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Fatigue, Depression and Quality of Life in Individuals with Hypothyroidism

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ABSTRACT:
Purpose: This research was conducted to examine fatigue, depression and quality of life levels in individuals with hypothyroidism and the relationship between variables.
Material and Methods: The study was conducted with 150 individuals who were treated with a diagnosis of hypothyroidism at the Endocrinology Clinic of a State Hospital located in a province and who met the inclusion criteria for the study. Study data; was collected by face-to-face interview using the Individual Introduction Form, Beck Depression Scale, Piper Fatigue Scale and ThyDQoL-TR Quality of Life Scale. The data were analyzed in a computer environment using appropriate statistical tests.
Results: In the study, it was determined that the fatigue severity of individuals with hypothyroidism was moderate (4.97±1.59), the depression severity was mild (15.43±8.83), and their quality of life was negatively affected (-5.34±8.44) compared to their situation before hypothyroidism was diagnosed. It was determined that there was a moderate positive relationship between the Piper Fatigue Scale subscales and total scale score and the Beck Depression Inventory scores.
Conclusion: The study concluded that individuals with hypothyroidism experience fatigue and superficial depression, and their quality of life is negatively affected after being diagnosed with the disease. In this context, it is recommended to evaluate fatigue, depression and quality of life levels in individuals with hypothyroidism, plan appropriate nursing interventions and raise awareness by organizing training/consultancy programs.
Keywords: *Hypothyroidism; fatigue; depression; quality of life; nursing*

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INTRODUCTION

Thyroid diseases are among the frequently seen illnesses in the world and in our country, and Turkey is considered one of the countries where thyroid diseases are commonly observed. According to studies conducted in our country, it is reported that thyroid diseases are observed in 8-9% of the population (Akarsu et al., 2020). Among thyroid diseases, the most commonly observed pathological hormone deficiency is hypothyroidism. Hypothyroidism is a condition characterized by the deficiency or ineffectiveness of thyroid hormones, resulting in a slowdown of metabolic processes (Gorkhali et al., 2021; Jansen et al., 2023; Wilson et al., 2021). In patients with hypothyroidism, which is not uncommon in the community, various signs and symptoms emerge due to the slowing of metabolism caused by the decrease in hormones. Latergia, apathy, cold intolerance, decreased bowel movements, weight gain, muscle weakness, and fatigue can be counted among these symptoms. One of the most complained physical symptoms among hypothyroidism patients is fatigue (Hegedüs et al., 2022; Jansen et al., 2023; Wilson et al., 2021). Fatigue is defined as an individual perception that affects the entire body, arising from a decrease in the physical, emotional, and mental energy necessary to perform a task. In individuals with hypothyroidism,

prolonged fatigue is reported to have serious effects on health, such as heart diseases, diabetes, hypertension, and digestive disorders (El Najjar et al., 2022; Wilson et al., 2021). Therefore, it is important to determine the level of fatigue and plan interventions to alleviate it.

Although fatigue is a common symptom in patients with hypothyroidism, it is often not adequately evaluated. Some individuals and healthcare workers attribute fatigue to working conditions or psychosocial stressors, not recognizing it as a medical condition. This situation can affect many areas of the patient's life because it delays the diagnosis and intervention process (Wilson et al., 2021). Thyroid hormone disorders cause a range of mood disorders and the occurrence of psychotic conditions, along with physiological symptoms. Forgetfulness, concentration disorder, mental slowing, delirium, dementia, and depressive mood are psychological symptoms observed in patients with hypothyroidism (Ağaçhanlı et al., 2016, Gorkhali et al., 2020; Yontar et al., 2015). Çaklılı (2019) reported in his study that moderate to severe depressive symptoms were observed in 34%-36% of patients with hypothyroidism. Siegmann and others (2018) stated that patients diagnosed with autoimmune thyroiditis have a 3.3 times higher risk of developing depression compared to healthy controls. When evaluating the data obtained from all these studies, it can be said that fatigue and depression are significant symptoms in hypothyroidism. When these symptoms are not identified and effectively addressed, the individual will constantly feel tired, weak, unwilling, and exhausted. It is stated that if low energy and a depressed mood are experienced continuously, the individual's quality of life will be negatively affected (Shivaprasad et al., 2018). Quality of life is one of the most important universal goals that societies aim to achieve (Boylu and Paçacıoğlu, 2016). In studies conducted on hypothyroidism, it has been determined that the patients' quality of life is negatively affected (Kelderman-Bolk et al., 2015; Shivaprasad et al., 2018).

