JKBMS, Vol.5, No.2, P.12-18, 2019 https://doi.org/10.56056/amj.2019.93

Depression in adolescents with beta-thalassemia major in Erbil city-Iraq

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Abstract

Background and objectives: Depression in adolescent is commonly prevalent with higher rates among patients with thalassemia. The aim of this study is to identify the prevalence of depression in adolescent with beta thalassemia major attending thalassemia main center in Erbil city /Iraq. **Methods:** A cross-sectional study with comparison group was carried out in Thalassemia main center, Ainkawa primary health care center, and Raparin pediatric teaching hospital in Erbil city for the period from April to August 2018. One hundred adolescent of thalassemia patients and that of normal ones ageing 10-19 years were enrolled. Patient Health Questionnaire - 9 used as a screening tool for depression and those with scores of ≥10 classified to have depression. **Results:** The prevalence of depression among thalassemia adolescents was 67%, compared with 21% of comparison group. Mild depression was the most frequently reported category among both groups while moderate and severe ones were significantly higher among thalassemia patients. Gender, educational level, residency in rural area and suicidal risk were significantly associated with adolescence depression in both study groups. **Conclusions:** Depression among thalassemia adolescents is three folds higher than that of comparison group. Screening of depression could be a fundamental component of the health services provided for thalassemia patients to optimize the quality of their life.

Key wards: Adolescence, Beta-thalassemia major, Depression.

Introduction

Beta-thalassemia major is one of the most common autosomal recessive disorders worldwide[1]. It is characterized by the defective production of hemoglobin and excessive destruction of red blood cells[2]. It is found in more than 60 countries with high prevalence among children in the Mediterranean, Middle-East including Iraq, central and south Asia[3, 4]. Recent surveys suggested that globally 23,000 babies are born each year with β-thalassemia major[5]. Depression is widely seen as one of the most common psychological complications in the context of any chronic disease including thalassemia patients, especially in the second decade of life[6]. It has an impact on their social behavior, psychological functioning[7] and quality of life[8]. Many factors could contribute to depression among thalassemia adolescents; having a chronic disease, burden of treatment modalities including frequent hospital visits for transfusion, subcutaneous infusions of chelating agents, complications of the disease, uncertainties about the future and the expectation of early death resulting from the disease complications[9]. The behavior problems of children with thalassemia that predispose them to depression could be also related to the parents revealed in their overprotection manner[10]. The psychological welfare of thalassemia patients had been studied in several studies and revealed a very high prevalence of depression and anxiety among them[11]. The prevalence of depression is about 5 percent among adolescents at any given time. Adolescence girls are more prone to develop depression than boys after the onset of puberty with doubled rates[12]. Depression among adolescents could interfere with many aspects of their life reflected on their academic performance, social behavior, and future health outcomes, including depression in adulthood, substance abuse, early pregnancy and parenthood, and increased suicide risk. Furthermore, the cost of medical care will be much higher if depression remained undiagnosed and unmanaged timely and effectively[13]. While the prevalence rates of depression have been increased in youth, it is still underdiagnosed and undertreated[14]. The aim of the study was to determine the prevalence of depression among adolescents with Beta- thalassemia major.

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Patients and methods

A cross-sectional study with comparison group was carried out in Thalassemia main center, Ainkawa primary health care (PHCC) and Raparin pediatric teaching hospital in Erbil city for the period from April to August 2018. A convenience non-randomly selected method used a sample of 200 adolescents aged 10-19 years of both sexes were enrolled. The study group comprised one hundred thalassemia patients attending thalassemia main center during the days visited by the researcher of the study period. Those included were patients diagnosed to have Beta thalassemia major, regularly undergoing transfusion every 3 weeks, receiving regular oral chelation, and having a complete medical record. A comparison group included 100 adolescents attending Ainkawa PHCC and Raparin pediatric teaching hospital either presenting with acute mild illnesses or escorting other patients excluding patients with comorbid diseases and very sick patients. The data were collected through direct interview with all participants of both study groups. Furthermore, the information of the medical records of thalassemia patient was utilized as another source for data collection. The questionnaire used in this study consisted of two parts: The first part was a structured questionnaire prepared by the researcher and completed for all participants of both study groups to cover the risk factors of depression, those related to socio demographic characteristics; age, gender, level of education, residency, divorced parents, dead father, smoking, socioeconomic status (SES of children's families were divided in to three main categories; low status ≤ 5 scores, medium status 6-10 scores and high status 11-15 scores), past history of psychological diseases, family history of psychological diseases, and suicidal risk. Further questions completed for thalassemia patients only included history of comorbid diseases; heart diseases, diabetes mellitus, hypogonadism, short stature, hypothyroidism, hepatitis, previously infected hepatitis C, splenectomy, iron deficiency anemia and Vitamin D deficiency. The second part included Patient Health Questionnaire – 9 (PHQ-9) being used as a screening instruments for depression in adolescents for all the participants of both study groups15. The overall scores (out of 36) were calculated for every participant and accordingly were classified to have: no depression (scores of 0-4), mild depression (scores 5- 9), moderate depression (scores 10-14), moderately severe depression (scores 15-19), and severe depression (scores 20 and more). In this study, the participants diagnosed to have depression were those with PHQ-9 scores of 10 and more because had a sensitivity of 88% and a specificity of 88% for major depression 15. Data were analyzed using the Statistical Package for Social Sciences (SPSS, version 22). Chi square test of association was used to compare proportions. Fisher's exact test was used when the expected count of more than 20% of the cells of the table was less than 5. A p-value of ≤ 0.05 was considered statistically significant. The study protocol was approved by the Ethics committee at Kurdistan Higher Council of Medical Specialties.

