Healthy Lifestyle Behaviors in Patients with Thalassemia Major

Talasemi Hastalarında Sağlıklı Yaşam Biçimi Davranışları

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ABSTRACT

Healthy Lifestyle Behaviors promotion purposes usual health and wellness position of the persons. No previous studies have been reported to determine healthy lifestyle behaviors in patients with thalassemia major. Therefore, this study is suggested to contribute to the recent literature by providing significant data about patients with thalassemia major for nurses. Because there is a limited number of studys in the literature, this study aims to investigate the healthy lifestyle behaviors in patients with thalassemia major.

This descriptive study was conducted with 151 follow-up and treated patients with thalassemia major (9 years old and above) in two hospitals in Antalya. The study data was analyzed with a Personal Information Form and the Healthy Lifestyle Behaviors Scale-II.

The Cronbach Alpha reliability coefficient was 0.93. The total scale score was 2.48±0.03. There was a statistically significant difference between the mean scores and educational level, employment status, number of siblings, place of residence of participants ($p<0.05$).

The mean total score of patients with thalassemia major healthy lifestyle behaviours scale was found to be a moderate level. Therefore, health professionals especially nurses who work with patients with thalassemia major are considered to undertake a great responsibility to assist them to maintain healthy lifestyle behaviors. According to the results obtained from the research, it is suggested that training and consulting programs be prepared for the improvement of lifestyles in patients with thalassemia major and the effectiveness of this training be evaluated, information about the factors affecting and their healthy lifestyle behaviours be reflected to practical processes by nurses.

Keywords: Thalassaemia Major, Healthy Lifestyle Behaviors, Nurse.

ÖZET

Sağlıklı yaşam biçimi davranışlarının geliştirilmesi bireyin genel sağlık ve iyilik durumunu iyileştirmeyi amaçlar. Talasemi hastalarında sağlıklı yaşam biçimi davranışlarını belirleyen çalışmaya rastlanmamıştır. Bu nedenle çalışma literatüre önemli katkı sağlamakta ve talasemi hastalarının yararına, hemşireler için önemli veriler sunmaktadır. Literatürde bu konudaki bilgi açığını gidermeye yönelik planlanan bu çalışmanın amacı, talasemi hastalarında sağlıklı yaşam biçimi davranışlarını belirlemektir.

Bu tanımlayıcı çalışma, Antalya İli'nde iki farklı hastanede takip ve tedavi edilen (9 yaş ve üzeri) 151 talasemi hastası ile gerçekleştirildi. Araştırmanın verileri, Kişisel Bilgi Formu ve Sağlıklı Yaşam Biçimi Davranışları Ölçeği-II kullanılarak elde edildi.

Ölçeğin genel cronbach alpha güvenirlik katsayısı 0,93 idi. Katılımcıların ölçek toplam puan ortalaması 2,48±0,03'dir. Eğitim, çalışma durumu, kardeş sayısı, oturduğu yerleşim yeri ile puan ortalamaları arasında istatiksel olarak anlamlı bir fark vardı ($p<0,05$).

Talasemi hastalığına sahip bireylerin sağlıklı yaşam biçimi davranışları puan ortalamaları orta düzeyde bulunmuştur. Bu doğrultuda talasemi hastaları ile çalışan hemşireler, hastalarına sağlıklı yaşam biçimi davranışı kazandırma konusunda bilgilendirmede önemli bir konuma sahiptirler. Araştırmadan elde edilen sonuçlar doğrultusunda hemşireler tarafından, talasemi hastalığına sahip bireylerin yaşam tarzı değişimine yönelik eğitim ve danışmanlık programlarının hazırlanması, eğitimin etkinliğinin değerlendirilmesi ve sağlıklı yaşam biçimi davranışlarını etkileyen faktörler konusundaki bilgilerin uygulamalara yansıtılması önerilmektedir.

Anahtar Kelimeler: Talasemi Major, Sağlıklı Yaşam Biçimi Davranışları, Hemşire.

