Health - Related Quality of Life in Chronic Disease Patients Undergoing Occupational Therapy: is it affected by Clinical and Demographic Factors?

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Abstract
The purpose of this research is to study the correlation of the quality of life with the time of occupational therapy, gender, age and the years that have passed since the diagnosis. The sample consists of 63 people, all chronic disease patients. Of the above patients, according to the research design, half receive Occupational Therapy services at a rate of 50.8% (32 patients) while the remaining 49.2% (31 people) did not receive. For the data collection MVQOLI-15 was used. The results indicated that statistically significant differences were found in wellbeing, where women comparatively seemed to enjoy higher levels than men (p<0.05). A statistically significant (p=0.016<0.05) monotonic positive correlation (r=0.421) appeared between age and spirituality. Also, a statistically significant correlation (p=0.004<0.05) was found between interpersonal relationships and years since the diagnosis of the disease. It is obvious that clinical and demographic features may affect quality of life in chronic disease patients.

Keywords: Occupational Therapy, Health Related Quality Of Life, Chronic Disease, Clinical Factors, Demographic Factors.

Introduction

Physical changes as a result of weakness, spasticity, sensory problems, pain, and reduced strength and range of motion require the services of physical therapy and occupational therapy to enhance mobility, upper extremity functionality, and generally prevent falls and maintain participation. Occupational therapy services are recommended when the patient has difficulty in self-care or participation in social, occupational or recreational roles [1].

In recent years, quality of life has been discussed and studied from many angles, with the aim of researching and interpreting the factors that influence it. More recent conceptual approaches regarding the quality of life, define it as the physical, mental and social well-being of the individual, as well as his ability to respond to the daily functions of his life. The World Health Organization connects the quality of life with the subjective perception that individuals have of their place in life, in the societies they live in, with the specific values and characteristics of the culture and in relation to their personal goals, expectations, standards and their concerns [2]. Some authors emphasize the subjective assessment of the individual regarding the Quality of Life and well-being. It has to do with the internal processes of the individual, related to

his degree of satisfaction with the various aspects of his life. It includes the necessary conditions and situations that promote the "physical, mental and social well-being of the individual", which is personal health, work, education, family, social interactions, financial situation, etc [2].

When quality of life is considered in the context of health and disease, it is usually referred to as "health-related quality of life" to distinguish it from other aspects of quality of life. Health is a multidimensional concept, so the health-related quality of life cannot but include multifactorial concepts, such as physical, mental, emotional and social functionality. Health-related quality of life measures health and focuses on the consequences of health status on the individual's quality of life. Quality of life measures assess positive aspects of life such as positive emotions and health satisfaction in patients with chronic ailments.

Health-Related Quality of Life, which is defined as the optimal level of physical and emotional state, optimal performance in role performance and social functioning, includes one's perceptions of health, well-being, life satisfaction, and well-being. It also focuses on the individual's satisfaction with the outcome of their treatment and future health prospects. Factors such as chronic

comorbidities, age, and the severity of government responses can affect health-related quality of life and mental well-being in the general population, reflecting "how well a person is functioning in his/her life and his/her perceived well-being in physical, mental and social domains of health [3]".

The purpose of this research is to study the correlation of the quality of life with the time of occupational therapy, gender, age and the years that have passed since the diagnosis.

Method

It is a quantitative cross-sectional study including the independent variables (time of occupational therapy, gender, age and the years that have passed since the diagnosis) and the dependent variable of quality of life. The sample consists of 63 people, all chronic disease patients. Of the above patients, according to the research design, half receive occupational therapy services at a rate of 50.8% (32 patients) while the remaining 49.2% (31 people) did not receive. The inclusion criteria for the sample's selection were > 18 years old, diagnosed with a chronic disease and speaking the Greek fluently.

For the implementation of this research, the questionnaire was used as a tool due to the many comparative advantages that characterize it (many examinees, low costs, ease of processing and analysis of the results, etc.). In particular, the two individual tools were used: Questionnaire to capture demographic data and questionnaire to capture quality of life. In more detail, the research tools are described below:

The demographic data of the sample was coded by a series of closed-ended questions, where gender, age, place of residence, occupation, etc. were specifically examined.