It is known that hypothyroidism is a chronic disease, the symptoms and potential complications threaten the individual throughout their life, and the problems it causes seriously affect both the individual and the society they are part of. Fatigue and depression, although among the most commonly observed symptoms in hypothyroidism, have not been sufficiently addressed as research topics, especially in nursing. However, studies related to the quality of life in individuals with hypothyroidism have been conducted, but often using general quality of life scales that are not disease-specific. Additionally, there are no studies that examine the specified variables in individuals with hypothyroidism and identify the relationships between them. Nurses have important responsibilities such as early diagnosis and monitoring of existing symptoms in patients, providing counseling for symptom management, and raising awareness about the disease in the community and among all healthcare workers. In this context, it is believed that this study will be beneficial in creating awareness on the specified topics, providing a holistic approach to patients with hypothyroidism, and guiding healthcare professionals who will be involved in planning nursing interventions for hypothyroidism and conducting research on the subject. However, the results obtained will contribute to filling the gap in the nursing literature regarding thyroid diseases, which are a common health issue in our country. This research was conducted to determine the levels of fatigue, depression, and quality of life in individuals with hypothyroidism and to examine the relationship between these variables.

MATERIAL and METHODS

Purpose and Type of the Study

This research was conducted to determine the levels of fatigue, depression, and quality of life in individuals with hypothyroidism and to examine the relationship between these variables. The research is descriptive and analytical.

Sampling and participant

This research was conducted in the Endocrinology clinic of a State Hospital located in a province between June 2021 and September 2021. The population of the study consists of individuals diagnosed with hypothyroidism who are being

treated at the specified hospital. The power analysis method was used for sample size calculation, with a sample proportion of 10% and a margin of error of 0.05, resulting in a minimum sample size of 137 patients (95% confidence). In the study, 150 individuals were sampled to account for the possibility of erroneous or incomplete questionnaire forms. *Inclusion criteria:* Individuals aged 18 and over, those who have been diagnosed with hypothyroidism and followed for at least 1 year, those without communication and mental problems that would affect the application of the survey, and those who agreed to participate in the study were included in the research. *Exclusion criteria:* Individuals using medications that affect thyroid hormone synthesis, such as lithium, heparin, or amiodarone, those in the pregnancy and lactation period, and those diagnosed with depression or another psychiatric problem and receiving psychiatric treatment were excluded from the sample.

Data Collection Tools

The research data were obtained using the Introductory Information Form, Piper Fatigue Scale, Beck Depression Scale, and The Underactive-Thyroid-Dependent Quality of Life Questionnaire-TR (THYDQOL-TR) Quality of Life Scale.

Descriptive Information Form

The Descriptive Information Form was prepared by reviewing the relevant literature (Bucvik et al., 2014; Hatiboğlu, 2012). The form consists of 17 questions that inquire about sociodemographic characteristics such as gender, age, marital status, and education level, as well as clinical characteristics such as disease duration, medication treatment, and the presence of chronic diseases.

Piper Fatigue Scale

The Piper Fatigue Scale was developed by Piper et al. (1998) to assess fatigue. The scale, consisting of 22 questions, has four sub-dimensions: behavioral/severity, affective, sensory, and cognitive/psychological. The total score of the scale ranges from 0 to 10. 0 points indicate no fatigue, 1-3 points indicate mild fatigue, 4-6 points indicate moderate fatigue, and 7-10 points indicate severe fatigue. The Turkish validity and reliability study of the scale was conducted by Can, Durna, and Aydiner (2004), and the scale's Cronbach's alpha internal consistency coefficient was reported as 0.98. In this study, the Cronbach's alpha value of the scale was found to be 0.92.

Beck Depression Inventory

Developed by Beck in 1961, this scale was created to measure the severity of depressive symptoms and to determine the risk of depression. In this scale, which consists of 21 questions, individuals are asked to score each item between 0-3. The total score is obtained by summing the scores of each item and ranges from 0 to 63. High scores indicate a high severity of depression. 0-9 points are considered normal, 10-16 points mild, 17-29 points moderate, and 30-63 points severe depression. The adaptation of the scale into Turkish was done by Hisli (1989), and the Cronbach's alpha value of the scale was found to be 0.8.In this study, the Cronbach's alpha value of the scale is 0.74.