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INTRODUCTION AND AIM

Thalassaemia is a genetic autosomal recessive blood disorder caused by abnormal formation of hemoglobin.[1-4] It has been estimated that there are 200.000 patients with thalassemia major only in Mediterranean countries, the studies have also shown that there are approximately 226 million thalassaemia carriers and roughly 300.000 pediatric patients with thalassemia major around the world. Moreover, there are almost 1.400.000 thalassaemia carriers and 4.500 patients with thalassemia major in Turkey.[5, 6]

It has recently been suggested that promoting healthy lifestyle behaviors is key to prevent diseases and to lead a healthy life. This approach relies on adopting healthy lifestyle behaviors to maintain one's physical and mental well-being.[7] The study results indicated that almost half of the deadly diseaes are caused by unhealthy lifestyle behaviors, which highlights the significance of ensuring a healthy lifestyle to protect from diseases and to improve health.[8]

A healthy lifestyle is commonly defined as maintaining control over all lifestyle behaviors that might influence one's health and well-being and organizing daily life activities by choosing appropriate behaviors of their own accord.[9] Healthy lifestyle behaviors and activities primarily include spiritual development, personal health responsibility, physical activity, diet, interpersonal support, and stress management.[10, 11] Healthy lifestyle behaviors (HLB) are first initiated in family environment and developed with education.[12] These behaviors should become habitual with the support of medical personnel and self-help of individuals.[13]

Thalassemia major is a chronic disease requirement of lifelong erythrocyte transfusions. The symptoms and complications of the disease, and the difficulties of the longterm treatment negatively effect the quality of life in patients with thalassemia major. For the last 30 years, there have been substantial improvements in the treatment of thalassaemia due to developments in science and technology and medical care, which eventually resulted in an increased life expectancy.[2, 4, 6, 14] However, increased life expectancy brought an increase in the number of adult patients with thalassemia major and changes in their needs. Patients, especially with the adolescence and onwards, commonly expect to start a family, get education, and find jobs.[15, 16] But, challenges equally arise with the increasing expectations.

The study results have demonstrated that patients with thalassemia major had lower levels of satisfaction of self-image, which adversely affects their physical, emotional, and social status.[2, 3, 15] Khurana et al. (2006) stated that 68% of thalassaemia patients were dissatisfied with their body image.[15] Ayoub et al. (2013), on the other hand, reported that 80% of thalassaemia patients had psychological problems.[2] Tefler et al. (2005) conducted a study with pediatric thalassaemia patients and found that approximately half of the children who had physical deformities experienced social problems.[17] These problems negatively affect not only the patient but also their families but it also underlined the urgency of quality of life and health promotion for thalassaemia patients.[18] It was widely reported that thalassaemia patients had lower levels of quality of life.[2, 6, 14, 18] Healthy lifestyle behaviors were studies with pregnant women, adolescent mothers and adolescents, patients with chronic diseases, cancer patients, students, nurses, and workers.[7-11, 19-22] However, it was found that healthy life behaviors in thalassaemia patients haven't been previously investigated.

Healthy lifestyle behaviors in patients with chronic diseases are vital to ensure a better quality of life and the course of disease. Hematology nurses carry out a significant role in providing care and treatment for patients with thalassemia and it is imperative for them to grasp the healthy life behaviors of their patients to manage and cope with the disease properly. However, it was not found a study in the literature

studying the health lifestyle behaviors of patients with thalassemia major. On the other hand, it would be reasonable to argue that life expectancy and quality of life of these patients can only be enhanced with a thorough understanding of their ideal healthy lifestyle behaviors. Therefore, it is considered elemental to conduct the present study to investigate the healthy lifestyle behaviors of patients with thalassemia major. This study aims to investigate the healthy lifestyle behaviors of patients with thalassemia major.

MATERIALS AND METHODS

Design

This study is a descriptive study conducted to investigate the healthy lifestyle behaviors of patients with thalassemia major.

Sample

This study was conducted in the Hematology Outpatient Clinic at Akdeniz University Hospital and in the Thalassemia Centre in Ministry of Health Antalya Education and Research Hospital, Antalya. The study universe consisted of all 9 years old and above patients with thalassemia major who were being treated or monitored in these two hospitals. No sampling method has been chosen and the study sample included 151 patients with thalassemia major who consented to participate in the study after they had been instructed about the purpose of the study.

Instruments

The data was collected by using a personal information form and the Healthy Lifestyle Behaviors Scale-II.