Results

One hundred adolescent patients affected with thalassemia, and another 100 normal ones (comparison group) had been included in the study. The mean± SD of depression score of thalassemia group (7.75 ±5.21)) found to be significantly (p-value < 0.001) higher than the mean ± SD score of the comparison group (2.95 ± 4.75). Table(1) showed that the prevalence of depression among thalassemia group (67%) was significantly (p-value < 0.001) higher than that of the comparison group (21%). Mild depression was the most frequently reported category among both groups. Meanwhile, the prevalence of moderately severe and severe depression among thalassemia adolescents was significantly (p-value < 0.001) higher than comparison group.

https://doi.org/10.56056/amj.2019.93

Table (1): Depression categories and prevalence of depression among the two study groups.

Depression categories	Thalassemia		Control		Total		
	No.	(%)	No.	(%)	No.	(%)	p-value
None	3	(3.0)	42	(42.0)	45	(22.5)	
Minimal	30	(30.0)	37	(37.0)	67	(33.5)	
Mild	35	(35.0)	11	(11.0)	46	(23.0)	
Moderate	19	(19.0)	7	(7.0)	26	(13.0)	
Moderately severe	9	(9.0)	1	(1.0)	10	(5.0)	
Severe	4	(4.0)	2	(2.0)	6	(3.0)	< 0.001
Prevalence of depression							
No	33	33	79	79	112	(56)	
Yes	67	67	21	21	88	(44)	< 0.001
Total	100	100	100	100	200	(100)	

As shown in Table (2), the higher rates of depression had been found among those aged (12-15) years. The prevalence of depression found to be significantly associated with gender (p-value = 0.012,) being more among female adolescents (52.4%). Those residing in the rural areas were (54%), while no consistent pattern and no clear conclusion can be observed between level of education and the prevalence of depression. No significant association was detected between depression and the SES (p-value = 0.058), divorced parent (p-value = 0.192), and dead father (p-value = 0.733).

Table (2): Prevalence of depression by socio-demographic variables among both study groups.

socio-demography	No depression		Depression		Total		
	No.	(%)	No.	(%)	No.	(%)	p-value
Age							
≤ 11	33	(62.3)	20	(37.7)	53	(100.0)	
12-15	54	(56.3)	42	(43.8)	96	(100.0)	
16-19	25	(49.0)	26	(51.0)	51	(100.0)	0.396
Gender							
Female	50	(47.6)	55	(52.4)	105	(100.0)	
Male	62	(65.3)	33	(34.7)	95	(100.0)	0.012
Education							
Illiterate	10	(76.9)	3	(23.1)	13	(100.0)	
Primary	47	(47.5)	52	(52.5)	99	(100.0)	
Secondary	55	(64.7)	30	(35.3)	85	(100.0)	
Others	0	(0.0)	3	(100.0)	3	(100.0)	0.007*
Residency							
Rural	29	(46.0)	34	(54.0)	63	(100.0)	
Urban	83	(60.6)	54	(39.4)	137	(100.0)	0.054
SES							
Low	57	(49.1)	59	(50.9)	116	(100.0)	
Medium	50	(66.6)	25	(33.3)	75	(100.0)	
High	5	(55.6)	4	(44.4)	9	(100.0)	0.058
Divorced parent							
No	112	(56.6)	86	(43.4)	198	(100.0)	
Yes	0	(0.0)	2	(100.0)	2	(100.0)	0.192*
Dead father							
No	108	(56.3)	84	(43.8)	192	(100.0)	
Yes	4	(50.0)	4	(50.0)	8	(100.0)	0.733*

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Table (3) revealed that no significant association was detected between the prevalence of depression among adolescents of both study group and the presence of previous history of psychological diseases (p-value > 0.999). Meanwhile the prevalence of depression among those with no family history of psychological disease was 46.4% compared with 17.6% among those with family history (p-value = 0.022). While All participants who had history of referral due to suicidal risk found to have depression, compared with 42% of those with no history of such referral (p-value = 0.003).

