

Anxiety and depression affects life and sleep quality in adults with beta-thalassemia

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Abstract

Purpose The aim of this study was to investigate the association of anxiety and depression symptoms with health related quality of life (HRQoL) and sleep quality in patients with beta-thalassemia.

Methods In a cross-sectional study between 2006 and 2007, 292 thalassaemic patients were assessed for symptoms of anxiety and depression (Hospital Anxiety Depression Scale; HADS), HRQoL (Short Form-36, SF-36) and quality of sleep (Pittsburgh Sleep Quality Index; PSQI). Linear regression models were used to determine possible predictive value of high anxiety and depressive symptoms on HRQoL and sleep quality, separately.

Results Mental and physical quality of life scores were predicted by symptoms of depression and somatic comorbidities. Total sleep quality was predicted by anxiety symptoms and somatic comorbidities.

Conclusions Screening for anxiety and depression in patients with thalassemia is essential. Further studies should

test if appropriate treatment of these conditions may improve patients HRQoL and sleep quality or not.

Keywords Anxiety · Depression · Thalassemia · Sleep quality · Health related quality of life

Introduction

Beta thalassemia is the commonest form of hemolytic anemia [1], and every year approximately 60,000 thalassaemic babies are born worldwide [2]. With the availability of better transfusion regimen, iron chelation therapy, proper management of complications and good supportive care, it is now possible for a thalassaemic patient to have a near normal life span with a good health related quality of life (HRQoL) [1]. As a result, attention has shifted to the well being of the patients with thalassemia [3].

A high rate of psychological distress has been reported in patients with thalassemia in different surveys. Depressive moods and anxiety were diagnosed in children with thalassemia major in a study conducted in Italy [4]. Same results were found in a similar study conducted in Singapore [5]. It is also observed that subjects with chronic illness limiting their daily life, experience more depression than those without limiting daily life [6]. Another study conducted in Utrecht, Netherlands [7] points to the depressive coping styles in thalassaemic adolescents. But in India, such a study is a lay felt.

Anxiety and depression have been shown to decrease well being [8, 9]. Previous studies in patients with thalassemia, however, have mainly focused on the HRQoL [10], few data exists on the impact of these symptoms on HRQoL [10], and we did not any study regarding their impact on sleep quality of these patients.

Considering the lack of data about the impact of anxiety and depression on the wellbeing of adult patients with beta

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thalassemia, we designed this study to investigate the association between these psychological symptoms and HRQoL and sleep quality perceived by this population.

Method and material

In a cross-sectional study between 2006 and 2007, 320 adult patients with beta thalassemia were invited to participate in our study, from whom, 292 (91.2%) agreed to participate. The subjects were selected through a census sampling method. The study was approved by the Ethics Committee of the Blood Transfusion Research Center, Tehran, Iran, and informed consent was obtained from all the participants. The inclusion criteria for subjects were stable clinical condition and absence of any acute concomitant disease or infection.

Independent variables

Anxiety and depression

Symptoms of anxiety and depression were assessed using the translated version of Hospital Anxiety Depression Scale (HADS). HADS was previously validated for the Iranian population [11]. The HADS contains 14 items and two subscales: anxiety and depression. Each item is scored from 0 to 3, giving maximal scores of 21 for anxiety and depression [12]. Scores of ≥ 11 on either subscale are considered a significant case of psychological morbidity (clinical caseness) [13].

Somatic comorbidities

Somatic comorbidities were assessed by using Ifudu score. The Ifudu comorbidity scale is a numerical index for monitoring the patients with chronic illnesses and assessing the medical comorbidity. The authors originally evaluated 13 major organ systems. The diseases evaluated included ischemic heart diseases, other cardiovascular problems (such as hypertension, congestive heart failure, cardiomyopathy, other nonischemic diseases), respiratory diseases, autonomic neuropathy (gastroparesis, obstipation, diarrhea, cystopathy, and orthostatic hypotension), neurological problems, cerebrovascular accidents or residual stroke, AIDS, infections in liver, pancreas, gallbladder (excluding the infection of the vascular access site or peritonitis), hematologic problems (excluding anemia), spinal abnormalities, low back problems or arthritis, vision impairment (decreased visual acuity to blindness), limb amputation, and genitourinary diseases. Each item is scored from 0 to 3. Total comorbidity index was calculated with SUM points for all 12 organ systems, after deleting item related to hematologic diseases. As a result, range of the scores was between 0 and 36. The higher was the index, the greater was

the comorbidity [14].