ThyDQoL-TR Quality of Life Scale

The disease-specific The Underactive-Thyroid-Dependent Quality of Life Questionnaire (ThyDQoL) scale was developed by McMillan and colleagues in 2004 for use in patients with hypothyroidism. This single scale in the literature for evaluating the quality of life in patients with hypothyroidism was translated into Turkish by Hatipoğlu (2012) and symbolized as ThyDQoL-TR, and it was accepted as a valid-reliable scale for our society, with a Cronbach's alpha value of 0.91. Before conducting the study, the necessary permissions for the use of the scale were obtained from the author. The scale generally consists of two introductory questions (G1) that inquire about the person's current quality of life and the impact of this condition on their quality of life (G2), followed by 18 questions that ask how each aspect of life has changed due to the thyroid condition and the importance of these changes to the individual. Each question consists of two sub-items. The first sub-item (a) evaluates how the disease affects that aspect, and the responses are scored between -3 and +1. The second sub-item (b),

on the other hand, attempts to determine the importance of that aspect for the individual and is scored between +3 and 0 based on the degree of importance. Subsequently, the Weighted Impact Score (WI) is obtained for each item by multiplying these two sub-items, which can vary between -9 and +3 (from maximum negative impact to maximum positive impact). The possible score range is between -9 and +3 (Hatiboğlu 2012). In this study, the scale's Cronbach's alpha value was found to be 0.84.

Statistical Analysis

The data obtained from the study were evaluated using the SPSS (ver:22.0) program. The normality of the scale means was determined using the Kolmogorov-Smirnov test. In the evaluation of the data, in addition to descriptive statistical analyses, the Independent Sample T Test for two independent groups, the Kruskal-Wallis T test for the comparison of more than two variables, and the Pearson correlation coefficient for the assessment of relationships were used. In the application phase, the confidence level for all analyses to be conducted has been set at 95%.

Ethical Approval

To conduct the research, ethical approval was obtained from the Non-Interventional Clinical Research Ethics Committee of a university with the date 19.02.2020 and number 2020-02/50. During the data collection phase, all individuals who agreed to participate in the research were informed about the study and the confidentiality of the data, and their verbal and written consents were obtained. At every stage of the research, the principles of the Helsinki Declaration were adhered to.

RESULTS

The sample group, with an average age of 47.7 ± 12.84, consisted of 74.7% women, 48.0% aged between 31-50 years, 45.3% high school graduates, 78.0% married, 87.2% with children, 52.7% not working in any job, and 42.0% classified as overweight according to BMI. When examining the clinical characteristics of the hypothyroid individuals participating in the study, it was found that 52.0% had a duration of hypothyroidism between 1-5 years, and 56.5% did not have any chronic diseases (Tablo 1).

The mean scores of the Piper Fatigue Scale, ThyDQoL-TR Scale, and Beck Depression Scale of the individuals included in the study are presented in Table 2. When the table is examined; the average subscale scores of the Piper scale were determined as follows: behavior/violence 4.39 ± 1.75, affect 5.10 ± 1.88, sensory 5.13 ± 1.82, cognitive/psychological 4.69 ± 1.50, and the overall average score of the Piper Fatigue Scale was found to be 4.97 ± 1.59. In the same table, the average score of the Beck Depression Scale is 15.43 ± 8.83, and the average score of the ThyDQoL-TR Scale is -5.34 ± 8.44 (Tablo 2).

In Table 3, where the correlation of the Piper Fatigue Scale, Beck Depression Scale, and ThyDQoL-TR Scale scores of individuals with hypothyroidism is examined, the correlation values between the subdimensions of the Piper Fatigue Scale and the total scale score and the Beck Depression Scale scores were found to be significant at the $p < 0.05$ significance level, indicating a moderate positive relationship. No significant relationship was found between the subscales and total score of the Piper scale and the ThyDQoL-TR scale (Tablo 3).