To measure quality of life, the Missoula – VITAS Quality of Life Index (MVQUOLI) tool was used, as originally developed by Byock, Merriman, and Kinzbrunner (4) and revised in 2004. The version of the questionnaire used consists of 15 questions. It should be mentioned here that although the original version of this tool consisted of 25 questions, it was found that it was difficult for some patients to complete, so the questions were reduced to 15 (a version that was also used in the present study) while at the same time measuring statistically that the information lost by reducing the questions to 15 was not significant. In this specific research, the translated and weighted in Greece tool was used by Dr. Theofilou Paraskevi [5, 6]. The above tool of 15 statements - questions, measures the quality of life in general, but also includes individual dimensions of the quality of life, as below: • Symptoms: The physical distress associated with the illness; perceived levels of physical distress. • Functionality: The ability to carry out ordinary functions and activities of daily life • Interpersonal Relationships: The degree of association in personal relationships and the quality of life enjoyed from relationships with family and friends • Well-being: Self-evaluation of an internal state; subjective sense of emotional "well-being" or "illness" Satisfaction or lack of satisfaction with self. • Spirituality: The degree of connection to an ongoing situation; degree of experiential meaning and purpose in life.

Each of the above five dimensions of quality of life measured by the questionnaire consists of three sentences where the sample is asked to express their degree of agreement or disagreement on a 5-point Likert scale ranging from Strongly Agree to Strongly Disagree, while intermediate scales include Agree, Neither Agree but Neither disagree, and disagree. Each of the above sentences is calibrated with integer numbers from -2 to 5, while it should be mentioned that in some sentences there is also a negative calibration. As we have seen before, each of the measured dimensions of the quality of life consists of three questions, which aim to capture the situation. Each of these questions aims at a different approach to each dimension, as below: • Assessment: Subjective measurement of the actual situation or conditions (Essentially examining "what exactly it is"). Example: I feel sick all the time. • Satisfaction: Degree of acceptance of the actual situation (Essentially, the "degree of annoyance obtained" is examined). Example: I am Satisfied with the current control of my symptoms. • Importance: The degree to which a dimension has an effect on the overall quality of life (Essentially examining "how much it matters"). Example: Physical discomfort prevents any opportunity for fun. Finally, each dimension of the quality of life is approached for its quantitative measurement by a statement concerning "Estimation", one concerning "Satisfaction" and finally, one concerning "Importance".

For the implementation of the research, the questionnaire was distributed electronically, through the google forms platform. The researcher got in touch with Occupational Therapists working in rehabilitation centers as well as doctors who follow chronic patients, in order to forward the questionnaires to a sample of patients. The questionnaires were completed electronically and anonymously by the patients or with the help of their companions. As the aim of the research is the comparative study between patients who receive Occupational Therapy services and those who do not, care was taken to obtain a sample of both chronically ill patients who receive Occupational Therapy services and those who do not. Before completing the questionnaire, the patients had to agree to ethical conditions, related to anonymity, confidentiality and the assurance that the results will be used strictly and only in the context of the statistical analysis of the research. The responses, after being coded, were processed with the statistical package spssv19. To capture the descriptive statistics, frequency, relative frequency, mean value and standard deviation were calculated with simultaneous visualization with bar graphs, histograms or histograms as appropriate. To draw inductive conclusions, non-parametric tests were used, such as the Mann-Whitney statistical test and spearman correlation.

Results

The sample consists of 63 people, all chronic disease patients. Of the above patients, according to the research design, half receive Occupational Therapy services at a rate of 50.8% (32 patients) while the remaining 49.2% (31 people) did not receive.

Recipients of Occupational Therapy Services

As previously mentioned, there are 32 receiving Occupational Therapy services (50.8% of the total sample). Of these, 29.0% are men (9 people) and 71.0% are women (22 people) while we also have a missing value. The average age of those receiving Occupational Therapy Services is 52.56 years (SD: 16.49), while the median age is 56 years. Ages range from 19 to 94 years. In continuation of the above, those receiving Occupational Therapy services have been diagnosed with the disease for an average of 10.31 years (TA: 10.751), while the median number of years that have passed since the diagnosis of the disease is 8.00 years. In addition, the range of years that have passed since the diagnosis of the disease is 59, ranging from 1 to 60.