Dependent variable

The checklist contained questions about the demographic data (age, gender, marital status, living place, and educational status), weight, height, and thalassemia related data (medications, thalassemia type, duration of disease, HCV). We also used scales of quality of life (Short Form-36) and quality of sleep (Pittsburgh Sleep Quality Index; PSQI).

Quality of life

HRQOL of patients was measured using the Medical Outcomes Study 36-Item Short Form Health Survey (SF-36) [15]. The SF-36 is a generic multidimensional measure of HRQOL that contains eight subscales representing physical functioning, social functioning, role limitations due to physical health problems, role limitations due to emotional problems, mental health, vitality, bodily pain, and general health perceptions. Higher scores of each subscale (0 – 100) indicating better HRQOL. The physical and mental components of eight scales were combined into physical component summary (PCS) and mental component summary (MCS) scores [16]. A total SF-36 score has been also introduced and used previously [17]. The SF-36 has proved reliable and valid in Iranian general population [18] and also Iranian thalassemic patients [19].

Table 1 Sociodemographic, clinical and psychological status at baseline

	Frequency	Percent
Sex		
Male	139	47.6
Thalacemia type		
Major	118	40.4
Marital status		
Married	47	16.1
Academic degrees		
Family income		
300 US \$ or less	67	22.9
Desferal		
Yes	125	42.8
Folic acid		
Yes	117	40.1
Calcium D		
Yes	106	36
Vitamine C		
Yes	75	25.7
HCV		
Positive	84	28.8

Sleep quality

Quality of sleep was measured using the PSQI. This self-administered questionnaire assesses quality of sleep during the previous month and contains 19 self-rated questions yielding seven components: subjective sleep quality, sleep latency, sleep duration, sleep efficiency, sleep disturbances, use of sleep medications and daytime dysfunction. Each component is scored from 0 to 3, yielding a global PSQI score between 0 and 21, with higher scores indicating poorer quality of sleep [20]. This questionnaire has been translated and validated for Iranian population [21].

Statistical analysis

The analyses were performed using SPSS version 13.0 for Windows. The Mann-Whitney U-test was applied to com-

pare differences in morbidity between groups. Two linear regression models were used to determine possible predictive value of anxiety and depression on Quality of life and sleep, separately. $P < 0.05$ considered to be significant.

Results

Most patients were women, had thalassemia intermedia, were single, had monthly income more than 300 US \$, with a mean (SD) age was 25 ± 6 . Demographic and clinical data of the participants are presented in Tables 1 and 2. The mean (SD) of SF-36, HADS and PSQI have been shown in table 2.

Group I anx, compared with group II anx, and also group I dep, compared with group II dep, showed poorer quality of life and sleep quality. (Tables 3, 4).

Table 2 Sociodemographic, clinical and psychological status at baseline

	Minimum	Maximum	Mean	Std. Deviation
Sociodemographics				
Age	16	53	25.4	6.9
BMI	14	31	20.4	2.9
Sleep quality				
Sleep quality	0	3	1.0	0.7
Sleep delay	0	3	1.7	1.0
Sleep effective duration	0	3	0.3	0.7
Sleep efficacy	0	2	0.0	0.2
Sleep disorder	0	3	1.4	0.6
Sleep drugs use	0	3	0.4	0.8
Daytime dysfunction	0	3	1.4	0.7
Total score	2	14	6.0	2.6
Psychological symptoms				
Anxiety	0	18	7.6	3.9
Depression	0	18	5.9	4.0
Quality of life				
Physical function	0	100	75.4	24.2
Role limitations	13	100	73.8	23.4
Bodily pain	0	100	72.7	26.2
Social function	0	100	73.5	24.0
General mental health	8	88	56.8	17.2
Role limitations due to emotional problem	0	100	72.1	24.8
Vitality energy or fatigue	10	90	56.3	17.0
General health perceptions	0	100	58.4	21.0
Physical health summary score	12	98	68.4	18.1
Mental health summary score	8	95	61.2	15.9
Total score	0	1	0.2	0.4
Somatic comorbidities				
Total score	12	30	15.4	3.2