Table (3): Prevalence of depression by risk factors among both study groups.

Risk factors	No depression		Depression		Total		
	No.	(%)	No.	(%)	No.	(%)	p-value
Previous history of Psychological disease							
No	111	(56.1)	87	(43.9)	198	(100.0)	
Yes	1	(50.0)	1	(50.0)	2	(100.0)	> 0.999*
Family history of psychological diseases							
No	98	(53.6)	85	(46.4)	183	(100.0)	
Yes	14	(82.4)	3	(17.6)	17	(100.0)	0.022
Referral / suicide risk							
No	112	(58.0)	81	(42.0)	193	(100.0)	
Yes	0	(0.0)	7	(100.0)	7	(100.0)	0.003*

No significant association had been found between the prevalence of depression among thalassemia patients with the presence of comorbid diseases: heart diseases, hypogonadism, short stature, diabetes, hypothyroidism, hepatitis, previously infected hepatitis C, splenectomy and iron deficiency anemia, Table (4).

Table (4): Prevalence of depression by history of diseases among patients with thalassemia.

History of diseases	No depression		Depression		Total		
	No.	(%)	No.	(%)	No.	(%)	p-value
Heart disease							
No	30	(33.3)	60	(66.7)	90	(100.0)	
Yes	3	(30.0)	7	(70.0)	10	(100.0)	> 0.999*
Hypogonadism							
No	32	(33.0)	65	(67.0)	97	(100.0)	
Yes	1	(33.3)	2	(66.7)	3	(100.0)	> 0.999*
Short stature							
No	32	(33.3)	64	(66.7)	96	(100.0)	
Yes	1	(25.0)	3	(75.0)	4	(100.0)	> 0.999*
Diabetes							
No	33	(33.3)	66	(66.7)	99	(100.0)	
Yes	0	(0.0)	1	(100.0)	1	(100.0)	> 0.999*
Hypothyroidism							
No	32	(33.0)	65	(67.0)	97	(100.0)	
Yes	1	(33.3)	2	(66.7)	3	(100.0)	> 0.999*
Hepatitis							
No	28	(31.1)	62	(68.9)	90	(100.0)	
Yes	5	(50.0)	5	(50.0)	10	(100.0)	0.291*
Previously infected Hepatitis C							
No	28	(35.4)	51	(64.6)	79	(100.0)	
Yes	5	(23.8)	16	(76.2)	21	(100.0)	0.314
Splenectomy							
No	19	(32.2)	40	(67.8)	59	(100.0)	
Yes	14	(34.1)	27	(65.9)	41	(100.0)	0.839
Iron deficiency anemia							
No	73	(77.7)	21	(22.3)	94	(100.0)	
Yes	6	(100.0)	0	(0.0)	6	(100.0)	0.338*

Discussion

Depression is one of the most common mental health conditions that can interfere with an individual's quality of life. Sever forms of depression can lead to suicide and increased risk of mortality[16]. Thalassemia adolescents face many stressors in their whole life that could predispose them to depression[17]. Both are related to disease itself and its complication and those of adolescence age period[8].

In Erbil city /Iraq, a comprehensive and continuous services are provided free of charge for all thalassemia patients throughout a public specialized tertiary care. Using (PHQ) -9 questionnaire, the current study revealed that more than two thirds of adolescent thalassemia patients (67%) having depression compared with 21% among comparison group, a result which is higher than reported by previous studies; Ghanizadeh et al. 49%[18] .and Yengel et al. 49%[8], Aydınok et al. 23%[19], Shargi et al. 51%[20], while a study conducted in Pakistan by Aziz K et al showed almost the same prevalence71%[21] and Cakaloz et al. detected depressive disorder in 15% of the children with thalassemia [22]. Depression found to be more prevalent (p-value = 0.012) in this study among female adolescents (52.4%) than male (43.7%) of both study groups. Adolescence is a particularly critical period for depression among adolescent