Finally, and regarding the frequency of receiving Occupational Therapy services, the sample was asked in an open-ended question about the time they receive Occupational Therapy services and the frequency with which they receive them ("If you receive Occupational Therapy Services, how long do you receive them and how often;"). To capture the results, the frequency of download was divided into times/week and correspondingly the total duration of download into years. It was found that the average weekly frequency of receiving Occupational Therapy services amounts to 2.34 times/week (SD: 1.54). Accordingly, the minimum weekly frequency of receiving Occupational Therapy services is 0.5 times/week (once every two weeks) while the maximum is 7 times/

week (every day). Accordingly, the average years of receiving Occupational Therapy services amounts to 2.23 (SD: 2.37). The years of receiving Occupational Therapy services range from 0.25 years (one quarter) to 10 years.

Non-Recipients of Occupational Therapy Services

Accordingly, and in continuation with the above, there are a total of 31 people not receiving Occupational Therapy services, of which 32.3% (10 people) are men while the remaining 67.7% (21 people) are women. Looking at the age distribution of those not receiving Occupational Therapy services, we can see that the minimum age is 24 years, while the maximum is 78 years. Mean age is 50.65 years (SD: 15.58) while median age is 52 years. Examining the years that have passed since the diagnosis of the disease, for those not receiving Occupational Therapy services, we can find that the average value is 9.97 years (SD: 11.71) and in addition the minimum value is 1 year and the maximum 62.

Quality of life

If we examine the distribution of the values of the overall quality of life scale for the entire sample, we can find that in general the sample appears to be neutral regarding its overall quality of life with the corresponding average value of the scale amounting to 15.86 (TA: 3.09). The price range is found from 9.60 to 22.50, while the median value is 15.80.

Table 1: Mean value and Standard Deviation of Quality-of-Life subscales for the entire sample (N=63)

	Mean	Standard deviation
Symptoms	2,8730	8,38680
Function	4,4286	10,31866
Interpersonal relations	11,5079	14,81267
Wellbeing	-1,3492	15,76865
Spirituality	-8,8254	11,42654

From the table above, we can see that the sample generally seems to have a higher quality of life in the Interpersonal Relationships subscale, with the corresponding mean value amounting to 11.51 (SD: 14.81), while the corresponding lowest value is found in the subscale of Spirituality with the average value amounting to -8.82 (TA: 11.43). In relation to the other dimensions of the quality-of-life subscales, we can find that the sample generally appears neutral with the corresponding mean values relatively close to 0.

Quality of Life of Recipients of Occupational Therapy Services and its association with Gender

Looking at the overall quality of life, in relation to gender, we can see that women seem to enjoy a comparatively higher quality of life, with the corresponding mean value for women being 17.47 (SD: 2.67) comparatively higher than the 15.31 (TA: 3.16) of the men. In more detail, the distribution of values for the overall quality of life of those receiving Occupational Therapy services for both sexes is shown in the following histogram:

Graph 1: Histogram of overall quality of life, receiving Occupational Therapy services according to gender
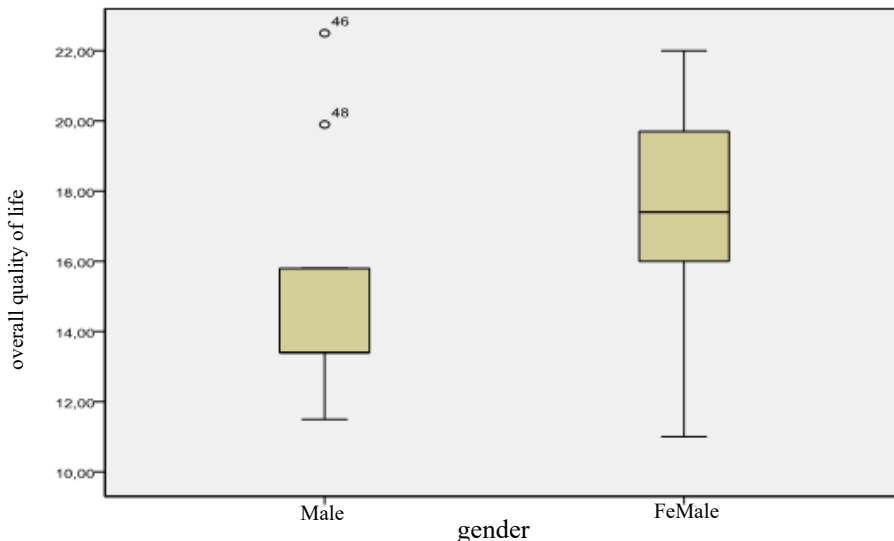
In order to test the statistical significance of the differences that appear, we will implement the Mann – Whitney(U) statistical test, after having previously formulated the null and alternative research hypothesis: H0: There are no statistically significant differences in overall quality of life between men and women, for those receiving Occupational Therapy services. H1: There are statistically significant differences in the overall quality of life between men and women, for those receiving Occupational Therapy services. From the implementation of the Mann-Whitney (U) statistical test we can see that with U=56.00, z=-1.873, p=0.061>0.05 the null hypothesis cannot be rejected and therefore no statistically significant differences are found in the overall quality of life, between men and women for those receiving Occupational Therapy services. In continuation of the above and after presenting the subscales of the quality of life for the two sexes, we will examine the existence of statistically significant differences between them by applying the Mann–Whitney test. The above data for the two sexes, together with the control in question, are reflected in the following table:

Table 2: Mean Value, Standard Deviation and Mann-Whitney (U) results for the subscales of quality of life

	Gender				Mann – Whitney (U)	Z	p-value
	Male (N=9)		Female (N=22)				
	Mean	Standard deviation	Mean	Standard deviation			
Symptoms	3,78	9,50	4,95	4,08	94.00	-0.220	0.825
Function	3,44	10,86	5,09	11,46	95.00	-0.175	0.861
Interpersonal relations	9,00	18,42	15,73	13,32	79.00	-0.889	0.374
Wellbeing	-7,33	19,14	7,32	13,30	50.50	-2.117	0.034
Spirituality	-5,78	13,84	-8,36	11,63	83.50	-0.679	0.497

From the table above, we can see that with the exception of Spirituality, women seem to have a higher score than men on all subscales. Of course, from the implementation of the Mann-Whitney (U) statistical tests, we can see that statistically significant differences are found only in Well-being, where women comparatively seem to enjoy higher levels of well-being than men.

Quality of Life of Recipients of Occupational Therapy Services and its Correlation with Age

Next, we will examine the quality of life of those receiving Occupational Therapy services as well as its correlation with age. First, we will examine the overall quality of life, while then the control will be extended to its subscales. To calculate the correlation, we will use Spearmann's rank correlation (rho), after previously recording the two variables:

Graph 2: Age and Overall Quality of Life for those receiving Occupational Therapy services
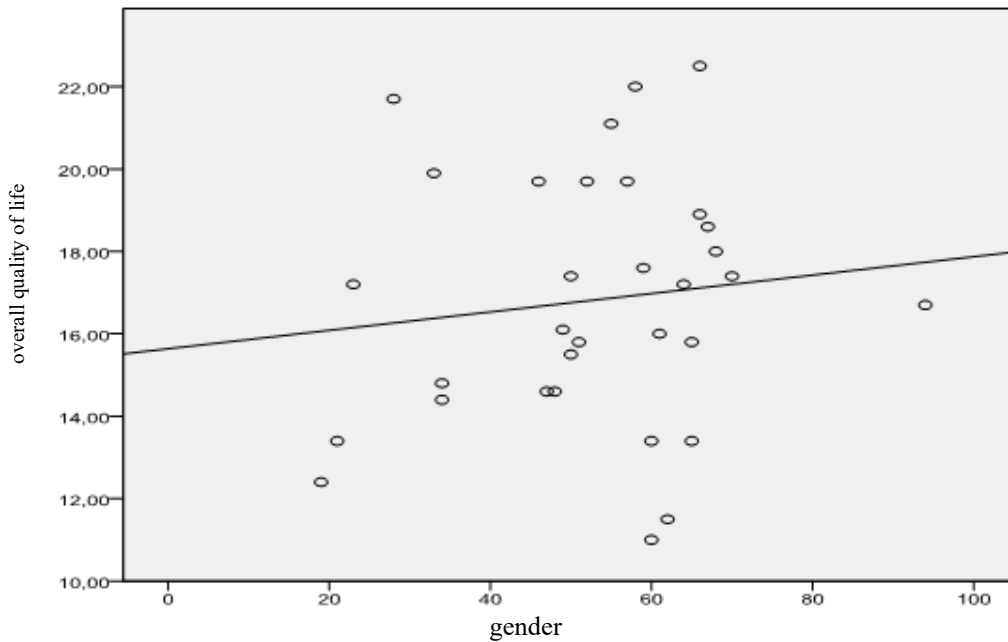
From the graph above, in which the regression line is also shown, no correlation between Age and Overall Quality of Life emerges. After all, the regression line seems to explain only 1.5% of the variation of the variables (R2=0.015). Calculating the Spearman correlation coefficient, we can see that with ρ(rho)=0.145, p=0.429>0.05 no statistically significant correlation is found between them. Next, we will implement a similar test to identify statistically significant associations between Age and the Quality-of-Life subscales. The results of the Spearman test are shown in the following table:

Table 3: Spearman Correlation Table for Age and Quality of Life Subscales (N=32)

|			Age	Symptoms	Function	Interpersonal relations	Wellbeing	Spirituality
Spearman's rho	Age	Correlation Coefficient	1,000	-,346	,116	-,058	,101	,421*
		Sig.	.	,052	,526	,752	,582	,016
	Symptoms	Correlation Coefficient	-,346	1,000	,029	,096	,229	-,339
		Sig.	,052	.	,874	,599	,208	,058
	Function Interpersonal relations	Correlation Coefficient	,116	,029	1,000	-,225	,209	,156
		Sig.	,526	,874	.	,216	,252	,394
		Correlation Coefficient	-,058	,096	-,225	1,000	,166	-,352*
		Sig.	,752	,599	,216	.	,362	,049
	Wellbeing	Correlation Coefficient	,101	,229	,209	,166	1,000	-,045
		Sig.	,582	,208	,252	,362	.	,809
	Spirituality	Correlation Coefficient	,421*	-,339	,156	-,352*	-,045	1,000
		Sig.	,016	,058	,394	,049	,809	.
*. Correlation is significant at the 0.05 level (2-tailed).								

From the table above, we can see that there are no statistically significant correlations between Age and Symptoms, Functionality, Interpersonal Relationships and Well-Being. On the other hand, a statistically significant (p=0.016<0.05) monotonic positive correlation (ρ=0.421) appears between Age and Spirituality, which can be interpreted that the increase in age corresponds to an increase in the value of the scale of spirituality and vice versa.

Quality of Life of Recipients of Occupational Therapy Services and its Correlation with Years Since Diagnosis

In continuation of the above, we will examine the correlation between the Quality of life and its subscales and the years that have passed since the diagnosis of the disease. For the above test, we will calculate the Spearman correlation coefficient, while the test will include both the Total Quality of Life and its subscales. First, the Total Quality of Life along with the years that have passed since the diagnosis are shown in the following graph:

Graph 3: Overall Quality of Life and Years passed since Diagnosis for Occupational Therapy Services
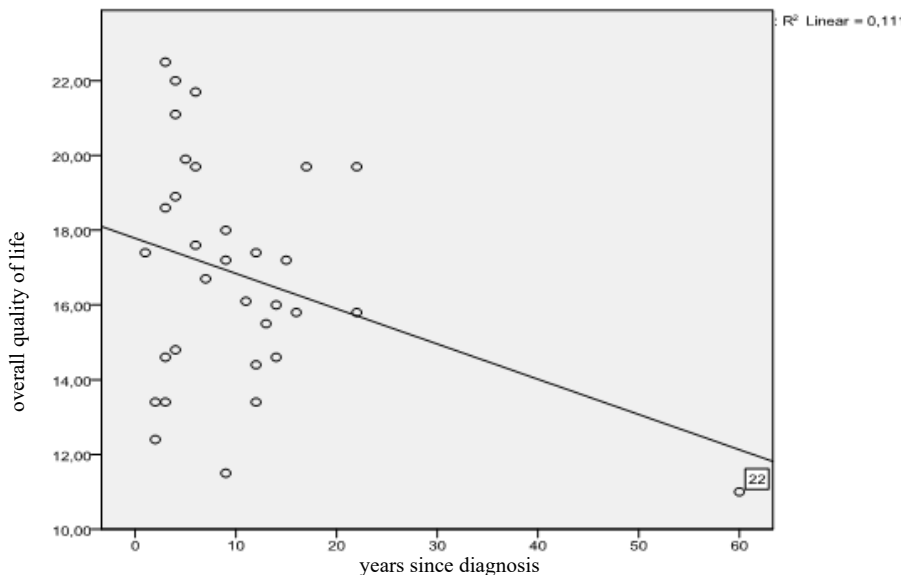
From the graph above, we can initially see that there is no linear correlation between the two variables, while the regression line seems to explain 11.1% of the total variance of the variables (R2=0.111). It should be mentioned that an extreme value is found in the years since the diagnosis of the disease (No. 22) which we choose to keep in the data. From the calculation of the Spearman correlation coefficient, we can see that with ρ(rho) =

