mean ± SD	*P*
Middlesex anxiety	9.23 ± 0.57	0.27 ± 0.83	<0.001
Middlesex phobia	5.60 ± 1.89	0.00 ± 0.00	<0.001
Middlesex obsession	3.57 ± 1.91	0.00 ± 0.00	<0.001
Middlesex somatization	7.80 ± 1.90	0.17 ± 0.913	<0.001
Middlesex depression	9.60 ± 1.48	0.63 ± 1.47	<0.001
Middlesex hysteria	4.87 ± 1.83	0.00 ± 0.00	<0.001

SD, standard deviation.

Correlation studies

The correlation between the HADS and the Middlesex Hospital Questionnaire is shown in Table 9.

The correlation between the Middlesex Hospital Questionnaire (depression) and the McGill Quality of Life Questionnaire, general and physical subscale is shown in Table 10.

Discussion

There was no statistically significant difference between the two groups with regard to age ($P = 1.18$) (Table 1). Participants from both groups were selected from the Pediatrics Outpatient Clinic.

There was no statistically significant difference between the two groups with regard to sex ($P = 0.194$) (Table 2). The majority of the patient group were men (53.3%). This was consistent with the results of Sabry and Salama [21], who found that 54% of patients with thalassemia in their study in Egypt were men.

There was a statistically significant difference between the two groups with regard to the educational level ($P = 0.047$). Twenty percent of the individuals in the patient group were illiterate, whereas only 6.7% of adolescents in the control group were illiterate (Table 3). This was in line with the study of Sabry and Salama [21]; a statistically significant difference was found in the levels of education between the patient group and the control group: 55% of cases did not attend school compared with 12% of the control group. This could be explained by the physical weakness caused by their chronic illness, and frequent blood transfusion. Another explanation for the lack of school attendance could be an overprotective parenting style among Egyptian families which is prevalent during the illness of their children. Ratip *et al.* [22] found that, in the United Kingdom, among 27 patients with thalassemia, 90% had to take time off from school because of their medical condition. In addition, thalassemia affected the scholastic performance of 70% of Indian adolescents adversely [22].

There was no statistically significant difference between both groups with regard to a family history of psychiatric illness ($P = 0.503$). The majority of adolescents in both the groups had a negative family history of psychiatric illness (90% of the patient group, 93.4% of the control group) (Table 4). This was similar to the study of Mazzone *et al.* [3], who found a statistically significant difference between a group of adolescents with thalassemia (28 patients) and

Table 8 McGill Quality of Life Questionnaire distribution in both groups

	Patients	Controls	
	Mean ± SD	Mean ± SD	*P*
McGill Quality of Life Questionnaire total	83.57 ± 11.60	128.7 ± 1.93	<0.001
McGill Quality of Life Questionnaire general	3.70 ± 0.92	9.90 ± 0.31	<0.001
McGill Quality of Life Questionnaire physical	31.60 ± 2.75	3.33 ± 3.33	<0.001
McGill Quality of Life Questionnaire emotional	48.60 ± 13.05	115.5 ± 3.99	<0.001

SD, standard deviation.

Table 9 Correlation between the Hospital Anxiety Depression Scale and the Middlesex Hospital Questionnaire

		Middlesex obsession
HADS total	R	0.393
	P	0.032
	N	30

HADS, Hospital Anxiety Depression Scale; n, number; P, P value; r, statistical parameter.

Table 10 Correlation between the Middlesex Hospital Questionnaire (depression) and the McGill Quality of Life Questionnaire (general and physical)

		McGill Quality of Life Questionnaire (general)	McGill Quality of Life Questionnaire (physical)
Mid. 6 depression	R	−0.500	−0.503
	P	0.005	0.005
	N	30	30

Mid., Middlesex.

the control group (28 normal participantss) with regard to a family history of psychological illness.

There was a statistically significant difference between the two groups with regard to PHQ-9 ($P<0.001$). All adolescents in the patients group were depressed (13.3% had mild depression, 53.4% had moderate depression, and 33.3% had moderate-to-severe depression). In contrast, only 6.7% of the participants in the control group had mild depression (Table 5). This was in line with the study of Sabry and Salama [21], who found that patients with thalassemia have three times higher likelihood of having depression. No patient with thalassemia was found to be free of depressive symptoms compared with 70% of the controls. Dysphoric moods and low selfesteem were reported by the majority of children with thalassemia [23]. Woo *et al.* [24] reported that two-third of the patients were worried about pain, death, and the unknown in a sample of 22 children with thalassemia. This conclusion was also supported by Khurana *et al.* [23], who reported that chronic illnesses such as thalassemia give rise to feelings of being different and inferior, with a consequent loss of selfesteem and increased dependence. Facial characteristics in thalassemia occur as a consequence of the expansion of bones, particularly the skull and the jaw bones. Anemia and iron overload in these patients often lead to short stature and delayed puberty. Delayed puberty is associated with other endocrine disturbances, which can cause depression. They are likely to have reduced self-esteem, feelings of difference, poor self-image, being dependent, and anxiety over issues such as pain and death. Huurre and Aro [25] observed that patients with chronic illness limiting their daily life experience more depression than those with illnesses that do not limit daily life.