The Healthy Lifestyle Behaviors Scale-II was developed by Walker et. al. in 1996 and its Turkish version was tested for reliability and validity by Bahar, Beser, Gordes, Ersin and Kıssal in 2008. The scale consists of 52 items and 6 subdimensions which are personal health responsibility, physical activity, diet, spiritual development, interpersonal relations, and stress management. Higher scores indicated higher levels of significance of healthy lifestyle behaviors. All items in the scale are affirmative and it is measured on 4 point likert scale with 1 as the lowest and 4 as the highest score, never (1), sometimes (2), often (3), and regularly (4). The Alpha reliability coefficient of the scale is 0.94 and it varies between 0.79 and 0.87 for the subdimensions. As far as the results of this particular study were concerned, the Cronbach Alpha coefficient was found to be 0.93 and it was 0.80 for personal health responsibility subdimension, 0.83 for physical activity subdimension, 0.63 for diet subdimension, 0.80 for spiritual development subdimension, 0.78 for interpersonal relations subdimension, and 0.66 for stress management subdimension.

The personal information form inquired sociodemographic characteristics of the participants such as gender, age, educational status, marital status, number of children, employment status, place of residence, number of siblings, number of other patients with thalassemia major in the family (if any), number of carriers in the family (if any), and number of family members with other chronic diseases (if any).

Data Collection

The questionnaire was prepared in accordance with the aim of the study. The clarity of the questioners was tested with a pre-interview with 10 patients who were later excluded from the sample. The study data were collected with face to face interviews by the researcher. Data were collected via interviews in the waiting room of the outpatient clinic and the thalassaemia centre. Participants were given sufficient time to answer the questions,with approximately 10-15 minutes taken to complete the questionnaire.

Analysis

The study data were analyzed with SPSS (23.0). Variance Analysis (ANOVA), t test,

Kruskall-Wallis Analysis, Tukey test and Mann-Whitney U Tests were carried out to observe whether or not healthy lifestyle behaviors of thalassaemia patients differed in regard to patient characteristics and the prognosis. In the evaluation of results, $p<0.05$ value was accepted as significant.

RESULTS AND DISCUSSION

Table 1 presents the sociodemographic characteristics of the participants. As shown in the table, 52.6% of the participants who were older than 20 years old were employed. The average age of participants was 21.2±8.8 years. Antropometric measurement averages were as follows: height (cm): 156.9±11.5 (Min:123, Max:180), weight (kg) : 50.3±13.9 (Min:21, Max: 110), BMI (kg/m^2): 75% normal, 13.2% thin.

Table 1. Sociodemographic Characteristics of Patients with Thalassemia Major (n=151)

Characteristics	n	%
Gender		
Female	**90**	**59.6**
Male	61	40.4
Age Groups (Year)		
≤12	16	10.6
13-20	**75**	**49.6**
21-30	38	25.2
≥31	22	14.6
Educational status		
Primary school	**88**	**58.3**
High school	45	29.8
University	18	11.9
Marital status		
Married	16	10.6
Single	**135**	**89.4**
Number of Children		
None	**135**	**89.4**
1	6	4.0
2	9	6.0
3	1	0.6
Employment status		
Employed	37	24.5
Unemployed	**114**	**75.5**
Place of residence		
City Center	**65**	**43.0**
Town	55	36.4
Village	31	20.6
Number of siblings		
1	20	13.2
2	**48**	**31.8**
3	45	29.8
≥4	38	25.2

Table 2 illustrates the patient characteristics. 88.0% of the participants in the sibling were patients with thalassemia major. 29.8% of the participants in the mother-father and %43.8 of the their in the mother-father-sibling were thallassaemia carriers.

Table 2. Characteristics of Patients

Characteristics	n	%
Other Family Members with Thallassaemia (n=50)		
Mother	3	6.0
Father	3	6.0
Sibling	**44**	**88.0**
Thallassaemia Carriers in the Family (n=128)		
Mother	9	7.1
Father	4	3.0
Sibling	19	14.8
Mother-Father	**38**	**29.8**
Mother-Father-Sibling	**56**	**43.8**
Child	2	1.5

Table 3 shows the mean of the total score Healthy Lifestyle Behaviors Scale-II and mean of the subdimension' scores. The lowest mean score was 1.95±0.05 for physical activity subdimension and the highest mean score was 2.81±0.04 for spiritual development subdimension.