-0.137, p=0.454>0.05 no statistically significant correlation is found between the years that have passed since the disease and the overall quality of life. Next, we will examine the association between years since disease diagnosis and quality of life subscales by calculating the Spearman correlation coefficient. The results are shown in the following table:

Table 4: Spearman Correlation Coefficient for Years Since Diagnosis and Quality of Life Subscales

			Years Since Diagnosis	Symptoms	Function	Interpersonal relations	Wellbeing	Spirituality
Spearman's rho	Years Since Diagnosis	Correlation Coefficient	1,000	-,062	,068	-,491**	-,025	,222
		Sig.	.	,736	,713	,004	,894	,222
	Symptoms	Correlation Coefficient	-,062	1,000	,029	,096	,229	-,339
		Sig.	,736	.	,874	,599	,208	,058
	Function	Correlation Coefficient	,068	,029	1,000	-,225	,209	,156
		Sig.	,713	,874	.	,216	,252	,394
	Interpersonal relations	Correlation Coefficient	-,491**	,096	-,225	1,000	,166	-,352*

|							
	Sig.	,004	,599	,216	.	,362	,049
Wellbeing	Correlation Coefficient	-,025	,229	,209	,166	1,000	-,045
	Sig.	,894	,208	,252	,362	.	,809
Spirituality	Correlation Coefficient	,222	-,339	,156	-,352*	-,045	1,000
	Sig.	,222	,058	,394	,049	,809	.
**. Correlation is significant at the 0.01 level (2-tailed).							
*. Correlation is significant at the 0.05 level (2-tailed).							

From the above table we can see that no statistically significant correlations are found between the Years since the diagnosis of the disease and Symptoms, Functionality, Well-being and Spirituality. On the other hand, a statistically significant correlation (p=0.004<0.05) is found between Interpersonal Relationships and Years since the diagnosis of the disease, which with p=-0.491 is of moderate strength and negative, in the sense that as the years since the diagnosis increase of the disease, a decrease in the corresponding subscale score is expected. Finally, we will examine the correlation between the quality of life of those receiving Occupational Therapy services and their weekly frequency:

Quality of Life of Recipients of Occupational Therapy Services and its correlation with frequency of receipt

As previously mentioned, the weekly frequency of receiving Occupational Therapy services was coded, which together with the overall quality of life, are shown in the following graph:

Graph 4: Weekly Frequency of Receiving Occupational Therapy Services and Overall Quality of Life for Occupational Therapy Service Recipients
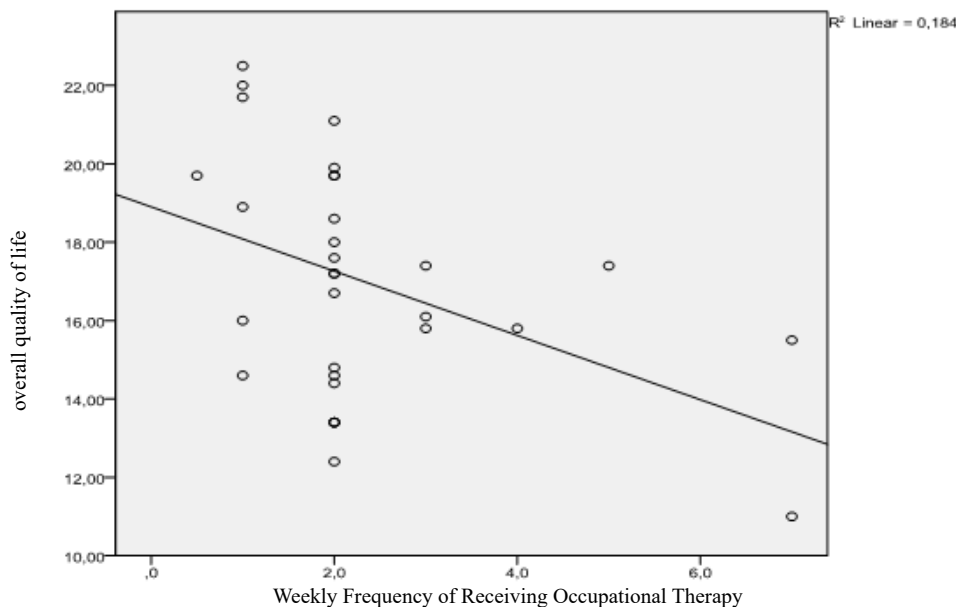
To examine the correlation between the Weekly Frequency of Receiving Occupational Therapy Services and the Overall Quality of Life, the Spearman correlation coefficient (rho) was calculated, where it was found that with $\rho=-0.414$ a negative correlation is found between the weekly frequency of receiving Occupational Therapy Services and the overall quality life which with p=0.021<0.05 is statistically significant. The above moderate, negative and statistically significant correlation means that an increase in the weekly frequency of receiving Occupational Therapy services is matched by a decrease in the overall quality of life. Then, examining the correlation with the subscales of the quality of life, we obtain the following table:

Table 5: Spearman Correlation Coefficient for Weekly Frequency of Receiving Occupational Therapy Services and Quality of Life Subscales

			Weekly Frequency of Receiving Occupational Therapy	Symptoms	Function	Interpersonal relations	Wellbeing	Spirituality
Spearman's rho	Weekly Frequency of Receiving Occupational Therapy	Correlation Coefficient	1,000	-,175	-,224	-,205	-,328	-,038
		Sig.	.	,346	,226	,268	,072	,840
	Symptoms	Correlation Coefficient	-,175	1,000	,029	,096	,229	-,339
		Sig.	,346	.	,874	,599	,208	,058
	Function	Correlation Coefficient	-,224	,029	1,000	-,225	,209	,156
		Sig.	,226	,874	.	,216	,252	,394
	Interpersonal relations	Correlation Coefficient	-,205	,096	-,225	1,000	,166	-,352*
		Sig.	,268	,599	,216	.	,362	,049
	Wellbeing	Correlation Coefficient	-,328	,229	,209	,166	1,000	-,045
		Sig.	,072	,208	,252	,362	.	,809
	Spirituality	Correlation Coefficient	-,038	-,339	,156	-,352*	-,045	1,000
		Sig.	,840	,058	,394	,049	,809	.
*. Correlation is significant at the 0.05 level (2-tailed).								

From the table above, we can see that there is no statistically significant correlation between the weekly frequency of receiving Occupational Therapy services and the subscales of quality of life.

Discussion
The purpose of this research is to study the correlation of the quality of life with the time of occupational therapy, gender, age and the years that have passed since the diagnosis.

From the analysis of the results of those receiving Occupational Therapy services, no statistically significant differences were identified in the quality of life and its subscales between the two sexes, except for the Well-being subscale where women seem to enjoy comparatively higher levels than men. This finding is not in agreement with several studies on chronic diseases, presenting female patients feeling more depressed than males and with lower quality of life [7-10].

In addition, in those receiving Occupational Therapy services, no statistically significant correlation was found between age and overall quality of life. Furthermore, regarding the quality-of-life subscales, a statistically significant positive correlation was found only in Spirituality, where an increase in age is associated with a corresponding increase in the value of the subscale. This finding

is in agreement with other studies indicating that older people present higher level of spirituality [11].

In continuation of the above, no statistically significant correlation was found between the years that have passed since the diagnosis of the disease and the overall quality of life, while with regard to the subscales of the quality of life, a statistically significant moderate and negative correlation was found only with the Interpersonal Relationships subscale, where an increase in years since disease diagnosis is associated with a decrease in the subscale value. It seems that more years from diagnosis is a burden for chronic disease patients and a restriction for their social life.

Finally, a statistically significant negative correlation was identified between the weekly frequency of receiving Occupational Therapy services and the overall quality of life, in the sense that an increase in the weekly frequency of receiving Occupational Therapy services is associated with a decrease in the overall quality of life. Last but not least, this study had some limitations due to its small sample. It is noted that the results can be further investigated in larger samples from other groups of chronic disease patients. In future research there may be the possibility of investigating other factors that are related to or affect the levels of quality of life.

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