Table 4 presents the scores obtained from the Piper Fatigue Scale, ThyDQoL-TR Scale, and Beck Depression Scale according to some characteristics of the participants. When examining the table, it is observed that the total and subscale scores of the Piper Fatigue Scale and the average scores of the Beck Depression Scale for individuals in the 61-76 age group are significantly higher. The scores on all scales of participants who were obese and morbidly obese were found to be significantly higher compared to those who were of normal weight and overweight. In the comparison made according to the education level, it was determined that the average depression scores of university graduate students were low, while the quality of life scores of high school graduates were significantly high. In the table, it is observed that individuals with a hypothyroidism duration of 11 years and above have significantly higher PIPER Fatigue Scale scores, while those with a disease duration of 1-5 years have

significantly lower Beck Depression Scale scores ($p < 0.001$). Additionally, participants with chron Table 4. Mean Scores of Piper Fatigue Scale, Thydqol-TR Scale and Beck Depression Scale According to Some Characteristics of Participantsic diseases have higher PIPER Fatigue and Beck Depression Scale scores. (Tablo 4).

Table 1. Descriptive Characteristics of the Participants

Descriptive Characteristics	n	%
Gender		
Female	112	74.7
Male	38	25.3
Average Age	47.7±12.84 (min:18, max: 76)	
Age Groups		
18-30 years	18	12.0
31-50 years	72	48.0
51-60 years	35	23.3
61-76 years	25	16.7
BMI average	29.32±5.60 (min:18.30, max:57.30)	
According to BMI;		
18.5-24.9 "Normal weight"	29	19.4
25.0-29.9 "Overweight"	63	42.0
30-39.9 "Obese"	52	34.6
40-49.9 "Morbidly obese"	6	4.0
Education level		
Illiterate	4	2.7
Primary school	43	28.7
High school	68	45.3
Bachelor's degree and above	35	23.3
Duration of hypothyroidism		
1-5 years	78	52,0
6-10 years	61	40,7
11 years and above	11	7,3

Table 2. Participants' Piper Fatigue Scale, Beck Depression Scale, and Thydqol-TR Scale Average Scores

SCALES	Mean	SD.	Min- Max	Cronbach Alpha
PİPER behavior/violence subscale	4,39	1,75	0,30 - 8,75	,878
PİPER affective subscale	5,10	1,88	1,40 - 8,80	,987
PİPER sensory subscale	5,13	1,82	1,40 - 9,80	,895
PİPER cognitive/psychological subscale	4,69	1,50	1,83 - 9,50	,956
Piper Fatigue Scale Total	4,97	1,59	1,63 - 9,07	,906
Beck Depression Scale	15,43	8,83	2,00 –52,00	,745
ThyDQoL-TR Scale	-5,34	8,44	-9,00 - 3,00	,846

Table 3. Correlation of Participants' Scores on the Piper Fatigue Scale with the Thydqol-TR Scale and the Beck Depression Scale

Piper Fatigue Scale		1	2	3	4	5	6	7
ThyDQoL-TR Scale	r	-,086	-,093	-,074	-,070	-,087	1	
	p	,297	,260	,370	,398	,294	-	
Beck Depression Inventory	r	,342**	,341**	,317**	,432**	,368**	,044	1
	p	**,000**	**,003**	**,000**	**,000**	**,000**	,592	-

1-Piper behavior/violence subscale, 2-Piper affective subscale, 3-Piper sensory subscale, 4-Piper cognitive/psychological subscale, 5-Piper Fatigue Scale, 6-ThyDQoL-TR Scale, 7-Beck Depression Scale

Table 4. Mean Scores of Piper Fatigue Scale, Thydqol-TR Scale and Beck Depression Scale According to Some Characteristics of Participants

