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Original article

CORRELATION BETWEEN QUALITY OF LIFE AND DEMOGRAPHIC CHARACTERISTICS OF PATIENTS WITH VITILIGO IN NORTH MACEDONIA

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Abstract

Many skin conditions affect patients in a multidimensional way, ranging from emotional to social interaction, symptoms, and functional impairment.

Aim: The aim of the study was to measure the QL of patients with vitiligo, expressed through the Dermatological Quality of Life Index (DLQI), as well as the correlation between, disease activity and demographic characteristics.

Materials and methods: This cross-sectional study was realized in a period of 1 year. Two questionnaires were used in the study: the first questionnaire contains data from the DLQI, which measures the QL. The second contains demographic characteristics of patients (age, gender, place of residence, marital status, education), disease activity, comorbid diseases, and size of BSA. DLQI was used for comparison of patients with newly diagnosed vitiligo and also, a comparison was made in terms of disease spread and stability. Data analysis was performed using the Statistica 7.1 for Windows and SPSS Statistics 23.0.

Results: Among 70 subjects included in the study, the total score for the DLQI ranged from 0 to 28 and the average was 11.70±5.7. The QL was significantly worse in the studied group of 16-30 years (13.85±5.3) compared to the population of 51-60 and over 60 years (6.75±5.7~~,~~ and 7.0±2.3) in terms of daily activities and leisure activities and treatment. As the age of patients with vitiligo advanced, the QL improved. Subjects with higher education had a higher DIQS score (14.41±6.6; p=0.001).

Keywords: vitiligo, QL, quality of life index, psoriasis, alopecia areata, body surface area measurement index (BSA), Dermatology life quality index (DLQI)

Introduction

Quality of life is the subjective experience of each individual about his life. It includes the physical aspect, emotional aspect, social aspect of life as well as daily functioning in life. In the past, the quality of life was measured according to the frequency of symptoms of certain diseases and the length of life, while a few decades ago the emphasis was placed on the psychosocial consequences of the disease. Theoretical descriptions of disease make it difficult to define or even understand how a skin disease affects the quality of life[1].

Vitiligo is an acquired chronic pigmentary disorder that can have significant impairment in quality of life (QoL). Studies have shown that limitations in QoL are similar in magnitude to patients with other chronic skin diseases such as psoriasis[1,2].

Vitiligo affects individuals of all races, ethnicities, and skin types. Individuals with vitiligo usually face more stigmatization, discrimination, and possibly major psychosocial problems[3].

This research was the first in North Macedonia that measured the quality of life in patients with vitiligo and aimed at providing an answer for the correlation between the quality of life, disease activity, and demographic characteristics of patients with vitiligo. The goal was to identify patients who were at risk of poor quality of life and to identify the variables that could predict this impairment of the QL.

Material and methods

This cross-sectional study was conducted in a period of one year (2021). Two questionnaires were used: the Dermatology Life Quality Index Questionnaire (DLQI)from the Cardiff University, UK, with consent obtained from Finlay *et al*., translated in Macedonian language, and the second questionnaire which contained questions about demographic characteristics and disease activity[4]. All subjects/patients who met the selection criteria were included in the study. DLQI questionare includes 10 items about a patient's feelings and many aspects of the illness that occurred in the last 7 days. Questions include "vitiligo symptoms" (itching, pain, etc.) irritation, "feelings" (shame, anxiety and anger), "everyday activities" (shopping and activities in the home), "type of clothing", "social or leisure activities", "physical exercises", "educational activities", "sexual activities", "interpersonal relations" (with husband/s, friends, relatives) and "treatment opportunities". Each item is scored on a scale from four points (3=a lot, 2=moderately, 1=a little, 0=not at all). The total score of DLQI was calculated by summing the score of each of the 10 questions assessed and interpreted: as no impairment of quality of life (0-1), minor damage (2-5), moderate damage (6-10), severe damage (11-20), or a serious severe impairment (21-30). In the second questionnaire, the data was filled out by the researcher of the Department of dermatology in the “Remedika” Private General Hospital after a clinical examination of the patient and includes data on age, sex, place of residence, education, marital status, Fitzpatrick skin type, comorbid diseases (hyperlipidemia, diabetes mellitus type 1, hyperthyroidism, hypothyroidism, pernicious anemia, alopecia areata, ophthalmic abnormalities), familial history of the disease, use of alcohol, cigarettes, BMI. Data related to vitiligo include age at onset, family history of vitiligo, therapeutic history (with or without therapy), type of vitiligo (non-segmental, segmental and unclassified), vitiligo activity (in years), the natural flow (stable, unstable and with regression) and percentage of occupation of body surface. The localization and type of the disease were diagnosed with physical examination of the skin and using Wood's light. The percentage of skin area involved was calculated using the rule of nine from Vitiligo European Task Force (VETF)[3,4].