Table 3. Distribution of the Healthy Lifestyle Behaviors Scale-II mean scores (n=151)

HLBS II	X±SD	Min.-Max.
Scale Mean Score	2.48±0.03	1.4 - 3.83
Subdimensions		
Personal Health	2.38±0.04	1.22 - 3.89
Physical Activity	**1.95±0.05**	**1.00 - 4.00**
Diet	2.38±0.03	1.22 - 3.78
Spritiual Development	**2.81±0.04**	**1.44 - 4.00**
Interpersonal Relations	2.79±0.04	1.67 - 4.00
Stress Management	2.48±0.04	1.44 - 3.89

The patient characteristics were analyzed in regard to the mean scores of HLBS II and subdimensions (table 4) and it was found that there was a significant difference in several subdimensions ($p<0.05$). It was noted that the mean score of 21-30 year old group in interpersonal relations subdimension (3.05±0.51) was found higher than others (p=0.006). College graduates among patients had deliberately higher than other participants mean scores (2.72±0.42) of HLBS II (p=0.011). Moreover, they had significantly higher mean scores in Personal health Responsibility (p=0.009), Spiritual development (p=0.002) and Interpersonal Relations (p=0.001) subdimensions. It was additionally stated that employed patients had higher HLBS II mean scores (2.62±0.44) in comparison to the unemployed group (p=0.035). It was suggested that there was a significant difference between HLBS II (p=0.043), Personal Health Responsibility (p=0.049), Physical activity (p=0.010) and Stress Management (p=0.021) subdimensions in relation to the place of residence. The patients with fewer siblings had significant differences in HLBS II (p=0.009), Spiritual development (p=0.014), Interpersonal Relations (p=0.002), and Stress Management (p=0.005) subdimensions.

Table 4. A Comparative Analysis of Sociodemographic Characteristics and HLBS II Mean Scores (N=151)

Descriptive Characteristics	n	%	Personal Health Responsibility X±SD	Physical Activity X±SD	Diet X±SD	Spritiual Development X±SD	Interpersonal Relations X±SD	Stress Management X±SD	Total SYBD II X±SD
Gender									
Female	90	59.6	2.45±0.59	1.99±0.60	2.41±0.48	2.80±0.63	2.81±0.55	2.54±0.50	2.51±0.45
Male	61	40.4	2.29±0.54	1.91±0.65	2.35±0.47	2.82±0.58	2.79±0.54	2.41±0.51	2.45±0.43
			t=1.649	t=0.714	t=0.737	t=0.207	t=0.273	t=1.546	t=0.954
			p=0.297	p=0.531	p=0.518	p=0.678	p=0.785	p=0.926	p=0.792
Age Groups									
≤12	16	10.6	2.24±0.60	1.91±0.59	2.35±0.56	2.65±0.60	2.54±0.52	2.42±0.56	2.37±0.50
13-20	75	49.7	2.38±0.58	2.04±0.65	2.42±0.48	2.80±0.59	2.74±0.55	2.50±0.50	2.50±0.45
21-30	38	25.2	2.39±0.55	1.86±0.54	2.31±0.40	2.92±0.65	3.05±0.51	2.54±0.50	2.53±0.41
≤31	22	14.6	2.50±0.55	1.87±0.68	2.41±0.54	2.77±0.58	2.75±0.49	2.40±0.51	2.47±0.49
			KW=1.98	KW=2.42	KW=1.52	KW=3.19	KW=12.59	KW=1.89	KW=2.50
			p=0.581	p=0.489	p=0.676	p=0.363	**p=0.006**	p=0.595	p=0.475
Educational status									
Primary school	88	58.3	2.28±0.56	1.91±0.63	2.38±0.49	2.70±0.56	2.68±0.52	2.43±0.50	2.42±0.43
High school	45	29.8	2.47±0.58	2.05±0.56	2.40±0.45	2.87±0.64	2.82±0.55	2.51±0.51	2.53±0.45
University	18	11.9	2.66±0.50	1.96±0.73	2.35±0.49	3.24±0.56	3.26±0.41	2.71±0.46	2.72±0.42
			KW=9.44	KW=3.03	KW=0.45	KW=12.18	KW=16.33	KW=5.803	KW=8.95
			p=0.009	p=0.220	p=0.800	**p=0.002**	**p=0.000**	p=0.055	**p=0.011**
Marital status									
Married	16	10.6	2.35±0.51	1.81±0.51	2.29±0.49	2.84±0.63	2.67±0.49	2.26±0.36	2.49±0.36
Single	135	89.4	2.39±0.58	1.98±0.63	2.39±0.47	2.81±0.60	2.82±0.55	2.51±0.52	2.50±0.45
			t=0.203	t=0.891	t=0.840	t=0.142	t=0.912	t=1.915	t=0.958
			p=0.839	p=0.373	p=0.401	p=0.887	p=0.362	p=0.055	p=0.338