There was a statistically significant difference between the two groups with regard to the HADS ($P<0.001$). Adolescents with thalassemia showed significantly higher levels of anxiety and depression than the control group (mean = 8.63 ± 1.65, 10.07 ± 2.12 and mean = 0.30 ± 0.183, 0.28 ± 1.03, respectively) (Table 6). Depression has been listed as a major cause of morbidity in thalassemia. The rate of depression in patients with thalassemia is higher than that in the controls [26]. In addition, Saravi *et al.* [27] claimed that frequent blood samplings for laboratory tests, multiple transfusions, and frequent subcutaneous injections of iron chelator drugs, which altogether can be considered severe stresses, are likely to make patients susceptible to psychological burdens namely depression and anxiety. They found that the rate of depression among patients with thalassemia was 14% in comparison with 5.5% in the control group ($P<0.001$). Aydin *et al.* [28] concluded that Hopelessness and Trait-Anxiety Scores were found to be significantly higher in adolescents with thalassemia than in control cases ($P<0.01$ and <0.05, respectively).

There was a statistically significant difference between both groups with regard to the Middlesex Hospital Questionnaire ($P<0.001$). Adolescents with thalassemia showed significantly higher levels of anxiety, phobia, obsession, somatization, depression, and hysteria (mean = 9.23 ± 0.57, 5.60 ± 1.89, 3.57 ± 1.91, 7.80 ± 1.90, 9.60 ± 1.48, and 4.87 ± 1.83, respectively) (Table 7). Moorjani and Issac [5] reported higher total neuroticism, anxiety, phobia, somatic anxiety, obsession, and depression in patients with thalassemia than in the controls. Interviews with parents of adolescents with thalassemia indicated various behavioral problems in these adolescents. Adolescents with thalassemiahad higher scores in neuroticism. Some behavioral problems were also found, along with neurotic manifestations. Adolescents with thalassemia had several physical problems, which led to stress. A recent study suggests that anxiety disorders may be more strongly related to early stress exposure, Manevich *et al.* [29]. Moussa *et al.* [30] found that children are anxious about the treatment modalities, effectiveness of iron chelation, and complications related to the iron chelation. Adolescence itself is a time that demands more adjustment skills. An illness, in addition to the existing problems, may cause an emotional outburst, which needs to be handled properly. If not, the overlooked needs may manifest as anxiety disorders. Thalassemia, being a chronic disease, can cause the same kind of anxiety and worry as other chronic illnesses such as type 1 diabetes and cancer. Hayward *et al.* [31] stated that because of the overgrowth of bones and disfigurement that occurs in the long run, a thalassemic child may confine him/herself within the home, which can manifested as a social phobia. These kinds of phobias have been documented earlier. A study carried out by Moorjani and Issac [5] revealed a marked difference in adolescents with thalassemia and adolescents without thalassemia in terms of phobia. Most of the population with thalassemia reported fear related to blood transfusions. Some of these children had a fear of death. Parents reported fear of new people and places in 33.3% of these children. Many adolescents with thalassemia may experience fear related to intravenous line insertion and subcutaneous infusion pumps. However, it is impossible for a child with thalassemia to remain symptom-free most of the time, which predisposes him or her to a certain degree of anxiety phobic reactions. Bush *et al.* [32] found that a marked difference in obsession

between adolescents with thalassemia and adolescents without thalassemia in which adolescents with thalassemia inclined more towards the negative side. Adolescents with thalassemia have frequent intrusive thoughts of death and parting from loved ones. This should be addressed because at a later stage these obsessions may result in blurring of the boundaries between internal (cognitive) and external events. Moorjani and Issac [5] claimed that adolescents with thalassemia revealed an increased level of somatic anxiety when compared with normal controls. The somatic anxiety is marked by a history of diverse physical complaints that may be psychological in origin.