https://doi.org/10.56056/amj.2019.93

girls when girls have nearly twice the rate of depression compared with boys[23, 24]. On the other hand, prevalence of depression among adolescents living in rural areas (54%) found to be more than those living in urban area (39.4%), previous research has identified particular rural community characteristics, to be relevant to mental health outcomes. These include: poorer physical health, rapid social change caused by globalization, higher poverty and unemployment, fewer educational opportunities, fewer social opportunities and social exclusion for defying community norms, youth migrating to cities, and lack of health facilities and specialists[25, 26]. Relatively, hereditary factors found to be responsible for the onset of depression among adolescence[27]. Yet in this study no significant association had been found between family history of psychological diseases and depression, on the other hand thalassemia patients face further threatening conditions rather than hereditary that could be attributed to the onset of depression; those related to the complications of the disease or the consequences of its therapy[27]. Anemia and iron overload in thalassemia patients often leads to short stature and delayed puberty, three out of 4 with short stature and 2 out of three with hypogonadism in this study found to have depression. At adolescence period, thalassemia individuals are more self-conscious of their physical appearance and their delayed sexual development having the feeling of being different[27]. A study conducted by Carballo J et al. found that adolescents with major depressive disorder are at increased risk for suicidal behavior[28], which was also evident in the present study that all adolescence of both thalassemia and comparison group with history of suicidal referral categorized to have depression. Adolescence is a critical period encompassing both physical and psychological development and establishing the future adult life. Adolescents usually develop negative thoughts about their lives, experience feelings of loneliness, and isolation that interfere with their integration into their surroundings and subsequently predisposing them to depressive symptoms, such thoughts and feelings could be superimposed by the burden of living permanently with chronic illness like thalassemia major[29]. Thalassemia adolescence patients need to be supported through tailored psychological and social programs intended to help them to overcome all the problems whether related to their age group or that of chronic illness and its complication leading them to productive and hopeful life and to ensure their integration and acceptance within their community. Upgrading such services may need applying further tools encompassing the mental health status, particularly of adolescents, to achieve an optimal improvement in the quality of their life, enhancing their school performance, and ensuring a productive adult life for them.

Conclusions

Depression found to be prevalent among two thirds of adolescence thalassemia patients representing three folds that of normal teens. Female gender and those with suicidal risk are more prone to develop depression. Preventive programs including screening for depression among thalassemia adolescence could help ameliorating the effect of this chronic disease, helping them to be incorporated into productive successful life.

References

1. Hakeem GLA, Mousa SO, Moustafa AN, Mahgoob MH, Hassan EE. Health-related quality of life in pediatric and adolescent patients with transfusion-dependent ß-thalassemia in Upper Egypt (single center study). Health and Quality of Life Outcomes. 2018; 16(1):59.

2. Hamed H, Ezzat O, Hifnawy T. Psychological manifestations in adolescents with thalassemia. Middle East Current Psychiatry. 2011; 18(4):237-44.

3. Ismail DK, El-Tagui MH, Hussein ZA, Eid MA, Aly SM. Evaluation of health-related quality of life and muscular strength in children with beta thalassemia major. Egyptian Journal of Medical Human Genetics. 2018; 19(4):353-7.

4. Al-Allawi NA, Hassan KM, Sheikha AK, Nerweiy FF, Dawood RS, Jubrael J. beta-Thalassemia Mutations among Transfusion-Dependent Thalassemia Major Patients in Northern Iraq. Molecular biology international. 2010. doi: 10.4061/2010/479282.

5. De Sanctis V, Kattamis C, Canatan D, et al. –Thalassemia Distribution in the Old World: an Ancient Disease Seen from a Historical Standpoint. Mediterranean Journal of Hematology and Infectious Diseases. 2017; 9(1): e2017018.

6. Moafi A, Mobaraki G, Sadr Taheri S, Heidarzadeh A, Shahabi I, Majidi F. Zinc in Thalassemic Patients and Its Relation with Depression. Biological trace element research. 2008; 123: 8-13.

https://doi.org/10.56056/amj.2019.93

7. Platania S, Gruttadauria S, Citelli G, Giambrone L, Di Nuovo S. Associations of Thalassemia Major and satisfaction with quality of life: The mediating effect of social support. Health Psychology Open. 2017; 4(2): doi: 10.1177/2055102917742054.

8. Yengil E, Acipayam C, Kokacya MH, Kurhan F, Oktay G, Ozer C. Anxiety, depression and quality of life in patients with beta thalassemia major and their caregivers. International Journal of Clinical and Experimental Medicine. 2014; 7(8):2165-2172.