Table continued

Number of Children									
1	6	37.5	2.31±0.50	1.90±0.58	2.11±0.49	2.35±0.38	2.33±0.43	2.26±0.22	2.22±0.28
2	9	56.3	2.27±0.48	1.72±0.40	2.33±0.44	2.85±0.43	2.79±0.55	2.32±0.31	2.40±0.29
3	1	6.2	2.11±0.50	2.25±0.49	2.22±0.43	1.89±0.52	2.56±0.54	2.00±0.50	2.20±0.29
None	135	89.4	2.40±0.58	1.97±0.64	2.40±0.48	2.84±0.61	2.82±0.55	2.51±0.52	2.51±0.45
			KW=0.76	KW=1.68	KW=2.22	KW=6.72	KW=5.255	KW=3.948	KW=3.733
			p=0.859	p=0.641	p=0.528	p=0.083	p=0.154	p=0.267	p=0.292
Employment status									
Employed	37	24.5	2.55±0.59	1.97±0.64	2.34±0.44	3.12±0.55	3.02±0.54	2.61±0.52	2.62±0.44
Unemployed	114	75.5	2.33±0.56	1.95±0.62	2.40±0.47	2.71±0.59	2.73±0.53	2.44±0.50	2.44±0.44
			t=2.009	t=0.133	t=0.636	t=3.732	t=2.901	t=1.738	t=2.131
			p=0.334	p=0.478	p=0.757	p=0.486	p=0.929	p=0.920	**p=0.035**
Place of residence									
City Center	65	43.0	2.45±0.64	2.07±0.70	2.33±0.51	2.82±0.64	2.85±0.58	2.49±0.52	2.52±0.49
Town	55	36.4	2.43±0.51	1.99±0.54	2.47±0.40	2.86±0.53	2.82±0.47	2.59±0.48	2.55±0.39
Village	31	20.5	2.16±0.48	1.67±0.48	2.33±0.52	2.70±0.66	2.66±0.47	2.28±0.47	2.32±0.40
			F=3.083	F=4.754	F=1.562	F=0.702	F=1.359	F=3.943	F=2.997
			p=0.049	**p=0.010**	p=0.213	p=0.497	p=0.260	**p=0.021**	**p=0.043**
Number of Siblings									
1	20	13.2	2.47±0.63	2.23±0.65	2.43±0.48	2.98±0.59	2.86±0.59	2.67±0.55	2.62±0.48
2	48	31.8	2.42±0.54	1.97±0.61	2.38±0.50	2.91±0.59	2.95±0.51	2.52±0.49	2.55±0.43
3	45	29.8	2.48±0.61	1.99±0.69	2.40±0.39	2.85±0.56	2.85±0.55	2.57±0.48	2.54±0.43
≥4	38	25.2	2.18±0.50	1.77±0.49	2.35±0.54	2.55±0.61	2.52±0.48	2.25±0.47	2.28±0.39
			F=2.371	F=2.560	F=0.147	F=3.653	F=5.089	F=4.416	F=4.004
			p=0.073	p=0.057	p=0.932	**p=0.014**	**p=0.002**	**p=0.005**	**p=0.009**

For patients with thalassemia like all patients with chronic diseases, healthy lifestyle behaviors are vitally important for the course of the disease and quality of life of the patients. A review of literature demonstrated that the healthy lifestyle behaviors of individuals with thalassaemia haven't been studied so far. This study, therefore, was conducted to investigate the healthy lifestyle behaviors of individuals with thalassaemia.

In several other studies conducted with individuals with a chronic disease, it was found that the healthy lifestyle behaviors were being practiced at moderate levels.[8, 20, 21, 23, 24] Similarly, the mean score of the scale in our study were found to be quite moderate, 2.48±.44. Thalassemia major is a chronic disease requirement of lifelong erythrocyte transfusions. This often causes the patient to come to the hospital. In this case, it is negative effect on their quality of life.[2, 4, 6, 14] It is thought that this is especially effective when the average score is not high.

Personal health responsibility is an important factor that shows to what extent individuals undertake the responsibility of their own health, which might be affected by a number of variables like age, gender, educational status, family type, social support status, marital status etc.[7, 8, 10, 11, 21] Altay et al. (2015) and Küçükberber et al. (2011) found that age is particularly influential in developing and maintaining healthy life behaviors.[9, 24] On the contrary, Hwang et al. (2015) stated that age doesn't significantly influence HLB scores.[20] It was concluded in this study that age is relevant only in relation with interpersonal relations subdimension and that 21-30 years old individuals had higher scores in comparison to other age groups.