Statistical analysis

Data analysis was performed using the statistical programs~~:~~ Statistics 7.1 for Windows and SPSS Statistics 23.0. The quality of life in patients with vitiligo were analyzed with the Dermatological Quality of Life Index, whereby the internal consistency between the answers to the 10 questions is assessed by making Reliability Statistics-Cronbach's Alpha/Total score /Average score. The differences in the quality of life among patients in relation to the analyzed attributive features was performed with the t-test for independent samples (t/p), analysis of variables (F/p)/LSD test, Kruskal-Wallis test (H/p)–/depending on the data distribution. The strength of the association between the total/average quality of life score in patients with vitiligo and the analyzed attributive and numerical features was analyzed by the Multiple Regression (R, F, p). Significance was determined at $p<0.05$.

Results

Participant characteristics

A total of 71 subjects were included in this study; patients with vitiligo, of which 38 (53.5 %) were male and 33(46.5%) female patients treated in the Dermatology department of the “Remedika” General Hospital, Skopje, Macedonia. The total DLQI score ranged from 0 to 28 (from a maximum of 30 points), and the average was 11.70±5.7. The overall mean score for the questionnaire was 10.34±5.7 in the male patient group and 13.27±5.4 in the female patient group. The difference of 2.93 was confirmed statistically as significant, for p=0.003. This statistical result suggests the conclusion that the quality of life was significantly less affected by the skin problem in male patients compared to female patients.

Male patients had a lower average DLQI score than females in all 6 domains, but the tested gender difference was statistically significant in the daily activities domain (2.16±1.4 *vs.* 2.91±1.4; p=0.026). The skin problem significantly affected daily activities in male patients compared to female patients, as presented in Table 1.

Table 1. Dermatology life quality index (DLQI) in subjects according to gender

DLQI	Gender	Descriptive statistics			p value
		mean ± SD	min–max	95 % CI	
Symptoms and feelings	male	2.47±1.4	0-6	2.0-2.9	t=1.72
	female	3.06±2.5	1-6	2.5-3.6	p=0.089
Daily activities	male	2.16±1.4	0-6	1.7-2.6	t=2.27
	female	2.91±1.4	0-6	2.4-3.4	p=0.026
Leisure	male	1.95±1.5	0-6	1.4-2.4	t=1.07
	female	2.33±1.5	0-5	1.8-2.9	p=0.29
Work and school	male	1.08±1.3	0-3	0.7-1.5	t=0.44
	female	1.21±1.3	0-4	0.7-1.7	p=0.66
Personal relationship	male	1.76±1.7	0-5	1.2-2.3	t=1.48
	female	2.36±1.7	0-6	1.7-2.9	p=0.14
Treatment	male	0.95±0.9	0-3	0.6-1.2	t=1.95
	female	1.39±1.0	0-3	1.0-1.8	p=0.055
Total	male	10.34±5.7	0-28	8.4-12.2	t=2.2
	female	13.27±5.4	2-25	11.4-15.2	p=0.0031

The quality of life was significantly worse in the studied group of 16-30 years (13.85±5.3) compared to the population of 51-60 and over 60 years (6.75±5.7 and 7.0±2.3) in terms of daily activities and leisure activities and treatment. As the age of patients with vitiligo advanced, the quality of life improved (Table 2).

Table 2. Dermatology life quality index (DLQI) in subjects according to age

DLQI	Age groups	Descriptive Statistics			p value
		mean ± SD	Min-max	95% CI	
Symptoms and feelings	16-30	3.37±1.4	1-6	2.8-3.9	F=5.2 p=0.001
	31-40	2.96±1.4	1-6	2.3-3.6	^{b}p=0.021
	41-50	1.91±1.1	0-3	1.1-2.7	^{c}p=0.027
	51-60	1.25±0.9	0-2	-0.3-2.8	^{d}p=0.039
	> 60	1.67±0.5	1-2	1.1-2.2	
Daily activities	16-30	3.07±1.4	0-6	2.5-3.6	F=2.8 p=0.03
	31-40	2.48±1.4	1-6	1.9-3.1	^{d}p=0.047
	41-50	1.91±1.5	0-4	0.9-2.9	
	51-60	2.25±1.5	0-3	-0.1-4.6	
	> 60	1.33±0.8	0-2	0.5-2.2	
Leisure	16-30	2.85±1.3	0-5	2.3-3.4	F=6.6 p=0.0015
	31-40	2.35±1.6	0-6	1.6-3.1	^{b}p=0.006
	41-50	1.18±0.9	0-2	0.6-1.8	^{c}p=0.012
	51-60	0.50±0.6	0-1	0.4-1.4	^{d}p=0.009