There was a statistically significant difference between the two groups with regard to the McGill Quality of Life Questionnaire ($P<0.001$). Adolescents with thalassemia showed significantly lower scores in different aspects of QoL: total, general, physical, and emotional (mean = 83.57 ± 11.60, 3.70 ± 0.92, 31.60 ± 2.75, and 48.60 ± 13.05, respectively) (Table 8). Triantis *et al.* [33] stated that thalassemia can be challenging to an individual at the physical, emotional, and cognitive levels and disrupts QoL. Its frequent and complex treatment might also lead to financial burden for the individual and his/her family, which may further result in reduced adaptive and coping ability of affected children. Sachdeva *et al.* [34] stated that the overall QoL was affected in 88% of patients with thalassemia in multiple domains, including physical, psychological, social, and cognitive.

There was a significant positive correlation between the HADS and the Middlesex Hospital Questionnaire, obsession subscale ($P = 0.032$) (Table 9). This means that anxiety and depression are highly associated with the occurrence of obsessive symptoms. Messina *et al.* [35] concluded that patients with thalassemia showed a personality characterized by somatization, depression, and obsessive–compulsive traits. Ahmad *et al.* [36] found that the most common psychiatric disorders among adolescents with thalassemia were major depressive disorder and separation anxiety disorder. In addition, they found that more than 43% of the adolescents had recurrent thoughts of death.

There was a significant negative correlation between the Middlesex Hospital Questionnaire, depression subscale, and the McGill Quality of Life Questionnaire, general and physical ($P = 0.005$) (Table 10). This means that a higher degree of depression is associated with lower QoL among adolescents with thalassemia. Pakbaz *et al.* [12] found that all patients with thalassemia reported severe impairments in the QoL assessment. Feelings such as anxiety, depression, and concern with regard to one's overall health status, which had marked effects on different aspects of QoL, were the most commonly reported. In addition, Azarkeivan *et al.* [37] claimed that depression is associated with both poor physical and mental HRQoL among patients with major/intermedia β-thalassemia. Kullowatz *et al.* [38] found that the negative impact of anxiety and depression on HRQoL in patients with thalassemia is consistent with previous studies of other chronic conditions that demonstrated that individuals with comorbid medical illness and depression and anxiety show significantly greater impairment with Health related quality of life (HRQoL). In addition, Ahmad *et al.* [36] reported that psychological problems, including depression and anxiety, were significant predictors of impaired QoL.

Conclusion

Depressive and anxiety symptoms are more prevalent among adolescents with thalassemia. In addition, in the same group, there were higher degrees of free floating anxiety, phobic anxiety, obsessive symptoms, somatic symptoms, depressive symptoms, and hysteria. QoL was highly affected among adolescents with thalassemia. A higher degree of depression is associated with lower levels of QoL among adolescents with thalassemia.

Limitations

The small-sized sample in this study can be considered as one of the limitations of this study. A large-sized sample may be needed to assess other possible psychological profiles of adolescents with thalassemia. In addition, follow-up studies may be valuable in the assessment of the course and prognosis of depression and anxiety among adolescents with thalassemia.

Acknowledgements

Conflicts of interest

There is no conflict of interest to declare.

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المظاهر النفسية لدى المراهقين المصابين بمرض الثلاسيميا

يؤدى مرض الثلاسيميا ومضاعفاته الى اثر نفسى كبير، مما يتسبب في زيادة العبء العاطفي ، واليأس ، وصعوبة في الاندماج الاجتماعي.
ويشتمل هذا البحث على دراسة مقارنة تضم ثلاثين من المراهقين المصابين بمرض الثلاسيميا ومجموعة أخرى من عدد مماثل من المراهقين من العيادة الخارجية (عيادة الجهاز الهضمي) كمجموعة ضابطة. هذا وقد تم جمع البيانات الخاصة بالمفحوصين ,مثل السن والجنس ومستوي التعليم والتاريخ المرضي العائلى والتاريخ المرضي السابق.
وقد تم عمل الاتى للمفحوصين: استبيان صحة المريض، ومقياس القلق والاكتئاب بالمستشفى ، واستبيان ميدلسكس المستشفى ، واستبيان ماكجيل لجودة الحياة.
وقد كشفت النتائج عن ان مجموعة المراهقين المصابين بالثلاسيميا كانوا يعانون من الاكتئاب والقلق بدرجة ذات دلالة إحصائية بالمقارنة مع المجموعة الضابطة.
كما وجد ايضا فروق ذات دالة إحصائية فيما يتعلق باستبيان ميدلسكس المستشفى، واستبيان ماكجيل لجودة الحياة.
كما اوضحت هذه الدراسة أيضا ان اعراض القلق والرهاب والاكتئاب والجسدنة والهستيريا كانت اكثر انتشارا ضمن مجموعة المراهقين المصابين بالثلاسيميا. وقد أثر ذلك بالطبع على جودة الحياة بين افراد نفس المجموعة.