Descriptive characteristics	Piper Fatigue Scale					ThyDQoL-TR Scale	Beck Depression Scale
	Behavior/violence sub-dimension	Emotion sub-dimension	Sensory sub-dimension	Cognitive psychological sub-dimension	Total Score		
Gender							
Female	5.08±1.67	5.25±1.87	5.26±1.75	4.76±1.38	5.10±1.48	-5.48±9.63	15.07±7.37
Male	4.49±1.89	4.63±1.84	4.75±1.97	4.46±1.80	4.59±1.83	-4.93±2.49	16.47±12.20
Statistical analysis	t=1.77 p=.078	t=1.74 p=.084	t=1.50 p=.136	t=1.07 p=.285	t=1.67 p=.095	t=.34 p=.732	t=-.66 p=.507
Age groups							
18-30 years	3.91±1.6	4.49±1.98	4.85±2.23	4.12±1.42	4.36±1.70	-4.72±2.12	12.28±9.98
31-50 years	4.50±1.42	4.61±1.74	4.68±1.62	4.34±1.36	4.54±1.34	-6.45±11.86	14.32±8.34
51-60 years	5.37±1.78	5.48±1.71	5.47±1.63	4.88±1.28	5.30±1.46	-4.50±2.46	15.63±5.60
61-76 years	6.26±1.76	6.36±1.77	6.15±1.88	5.81±1.63	6.16±1.66	-3.73±1.92	20.60±11.12
Statistical analysis	KW=27.02 **p=.000**	KW=18.84 **p=.000**	KW=13.46 **p=.004**	KW=19.62 **p=.000**	KW=21.86 **p=.000**	KW=8.24 **p=.041**	KW=14.56 **p=.002**
Body Mass Index							
Normal	4.14±1.66	4.39±2.04	4.79±2.1	4.37±1.64	4.44±1.78	-3.89±2.31	18.11±13.86
Overweight	4.40±1.59	4.67±1.68	4.71±1.6	4.11±1.25	4.46±1.39	-4.80±2.48	12.49±7.04
Obese	5.76±1.52	5.82±1.68	5.71±1.7	5.42±1.36	5.70±1.35	-6.84±13.85	17.35±6.74
Morbidly obese	6.67±1.48	6.47±2.41	6.17±2.37	5.89±1.29	6.38±1.56	-4.18±2.53	17.00±4.0
Statistical analysis	KW=30.60 **p=.000**	KW=18.40 **p=.000**	KW=12.85 **p=.005**	KW=27.2 **p=.000**	KW=27.23 **p=.000**	KW=4.98, p=.173	KW=18.31 **p=.000**
Education level							
Illiterate	5.76±2.18	6.05±2.15	6.20±2.13	6.29±2.29	6.08±2.12	-3.31±1.16	16.00±11.97
Primary school	5.47±1.92	5.31±2.21	5.36±2.03	4.88±1.52	5.28±1.77	-4.22±1.88	18.63±9.39
High school	4.83±1.75	5.04±1.68	4.99±1.71	4.74±1.51	4.91±1.53	-6.57±12.24	16.07±8.87
University and above	4.36±1.21	4.82±1.76	5.01±1.70	4.15±1.14	4.58±1.29	-4.53±2.07	10.17±4.72
Statistical analysis	KW=8.91 **p=.030**	KW=2.28 p=.515	KW=2.82 p=.419	KW=7.07 p=.070	KW=5.34 p=.148	KW=8.13 **p=.043**	KW=24.45 **p=.000**
Duration of hypothyroidism							
1-5 years	4.24±1.56	4.65±1.76	4.68±1.74	4.14±1.34	4.42±1.44	-4.96±2.25	13.29±8.76
6-10 years	5.53±1.65	5.44±1.86	5.51±1.76	5.10±1.41	5.43±1.52	-6.00±12.95	17.84±8.44
≥11 years	6.44±1.28	6.31±2.0	6.22±1.85	6.23±1.25	6.31±1.34	-4.39±1.96	17.18±8.19
Statistical analysis	KW=28.05 **p=.000**	KW=10.68 **p=.005**	KW=11.49 **p=.003**	KW=28.07 **p=.000**	KW=22.60 **p=.000**	KW=2.87, p=.237	KW=17.71 **p=.000**
Chronic disease status							
Yes	5.66±1.72	5.58±2.01	5.62±1.87	5.28±1.44	5.55±1.62	-4.26±2.35	18.38±8.77
No	4.39±1.56	4.75±1.68	4.78±1.68	4.23±1.35	4.54±1.39	-6.11±11.07	13.25±8.32
Statistical analysis	t=4.64 **p=.000**	t=2.68 **p=.008**	t=2.83 p**=.005**	t=4.50 **p=.000**	t=4.05 **p=.000**	t=1.30, p=.194	t=3.61 **p=.000**