	> 60	0.83±0.7	0-2	0.04-1.6	
Work and school	16-30	1.0±1.3	0-4	0.5-1.5	F=2.4 p=0.055
	31-40	1.35±1.3	0-3	0.8-1.9	
	41-50	0.54±1.0	0-3	-0.2-1.2	
	51-60	0.75±1.5	0-3	-1.6-3.1	
	> 60	2.33±0.5	2-3	1.8-2.9	
Personal relationship	16-30	2.07±1.9	0-6	1.3-2.8	F=1.8 p=0.13
	31-40	2.61±1.6	0-6	1.9-3.3	
	41-50	1.64±1.6	0-5	0.6-2.7	
	51-60	1.75±2.1	0-4	-1.5-5.0	
	> 60	0.67±0.8	0-2	-0.2-1.5	
Treatment	16-30	1.48±1.0	0-3	1.1-1.9	F=4.0 p=0.0056 ^{d}p=0.017
	31-40	1.30±0.9	0-3	0.9-1.7	
	41-50	0.91±0.8	0-2	0.4-1.5	
	51-60	0.25±0.5	0-1	-0.5-1.0	
	> 60	0.17±0.4	0-1	-0.3-0.6	
Total	16-30	13.85±5.3	3-25	11.7-15.9	F=5.0 p=0.0014 ^{c}p=0.022 ^{d}p=0.036
	31-40	13.0±5.2	2-28	10.7-15.3	
	41-50	8.09±5.6	0-17	4.3-11.9	
	51-60	6.75±5.7	0-12	-2.4-15.9	
	> 60	7.0±2.3	5-11	4.6-9.4	

F (Analysis of Variance), Post-hoc ^{b}p (16–30 *vs.* 41–50), ^{c}p (16–30 *vs.* 51–60), ^{d}p (16–30 *vs.* > 60)

Subjects with higher education had a higher DIQS score (14.41 ± 6.6; p=0.001) (Table 3).

The differences between subjects with vitiligo in terms of smoking and alcohol consumption were also not statistically significant. There were no statistical differences in the group of patients with newly diagnosed vitiligo compared to patients with long-standing vitiligo.

The present comorbidities did not have a statistically significant influence on the QL in the studied patients with vitiligo in all domains. There were no statistically significant differences in the group of patients with newly diagnosed vitiligo compared to patients with long-standing vitiligo and between patients with acute and stable vitiligo, in all domains, except in daily activities.

Table 3. Dermatology life quality index (DLQI) in subjects according to education

DLQI	**Education**	**Descriptive Statistics**			**p value**
		mean ± SD	**min-max**	**95 % CI**	
Symptoms and feelings	Elementary	2.08±1.1	0-4	1.4-2.8	F=3.2 p=0.028 ^{b}p=0.048
	High school	2.33±1.6	0-6	1.6-3.0	
	Faculty	3.26±1.3	1-5	2.8-3.8	
	PhD	3.25±1.5	1-6	2.0-4.5	
Daily activities	Elementary	1.75±0.9	0-3	1.2-2.3	F=4.5 p=0.0058 ^{b}p=0.012 ^{d}p=0.023
	High school	2.12±1.3	0-4	1.6-2.7	
	Faculty	3.22±1.6	0-6	2.6-3.9	
	PhD	2.37±0.7	2-4	1.7-3.0	
Leisure	Elementary	2.0±1.9	0-6	0.8-3.2	F=1.1 p=0.34
	High school	1.75±1.3	0-5	1.2-2.3	
	Faculty	2.52±1.6	0-6	1.9-3.1	
	PhD	2.12±1.2	1-5	1.1-3.2	
Work and school	Elementary	1.75±1.1	0-3	1.1-2.4	F=2.1 p=0.11
	High school	1.21±1.3	0-4	0.6-1.8	
	Faculty	1.04±1.3	0-3	0.5-1.6	
	PhD	0.37±0.7	0-2	-0.3-1.0	
Personal relationship	Elementary	1.83±1.3	0-4	0.9-2.7	F=3.7 p=0.015 ^{d}p=0.009
	High school	1.25±1.4	0-5	0.7-1.8	
	Faculty	2.74±1.9	0-6	1.9-3.5	