It was also found that individuals with chronic diseases had better HLB results when they were educated.[25] Drevenhorn et al. (2007) reported that HLB mean scores increased in individuals with hypertension after they participated in education programs.[25] Considering the fact that nurses are also educators, they play a significant role in educating individuals with chronic diseases. That individuals with thalassaemia had lower HLB mean scores accounts for their incapacity to practice such behaviors in their daily lives. As nurses meet these individuals at least once a month, they should initiate education programs to instruct them about the disease, coping strategies, and the course of the disease and closely monitor the process. Kim et al. (2014) 0and Hwang et al. (2015) conducted similar studies with individuals with chronic diseases who were found to have the highest scores in the spiritual development subdimension and the lowest scores in the personal health responsibility.[20, 21] Onat, Aba (2014) reported that the participants had the highest score in the spiritual development subdimension and the lowest mean score in physical activity subdimension.[19] In our study, the participants had the highest mean scores in spiritual development and the lowest mean scores in physical activity. Life expectancy has prolonged in patients with thalassemia in recent years due to recent developments in medical care and technologies, which eventually resulted in enhanced quality of life and patient expectations.[4, 6, 14-16] Additionally, Turkish people are quite religious and spiritual and therefore religious practices like praying or seeking refuge in Islamic belief are among the major coping strategies of patients with chronic disorders and their relatives, which is considered to explain the higher mean scores of spiritual development.[26, 27]

Chronic anemia in patients with thalassemia major causes restrictions in their daily life activities.[1, 6, 18] Jafari et al. (2008) and Sobota et al. (2011) conducted a study on the quality of life of patients with thalassemia and reported that a majority of participants had lower scores of physical and mental subdimensions.[28, 29] Although 75% of all patients in our study had a normal BMI, it was also noted that the participants had the lowest scores in physical activity subdimension, which was associated with the decrease in physical capacity and activity intolerance resulted from anemia.

A positive significant correlation was found between educational status and HLB in many other studies and individuals with higher educational status had higher HLB mean scores. [9, 19, 20, 21, 24, 25] In our study, it was concluded that university graduates had significantly higher HLB scale mean scores in comparison to other participant groups and they had significantly higher scores in personal health responsibility, spiritual development, and interpersonal relations, which, after all, confirmed the results of previous studies. The individuals with higher educational status were reported to have better interpersonal relations, a better understanding of their medical condition, better coping skills with the restrictions caused by the disease, and better adaptation to the treatment procedures and education programs.[10, 20]

Küçükberber et al. (2011) argued that socioeconomical status and employment positively influenced HLB and similarly Hwang et al.(2015) reported that social support had positive effects on HLB. [20, 24] 24.5% of the participants in our study were employed and 52.6% of them were older than 20 years old. HLB scale mean scores of employed patients in our study were higher in comparison to other groups. When individuals spend time in work environment away from the tranquility of home, they make new friends, share with others, and earn their own living, which will certainly enhance the healthy lifestyle behaviors of patients.

Environmental factors as a component of the Health Promotion Model are believed to influence the acquisition of health promotion behaviors.[7] The results of our study already illustrated a significant difference between HLBS II mean scores and the mean scores of physical activity and stress management subdimensions in regard to the place of residence. It was noted that the mean score of participants living in the village was found lower than others. People who live in city centers have an easier access to medical services and health promotion programs. Individuals also benefit from certain public services such as education, health, transportation, communication, and physical activities in the city centers. Taking advantage of these possibilities will enable the individual to feel safe. It is believed that this confidence is influenced by the higher score of individuals living in the city. This determines whether or not patients with thalassemia can undertake the responsibility of their own health and contribute to the improvement of their medical conditions, which eventually positively affects their healthy lifestyle behaviors and confirms the results of our study.

Karadamar et al. (2014) suggested that the number of siblings is an important determinant of healthy lifestyle behaviors while Altay et al. (2015) and Özkan, Yılmaz (2008) claimed that the number of family members influences the healthy lifestyle behaviors.[7, 9, 30] In our study, on the other hand, individuals with fewer siblings had higher mean scores in spiritual development and interpersonal relations subdimensions. Patients with thalassemia may not receive the support they need in a crowded family, which may bring about inadequate levels of healthy lifestyle behaviors. The effect of higher numbers of family members on HLB may be explained with economical reasons increase and it may be additionally stated that with more people in the house, individuals can't spend enough time and energy to take care of their own health.