DISCUSSION

Fatigue is commonly observed in patients with hypothyroidism, yet it is a symptom that is not adequately considered as a medical condition. This situation not only affects the evaluation and diagnosis process but also causes the patient to experience constant fatigue, impacting their daily activities and quality of life (Hegedüs et al., 2022; Raij and Raij, 2024). In this context, conducting assessments and studies to determine fatigue is becoming increasingly important for maintaining the patient's well-being. In this study, the Piper Fatigue Scale was used to determine the fatigue levels of individuals with hypothyroidism, and it was found that the individuals experienced moderate levels of fatigue. According to the subscale scores of the scale, it has been determined that individuals experience the most mental and emotional fatigue. In a study conducted in Netherlands, 81% of hypothyroid patients reported experiencing weakness and fatigue (Jansen et al., 2023). In studies evaluating muscle dysfunction and fatigue in hypothyroid patients, the level of fatigue in the hypothyroid patient group was found to be higher compared to the healthy group (Ruíz-Pacheco et al., 2023; Shah, 2017). In another study conducted with a group of women with hypothyroidism, after the diagnosis of the disease the functional capacity decreased. Fatigue is more commonly observed, and all of this affects daily life activities it has been reported that it reduces the quality of life (Werneck et al., 2018). Although fatigue has been reported in studies conducted with individuals with hypothyroidism in our country and worldwide literature, studies evaluating the severity of fatigue are limited in number. When considering the frequency of occurrence and the level of impact on the individual, it can be said that the fatigue symptom in individuals with hypothyroidism should be evaluated in detail, and nurses should adopt a holistic approach to the patient in collaboration with the entire healthcare team for symptom control.

Depression; especially during the process of chronic illness is a frequently occurring mood disorder, and this condition is also commonly observed in the context of hypothyroidism (Ağaçhanlı et al., 2016; Gorkhali et al., 2020; Özen et al., 2018). Indeed, it was determined in this study that the participants experienced mild levels of depression. It has been reported that depressive symptoms are increased in individuals with hypothyroidism (Basiura et al., 2024; Jansen et al., 2023; Raij and Raij, 2024). In the study by Demartini et al., (2014) it was found that individuals with hypothyroidism had higher depression scores compared to the healthy group. In another study, it was determined that there is a positive correlation between the level of hypothyroidism symptoms and the severity of depression. (Fugger et al., 2018). In the study by Gorkhali et al. (2020), the prevalence of depression in individuals with hypothyroidism was determined to be 36.7%, and it was found that the patients experienced moderate levels of depression. When the literature is examined, it is seen that the study findings support our study results. The relationship between depression and hypothyroidism has been studied for many years, but its pathophysiological mechanism has not been fully proven. It is thought that hypothyroidism slows down serotonergic nerve transmission and reduces adrenergic conductivity (Basiura et al., 2024; Hong et al., 2018; Özen et al., 2018). It is believed that depression, which is not diagnosed and treated early in patients with hypothyroidism, causes serious job losses, social incompatibilities, and prolongs the duration of disease treatment. Considering these results, it is thought that the nurse, physician, and all caregiving staff should adopt a holistic approach to the patient, focusing on both the physical and emotional issues of the patients.

Hypothyroidism is one of the chronic diseases that negatively affect the quality of life due to the symptoms it causes. (Hong et al., 2018). When the literature is examined, it is observed that the quality of life in hypothyroidism is generally evaluated using non-disease-specific general scales. These scales are less sensitive and may be inadequate in measuring small changes because they are not disease-specific (Hatiboğlu, 2012). In this study, the ThyDQoL-TR Scale was used for the first time after the Turkish validity and reliability study, and it was determined that the quality of life of individuals with hypothyroidism was negatively affected compared to their condition before the diagnosis of the