9. Siddiqui SH, Ishtiaq R, Sajid F, Sajid R. Quality of life in patients with thalassemia major in a developing country. Journal of the College of Physicians and Surgeons Pakistan. 2014; 24(7), 477-480.

10. Yalçn SS, Durmusoglu-Sendogdu M, Gümrük F, Ünal S, Karg E, Tugrul B. Evaluation of the Children with –Thalassemia in Terms of Their Self-concept, Behavioral, and Parental Attitudes. Journal of Pediatric Hematology/Oncology. 2007; 29(8):523-8.

11. Maheri A, Sadeghi R, Shojaeizadeh D, Tol A, Yaseri M, Rohban A. Depression, Anxiety, and Perceived Social Support among Adults with Beta-Thalassemia Major: Cross-Sectional Study. Korean Journal of Family Medicine. 2018; 39(2):101-7.

12. Brent DA, Birmaher B. Adolescent Depression. New England Journal of Medicine. 2002; 347(9):667-71.

13. Lewandowski RE, Acri MC, Hoagwood KE, et al. Evidence for the Management of Adolescent Depression. Pediatrics. 2013; 132(4): e996-e1009.

14. Clark MS, Jansen KL, Cloy JA. Treatment of childhood and adolescent depression. Am Fam physician. 2012; 86(5):442-8.

15. Kroenke K, Spitzer RL, Williams JB. The PHQ-9: validity of a brief depression Severity measure. J Gen Intern Med. 2001; 16:606–13.

16. Lim GY, Tam WW, Lu Y, Ho CS, Zhang MW, Ho RC. Prevalence of Depression in the Community from 30 Countries between 1994 and 2014. Scientific Reports. 2018; 8(1):2861.

17. Pattanashetti M, Mugali J, Pattanashetty N, Patil S A. Study of Severity of Depression in Thalassemia Patients, International Journal of Indian Psychology. 2017; 4(2): 85.

18. Ghanizadeh A, Khajavian S, Ashkani H. Prevalence of psychiatric disorders, depression, and suicidal behavior in child and adolescent with thalassemia major. Journal of pediatric hematology/oncology. 2006; 28(12):781-4.

19. Aydinok Y, Erermis S, Bukusoglu N, Yilmaz D, Solak U. Psychosocial implications of Thalassemia Major. Pediatr Int. 2005; 47:84–89.

20. Sharghi A, Karbakhsh M, Nabaei B, Meysamie A, Farrokhi A. Depression in mothers of children with thalassemia or blood malignancies: a study from Iran. Clin Pract Epidemiol Ment Health. 2006; 2:27.

21. Aziz K, Sadaf B, Kanwal S. Psychosocial problems of Pakistani parents of Thalassemic children: a cross sectional study done in Bahawalpur, Pakistan. Biopsychosoc Med. 2012; 6:15.

22. Cakaloz B, Cakaloz I, Polat A, Inan M, Oguzhanoglu NK. Psychopathology in thalassemia major. Pediatr Int. 2009;51: 825–28.

23. Rohde P, Beevers CG, Stice E, O'Neil K. Major and minor depression in female adolescents: onset, course, symptom presentation, and demographic associations. J Clin Psychol. 2009; 65(12):1339-49.

24. Magklara K, Bellos S, Niakas D, et al. Depression in late adolescence: a cross-sectional study in senior high schools in Greece. BMC Psychiatry. 2015; 15:199.

25. Boyd CP, Aisbett DL, Francis K, Kelly M, Newnham K. Issues in rural adolescent mental health in Australia. Rural and Remote Health. 2006; 6(1): 501.

26. Rajkumar S, Hoolahan B. Remoteness and issues in mental health care: Experience from rural Australia. Epidemiologia e Psichiatria Sociale. 2004; 13(2): 78-82.

27. Koutelekos J, Haliasos N. Depression and Thalassemia in children, adolescents and adults Health Science Journal. 2013; 7(3): 239-246.

28. Carballo J, Muñoz-LorenzO L, Blasco-Fontecilla H, Lopez-Castroman J, García-Nieto R, Dervic K. Continuity of Depressive Disorders from Childhood and Adolescence to Adulthood: A Naturalistic Study in Community Mental Health Centers. Prim Care Companion CNS Disord. 2011; 13(5): PCC.11m01150.

29. Matthews T, Danese A, Wertz J, et al. Social isolation, loneliness and depression in young adulthood: a behavioural genetic analysis. Social psychiatry and psychiatric epidemiology. 2016; 51(3):339-48.

https://doi.org/10.56056/amj.2019.93