Table 3 Association between comorbid anxiety and perceived health

	Comorbid anxiety				Sig. (2-tailed)
	No		Yes		
	Mean	Std. Deviation	Mean	Std. Deviation	
Sleep quality					
Sleep quality	1.0	0.7	1.5	0.9	0.004
Sleep delay	1.7	1.1	1.7	0.9	0.975
Sleep effective duration	0.3	0.7	0.5	0.8	0.218
Sleep efficacy	0.0	0.2	0.0	0.0	0.491
Sleep disorder	1.3	0.6	2.0	0.5	<0.001
Sleep drugs use	0.3	0.8	0.7	1.2	0.012
Daytime dysfunction	1.4	0.7	1.3	0.8	0.694
PSQI Total Point	5.8	2.6	7.4	2.3	0.013
Quality of life					
Physical Function	77.9	21.9	55.7	32.4	0.005
Role limitations	75.9	22.0	56.8	27.9	0.005
Bodily pain	75.0	25.2	53.4	27.2	<0.001
Social function	76.5	22.4	49.4	23.3	<0.001
General mental health	59.2	15.7	37.3	16.1	<0.001
Role limitations due to emotional problem	74.9	23.4	49.2	24.5	<0.001
Vitality energy or fatigue	58.3	16.0	40.5	16.4	<0.001
General health perceptions	59.5	21.0	49.8	18.8	0.039
Physical health summary score	70.5	16.5	52.1	22.0	0.001
Mental health summary score	63.2	14.9	44.4	14.5	<0.001
Total score	69.2	15.2	49.3	18.2	<0.001
Somatic comorbidities					
Total score	77.9	21.9	55.7	32.4	0.005

Regressors of quality of life

Physical health component summary score was predicted by depression ($B=-16.770$, 95% CI=-0.965--26.690, $p=0.001$) and somatic comorbidities ($B=-1.979$, 95% CI=-0.965--2.993, $p<0.001$). Mental health component summary score was predicted by depression ($B=-16.698$, 95% CI=-7.035--26.360, $p=0.001$) and somatic comorbidities ($B=-0.977$, 95% CI=0.011--.964, $p=0.05$). (Table 5)

Regressors of quality of sleep

Total sleep quality was predicted by anxiety ($B=2.694$, 95% CI=1.176-4.211, $p=0.001$) and somatic comorbidities ($B=0.235$, 95% CI=0.070-0.401, $p=0.006$). (Table 5)

Discussion

According to our study, high anxiety and depression symptoms were associated with poorer HRQoL and sleep

quality, and this association was independent of the somatic comorbidities. Similar results have been reported in children with thalassemia. These data suggest the recognition and management of the psychological problems accompany thalassemia [10].

The findings of this study about some impaired subdomains of SF-36 in the presence of anxiety and depression in thalassemic patients is consistent with previous studies in other chronic conditions [8, 9, 22]. It has been demonstrated that in individuals with medical illness, comorbid anxiety cause impairment in HRQoL [23]. The link between anxiety and poor sleep quality in thalassemic patients in our study is also in consistent with previous reports in the other chronic conditions [24, 25].

In chronic conditions, the negative impact of anxiety/depression on HRQoL may be explained by their impact on functioning in a number of areas, including work and family functioning, social relationships [26, 27], productivity [28, 29], and physical disability [30]. The impact of depression on HRQoL is more than chronic conditions such as diabetes, hypertension and chronic lung disease [31].

Table 4 Association between comorbid depression and perceived health

	Comorbid depression				Sig. (2-tailed)
	No		Yes		
	Mean	Std. Deviation	Mean	Std. Deviation	
sleep quality					
Sleep Quality	0.9	0.6	1.7	0.9	<0.001
Sleep Delay	1.7	1.1	1.7	0.8	0.789
Sleep effective duration	0.3	0.7	0.7	0.9	0.025
Sleep efficacy	0.0	0.2	0.1	0.4	0.043
Sleep disorder	1.4	0.6	1.8	0.7	0.001
Sleep drugs use	0.3	0.8	0.6	1.2	0.073
Daytime dysfunction	1.4	0.7	1.3	1.0	0.482
Total score	5.8	2.5	7.5	3.1	0.003
Quality of life					
Physical Function	78.0	22.4	46.6	26.3	<0.001
Role limitations	76.0	21.9	48.4	25.6	<0.001
Bodily pain	75.0	24.6	45.5	29.6	<0.001
Social function	76.8	21.0	35.9	24.5	<0.001
General mental health	59.0	15.5	31.8	15.4	<0.001
Role limitations due to emotional problem	74.4	23.0	45.8	30.4	0.002
Vitality energy or fatigue	58.4	15.8	32.5	10.8	<0.001
General health perceptions	59.8	20.1	42.5	24.8	0.001
Physical health summary score	70.6	16.4	43.8	18.9	<0.001
Mental health summary score	63.2	14.3	37.4	15.1	<0.001
Total score	69.2	14.8	41.5	16.9	<0.001
Somatic comorbidities					
Total score	15.1	2.7	18.1	5.1	<0.001