disease. Indeed, studies conducted in our country and around the world also support this conclusion. In studies comparing individuals with hypothyroidism to the general population, it has been found that individuals with hypothyroidism have a lower quality of life (Hegedüs et al., 2022; Kelderman-Bolk et al., 2015; Shivaprasad et al., 2018). When evaluating the results obtained from our study and the findings in the literature; individuals with hypothyroidism it can be said that their quality of life is negatively affected due to the disease process, and planning nursing interventions aimed at improving quality of life is an important professional responsibility. In the study, the average scores of fatigue, depression, and quality of life were compared based on certain characteristics of individuals with hypothyroidism. In the analysis conducted, age was identified as a significant variable for fatigue levels, and individuals aged 50 and above had higher Piper fatigue scale scores compared to other age groups. It is stated that the prevalence of hypothyroidism increases to approximately 10% after the age of 60, and the severity of symptoms also increases with age (Akter et al., 2017). Murpy and Niemiec (2014) obtained similar results in their study with a different patient group. The increase in fatigue with age, the progression of hypothyroidism as one gets older, the slowing of metabolism, and the physiological changes that occur as part of the natural aging process can explain this.

In the study, when the Piper Fatigue Scale scores of patients were examined according to the duration of hypothyroidism, significant differences were found between the total scale and subscale scores. It was determined that as the duration of hypothyroidism increased, the severity of fatigue also increased, and all subscales were more affected. When we look at the literature, it is observed that there has been no study conducted on fatigue and disease duration, and no comparison has been made in this regard. Another finding obtained in this study is that individuals with chronic diseases other than hypothyroidism have higher total scores on the Piper Fatigue Scale and higher scores on all sub-dimensions of the scale. Hirsch and Sirois (2016) reported in their study that fatigue symptoms are frequently observed in chronic illnesses. Bozkurt et al. (2020), in their study, stated that individuals with multiple chronic diseases perceive a higher severity of fatigue. These studies in the literature support our work and highlight the significant impact of chronic illness on fatigue. The study found that advanced age is a determining factor for the level of depression in individuals with hypothyroidism. When the literature is examined, it is seen that there are findings supporting this result (Aytap and Özer, 2021; Loh et al., 2019). In a study conducted on women with hypothyroidism in our country, the depression rate observed in the age group of 53-65 was found to be higher, and it was reported that depression and stress levels increased with age (Çiftçi and Karaca, 2021). When the results are evaluated, most studies emphasize that the rate of depression increases with age. Indeed, with aging. It has been reported that factors such as the increase in chronic diseases, the variety and frequency of medication use, the rise in pain and fatigue levels, the decrease in personal health perceptions, the inadequacy in coping with diseases and problems, and exposure to social isolation, along with biochemical and psychological changes occurring in the hypothalamus-pituitary-thyroid axis, trigger depression (Loh et al., 2019). In the study, it was found that the Beck Depression Inventory scores of obese patients were higher compared to those who were of normal-overweight. In the study conducted by Çiftçi and Karaca (2021) using the Beck Depression Inventory on women with hypothyroidism, it was found that the Beck Depression Inventory scores of individuals with a BMI classified as underweight and normal were lower compared to those classified as slightly overweight and obese. In light of the obtained results, it can be said that in overweight and obese individuals, disease symptoms, negative body perception, and low body image increase the risk of depression.

The Beck Depression Inventory scores of patients with a disease duration of 6-10 years were found to be significantly high. As the duration of chronic illness increases, the symptoms and effects of the disease experienced by individuals may intensify, the disease process may worsen, long-term medication use may lead to more frequent side effects, and feelings of hopelessness and burnout may increase

the risk of depression. In the literature, no study has been found that aims to determine the relationship between the duration of hypothyroidism and depression. In individuals with chronic illnesses, considering that the duration of the disease can increase the period of stress exposure and lead to mood changes, it is believed that providing psychological care services alongside physical care is important in the planning of care. It has been observed that individuals with any chronic illness other than hypothyroidism have higher Beck Depression Inventory scores. In our country, it has been determined that at least 22 million people have one or more chronic diseases, and it has been reported that one in three people diagnosed with a chronic disease experience depression (Akpınar and Ceran, 2019). In the study conducted by Aytap and Özer (2021), moderate depression was detected in 66.5% of individuals with chronic diseases. In the study by Güzel and Ergün (2020), similar results were obtained. In light of the obtained data, it can be considered that chronic diseases lead to an increase in depression scores by causing feelings of helplessness, sadness, anger, withdrawal, decreased self-esteem, fear of death, and anxiety about dependency in individuals. In the analysis conducted to compare the quality of life levels of individuals with hypothyroidism with certain variables, age was identified as an important variable, and the group most affected in terms of quality of life was determined to be the 31-50 age group. In a study where the quality of life of individuals with hypothyroidism was evaluated using the SF-36 scale, the relationship between age and quality of life was found to be significant, with younger patients' physical functions being less affected and older patients' mental functions being more affected (Bukvic et al., 2014). According to a study conducted in our country using the SF-36 Quality of Life scale, a decrease in scale scores with age was found in women with hypothyroidism (Çiftçi and Karaca, 2021). In Hatiboğlu's (2012) study on the Turkish validity-reliability of the ThyDQoL-TR Scale, no significant relationship was found between age and quality of life related to hypothyroidism. These differing results in the literature prevent a clear interpretation of the quality of life related to hypothyroidism and indicate the need for further research on the topic.