CONCLUSION

In light of the results of our study, it was reported that patients with thalassemia had higher scores of healthy lifestyle behaviors if they had better educational levels, they were living in city centers, they were employed and they had fewer siblings. It was also found that there were educational level, employment status, number of siblings, place of residence that might influence their healthy lifestyle behaviors. It is suggested that patients with thalassemia embrace healthy lifestyle behaviors and participate in education programs and consultation services. Therefore, nurses should play a

significant role in helping the patients adopt healthy lifestyle behaviors and provide counseling and education programs on disease management and coping strategies. According to the results obtained from the research, it is suggested that training and consulting programs be prepared for the improvement of lifestyles in patients with thalassemia major and the effectiveness of this training be evaluated, information about the factors affecting and their healthy lifestyle behaviours be reflected to practical processes by nurses. At the same time, it may be suggest to conduct studies evaluating the effectiveness of these programs. Also, trainings about healthy lifestyle can be arranged to relatives of patients.

Methodological issues and study limitations

This research was conducted at two hospitals in Antalya, Turkey. The results can only be generalized to patients with thalassemia major at this city and cannot be generalized to patients with thalassemia major in Turkey. It is suggested that studies with larger groups are conducted to analyse healthy lifestyle behaviors in patients with thalassemia major.

Ethical Considerations

The hospital management granted a permission in writing and an informed consent was sought from the participants. Additionally, an ethical approval was obtained from Akdeniz University Noninvasive Clinical Research Board of Ethics (04/06/2010-6).

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REFERENCES

1. Asadi, F., & Askari, M. (2015). The effectiveness of cognitive behavioral therapy (CBT) group training in mental health among thalassemia patients in Bandar Abbas. *Jamaican Journal of Science and Technology*, 26, 150-162.
2. Ayoub, M. D., Radi, S. A., Azab, A. M., Abulaban, A. A., Balkhoyor, A. H., Seif-eleslam, W. B., et al. (2013). Quality of life among children with beta-thalassemia major treated in Western Saudi Arabia. *Saudi Medical Journal*, *34*(12), 1281-1286.
3. Nederi, M., Hormozi, M., Ashrafi, M., & Amamdadi, A. (2012). Evaluation of mental health and related factors among patients with beta-thalassemia major in South East of Iran, *Iranian Journal Psychiatry*, 7(1), 47-51.
4. Smiers, F.J., Krishnamurti, L., & Lucarelli, G. (2010). Hematopoietic stem cell transplantation for hemoglobinopathies: current practice and emerging trends, *Pediatric Clinics Of North America*, 57(1), 181-205.
5. Yeşilipek, A. (2014). Hematopoetic stem cell transplantation in patients with beta thalassemia major, *Archive and Survey Journal*, 23(1), 49-59.
6. Ansari, S.H., Baghersalimi, A., Azarkeivan, A., Nojomi, M., & Hassanzadeh, R.A. (2014). Quality of life in patients with thalassemia major, *Iranian Journal of Pediatric Hematology Oncology*, 4(2), 57-63.
7. Karadamar, M., Yiğit, R., & Sungur, M.A. (2014). An analysis of the healthy lifestyle behaviors of adolescents, *Anadolu Nursing and Health Sciences Journal*, 17(3), 131-139.
8. Savaşan, A., Ayten, M., & Ergene, O. (2013). Healthy lifestyle behaviors and desperation in coronary arterial patients, *Journal of Psychiatry Nursing*, 4(1), 1-6.
9. Altay, B., Çavuşoğlu, F., & Güneştaş, İ. (2015). Healthy life behaviors of nurses in a medicine faculty hospital and related factors, *Dokuz Eylül University Nursing Faculty E-Journal*, 8(1), 12-18.
10. Kim, H.J., Choi-Kwon, S., Kim, H., Park, Y.H., & Koh, C.K. (2015). Health-promoting lifestyle behaviors and psychological status among Arabs and Koreans in the United Arab Emirates, *Research in Nursıng & Health*, 38, 133-141.
11. Yi, M., & Kim, J. (2013). Factors influencing health-promoting behaviors in Korean breast cancer survivors, *European Journal of Oncology Nursing*, 17(2), 138-145.
12. Beydağ, K.M., Uğur, E., Sonakın, C., & Yürügen, B. (2014). Effects of health and life course on the healthy lifestyle behaviors of university students, *Gümüşhane University Health Sciences Journal*, 3(1), 599-609.
13. Bahar, Z., Beşer, A., Gördes, N., Ersin, F., & Kıssal, A. (2008). Reliability and validity of Healthy Life Behaviors Scale II, *Cumhuriyet University Nursing School Journal*, 12(1), 1-13.
14. Lyrakos, G.N., Vini, D., Aslani, H., & Drosou-Servou, M. (2012). Psychometric properties of the specific thalassemia quality of life instrument for adults, *Patient Preference and Adherence*, 6, 477-497.
15. Khurana, A., Katyal, S., & Marwaha, R.K. (2006). Psychosocial burden in thalassaemia, *Indian Journal of Pediatrics*, 73(10), 877-880.
16. Pakbaz, Z., Treadwell, M., Yamashita, R., Quirolo, K., Foote, D., & Quill, L. (2005). Quality of life in patients with thalassemia intermedia compared to thalassemia major, *Annals New York Academy of Sciences*, 1054, 457-461.
17. Tefler, P., Constantinidou, G., Andreou, P., Christou, S., Modell, B., & Angastiniotis, M. (2005). Quality of life in thalassemia, *Annals New York Academy of Sciences*, 1054, 273-282.
18. Majid, S., & Abidi, M. (2013). Quality of life and coping styles of care-givers of patients suffering from thalassemia major, *International Journal Medical Pharmaceutical Sciences*, 3(10), 41-48.
19. Onat, G., & Aba, Y.A. (2014). Health-promoting lifestyles and related factors among pregnant women, *Turk Journal Public Health*, 12(2), 69-79.
20. Hwang, W.J., Saeng Hong, O., & Rankin, S.H. (2015) Predictors of health-promoting behavior associated with cardiovascular diseases among Korean blue-collar workers, *Asia-Pacific Journal of Public Health*, 27(2), 691-702.
21. Kim, C., Park, J., & Kang, S.W. (2014). Health-Promoting lifestyles and cardio-metabolic risk factors among