	PhD	2.37±1.8	0-5	0.8-3.9	
Treatment	Elementary	0.67±0.6	0-2	0.3-1.1	F=4.3 p=0.008
	High school	0.87±0.7	0-2	0.6-1.2	[b]p=0.018
	Faculty	1.63±1.1	0-3	1.2-2.1	[d]p=0.023
	PhD	1.12±1.1	0-3	0.2-2.1	
Total	Elementary	9.92±4.8	0-16	6.9-12.9	F=4.1 p=0.011
	High school	9.50±4.2	0-17	7.7-11.3	[d]p=0.010
	Faculty	14.41±6.6	2-28	11.8-17	
	PhD	11.87±4.5	6-19	8.1-15.7	

[b]p (elementary *vs.* faculty), [d]p (elementary *vs.* faculty), F (Analysis of Variance)

Present comorbidities did not have a statistically significant impact on the QoL in the studied patients with vitiligo in all domains.

Discussion

This is the first study to evaluate QoL in patients with vitiligo in N. Macedonia and the correlation between vitiligo disease characteristics and QoL. Significant differences in QoL scores were observed among patients based on education, gender and age.

In our study, the total average score of the quality of life was higher in contrast to the published results of 21 studies. In ten of these studies, containing 3,341 patients with vitiligo, the mean quality of life score for men *versus* women ranged between 3.13-8.80 and 6.00-11.40, respectively[5-22]. Female patients had greater impairment of QL (overall mean value of 8.03 %) than men (5.99 %), which may be due to greater concern regarding appearance and the potential impact on their marital status. In the remaining 11 studies, no relationship between DLQI and gender was observed. Gender differences occurred especially among women, causing them greater depression, anxiety and isolation in the community and represented a serious public health problem. Ongenae *et al.* and other authors found that women were more self-conscious about this disease, ashamed and the disease had a greater influence on the choice of clothes[23]. In terms of age, our investigation showed that the highest percentage representation of vitiligo was in the group aged 16-30 years. The results show that vitiligo is a disease that can occur at any age of life, but it is still dominant in the younger population, i.e., in the age group of 16-30 years.

According to Lui's studies, vitiligo was found in 70-80% of subject in the group of 16-30 years and this high percentage was in agreement with our results.[26] Today, it is quite clear that the condition of the skin has a particular impact on the quality of life, considering that it is the most exposed part of the human body, especially when communicating with the environment. The appearance of depigmented macules on the head, neck, face and hands are instantly registered when meeting a person. All this leads patients to a certain handicap, and they have to be careful how to cover it up, either with make-up or by choosing appropriate clothes. Hence, the subjective complaints from the disease speak much more about the quality of life than the objective difficulties of the disease.

In many studies the localization was on the trunk in 85% of subjects. Our results are partially in accordance with the studies done by Speeckart[24]. In our study, the localization of vitiligo changes in male subjects was on the chin and genital organs, and in female subjects mostly elbows, thighs and groin were affected. The results indicated that vitiligo had a greater impact on the quality of life in patients with completed higher education compared to those with primary and secondary education. Dolatshahi *et al.* found insignificant differences in terms of the level of education and QL in the studied group of patients with vitiligo[5]. Patients with completed higher education in the studied group had a rational thinking about the morbidity of the disease. The obtained results regarding living in an urban and rural environment and their influence on the quality of life in patients with vitiligo showed statistically insignificant differences. Namely, patients from the countryside had a lower DLQI score than patients living in the city in all six domains, but with statistically insignificant differences. These results are consistent with the results of Sehgal, a study conducted in China, in patients with vitiligo and its impact on quality of life[25]. Sehgal did not find statistically significant differences depending on the place of residence, village or urban place[25]. Patients with vitiligo who lived in a rural environment had a worse quality of life. These differences between patients from rural and urban areas in terms of vitiligo and its impact on the quality of life, can be explained by the fact that in rural environment, there were factories, printing houses, which released quinines and phenols that had an impact on the quality of life of patients with vitiligo.

Limitations of this study include a small study sample, as well as possible selection bias as participating patients were recruited from the Dermatology department of the "Remedika" General Hospital, Skopje N. Macedonia. Patients in our study showed a moderate limitation of QoL, comparable to that of other chronic skin diseases. Furthermore, differences across geographical regions, cultures, skin color, or gender perceptions of vitiligo and the subsequent impact on QoL were not always considered in many reported studies that we need to consider[27-30]. Management should focus not only on medical treatment but also on psychological aspects, hence better QoL and treatment outcomes.

Conflict of interest statement. None declared.

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