Table 5 Logistic regression for prediction of quality of life and sleep quality

	Unstandardized Coefficients (B)	Sig.	95% Confidence Interval for B	
			Lower Bound	Upper Bound
			Quality of life total score	
Somatic comorbidities	-1.738	<0.001	-2.665	-0.811
Depression	-17.124	<0.001	-26.197	-8.052
Mental health component summary				
Somatic comorbidities	-0.977	0.050	-1.964	0.011
Depression	-16.698	0.001	-26.360	-7.035
Physical health component summary				
Somatic comorbidities	-1.979	<0.001	-2.993	-0.965
Depression	-16.770	0.001	-26.690	-6.851
Sleep quality				
Somatic comorbidities	0.235	0.006	0.070	0.401
Anxiety	2.694	0.001	1.176	4.211

The goal of health care in thalassemia is not only to strive for survival, but also to increase patient HRQoL as a central

goal [8, 10, 19]. According to the literature, thalasseemics have to shoulder high psychosocial burden associated with

the disease [32], and according to the current study, recognition and treatment of psychological symptoms should be addressed to improve HRQoL and sleep quality. Therefore, we suggest that treatment of these comorbidities be taken into consideration. Effective psychotherapeutic interventions addressing emotional problems in thalassemia should be considered.

Literature provides information about the causes of anxiety in thalassemia. Thalassemia as a disease of chronic nature can impose anxiety and worry [26]. Thalassemic patients may feel more distressed from their treatment than from the disease itself. The patients may react to thalassemia related distress with mal-adaptive coping strategies, indicating feelings of helplessness and hopelessness, future expectations and perceived social support [26]. Cause of anxiety in thalassemia may be treatment modalities, effectiveness of iron chelation and complications related to the iron chelation. Illnesses superimposed on the thalassemia problems causes an emotional outburst, and if is not handled properly, the overlooked needs may become manifested as anxiety disorders [33]. Moreover, financial burden due to health care use in thalassemic patients may impose patients to great concern. The disease affects the education, works, activities of daily life and sports life. The patients are likely to suffer from reduced self-esteem, feelings of difference, poor self-image, being dependent and anxiety over issues such as pain and death [32]. The high psychological burden of thalassemic patients has been related to impairments in main domains like education, sports, family life and social life [32]. Anxiety and depression in thalassemia may be related to symptoms, medications and treatment, and frequent absence from society. Adults with thalassemia face problems related to career, finding partners, establishing a family (due to infertility), and waning social support as parents age [10]. Anxiety in thalassemia may be due to physical abnormalities, worry about pain and death [32].

Although recognition and management of the psychological problems that accompany thalassemia has been suggested [8], it is the scarcity of data on this aspect of life in thalassemia which has limited implementation of proper psychological intervention strategies for the patients [32]. Psychosocial interventions for thalassemics is hoped to integrate them into the social mainstream and help them in leading healthy, creative and fulfilling lives [32]. All in all, thalassemic patients – especially those with poor psychiatric adaptation with dysphoric moods and low self-esteem - need psychosocial support [32], and the integration of mental health care to thalassemia clinics is recommended.

Nowadays, it is an interest to increase the rate of patients with chronic medical conditions who receive psychological consultations. A more comprehensive mode of treatment in thalassemia includes psychological factors and enhances the psychosocial adaptation of thalassemic patients and their families [33]. Such collaborative care models have been shown to be effective in other chronic conditions [34],

but, unfortunately, no published data exists on the efficacy of such interventions in thalassemia, and further research in this field is welcomed.

In conclusion, higher symptoms of anxiety and depression are associated to poorer perceived HRQoL and sleep quality among adult patients with thalassemia. Therefore, assessment of anxiety and depression should be part of the routine medical examination in this condition.

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