international students in South Korea, *Collegian*, 22(2), 215-223.
22. Sivrikaya, A.H., Sivrikaya, S., & Altun, Ö.Ş. (2013). An analysis of healthy life behaviors in physical education and sports school students, *Balıkesir Journal of Health Sciences*, 2(3), 133-138.
23. Kang, S.W., & Yoo, J.S. (2012). Health-promoting lifestyle and depression in metabolic syndrome patients in Korea, *International Journal of Nursing Practice*, 18(3), 268-274.
24. Küçükberber, N., Özdilli, K., & Yorulmaz, H. (2011). An analysis of the healthy life style behaviors of cardiac patients and related factors, *Anadolu Journal of Cardiology*, 11, 619-626.
25. Drevenhorn, E., Bengston, A., Allen, J.K., Sa¨Ljo, R., & Kjellgren, K.I. (2007). Counselling on lifestyle factors in hypertension care after training on the stages of change model, *European Journal of Cardiovascular Nursing*, 6(1), 46-53.
26. Efe, E., İşler, A., Sarvan, S., Başer, H., & Yeşilipek, A. (2013). Complementary and alternative medicine use in children with thalassaemia, *Journal of Clinical Nursing*, 22(5-6), 760-769.
27. Post-White, J., Fitzgerald, M., & Hageness, S. (2009). Complementary and alternative medicine use in children with cancer and general and specialty pediatrics, *Journal of Pediatric Oncology Nursing*, 26(1), 7-15.
28. Jafari, H., Lahsaeizadeh, S., Jafari, P., & Karimi, M. (2008). Quality of life in thalassemia major: reliability and validity of the persian version of the sf-36 questionnaire, *Journal of Postgraduate Medicine*, 54(4), 273-275.
29. Sobota, A., Yamashita, R., Xu, Y., Trachtenberg, F., Kohlbry, P., Kleinert, D.A., et al. (2011). Quality of life in thalassemia: A comparison of SF-36 results from the thalassemia longitudinal cohort to reported literature and the US norms, *American Journal of Hematology*, 86(1), 92-95.
30. Özkan, S. & Yılmaz, E. (2008). Healthy life behaviors of hospital nurses. *Fırat Medical Services Journal*, 3(7), 89-105.