In the study, the quality of life of the patient group with a high school education was found to be significantly low. This result may be related to the change in individuals' perception of quality as their education level increases, the rise in their expectations from life, and consequently, their dissatisfaction with their current living conditions. In the study conducted by Çiftçi and Karaca (2021), a positive relationship was found between education level and quality of life scores. In a different study, however, no significant relationship was found between education level and quality of life (Hatiboğlu, 2012).

In the study, the relationship between fatigue, depression, and quality of life scores was examined, and it was found that there is a moderately positive and significant relationship between the level of fatigue individuals feel and their depression scores. The perception of fatigue felt by individuals is influenced by various factors. One of these factors is psychological influences. The relationship between long-term fatigue and depression has been examined in various studies, and a positive correlation has been identified between them (Adın et al., 2022; Fong et al., 2015; Ha Jeong et al., 2018). Just as depression can be triggered in an individual who constantly and severely feels fatigued, a constant state of fatigue can also be observed in depressive individuals (Raij and Raij, 2024). Doğan et al., (2020) reported that symptoms of major depressive disorder were observed in patients with prolonged fatigue symptoms. In a study conducted in our country, it was found that mental fatigue is significantly and positively correlated with depression (Adın et al., 2022). When evaluating the study results, it can be said that fatigue and depression are two interrelated symptoms. It is clear that nurses, who play active roles in the physical and psychosocial care process and are responsible for providing holistic care to patients, can achieve significant improvements in other existing symptoms by effectively managing one of these symptoms.

CONCLUSION

The study found that individuals with hypothyroidism experience moderate fatigue, mild depression, and their quality of life levels are negatively affected compared to their condition before being diagnosed with hypothyroidism, and there is a significant positive relationship between the levels of fatigue and depression. In individuals with hypothyroidism, it is recommended to regularly evaluate the levels of fatigue, depression, and quality of life, for nurses to include these issues during patient assessment, and to make plans addressing these problems. Additionally, increasing awareness among healthcare workers through training and counseling programs related to the topic is suggested. Additionally, providing counseling services to help individuals cope with issues such as fatigue and depression and to improve their quality of life, as well as planning follow-up studies with larger samples to examine the levels of fatigue, depression, and quality of life in these individuals, can be considered.

Limitations of the Study

Since the study was conducted with individuals who applied to a single hospital in a certain time period and accepted to participate in the study, the results can only be generalised to its own population. Another limitation of the study is that the data were collected through self-reporting within a certain period of time.

Conflict of Interest

There are no potential conflicts of interest.

REFERENCES

Adın, R. M., Ceren. A. N., Salcı. Y. et al. (2022). Dimensionality, psychometric properties, and population-based norms of the Turkish version of the Chalder Fatigue Scale among adults. Health and Quality of Life Outcomes, 20(1), 161. https://doi.org/10.1186/s12955-022-02074-x

Ağaçhanlı, R., Balaban, Ö. D., Yazar, M. S. et al. (2016). Hashimoto tiroiditine bağlı gelişen psikoz: Bir olgu sunumu. Düşünen Adam, The Journal of Psychiatry and Neurological Sciences, (29), 181-186. https://doi.org/10.5350/DAJPN2016290212

Akarsu, E., Alagöl, F., Altun, B. et al. (2020). Tiroid Hastalıkları Tanı ve Tedavi Kılavuzu, 3, 13-21.

Akpınar, N. B., Ceran, M. A. (2019). Kronik hastalıklar ve rehabilitasyon hemşireliği. Adnan Menderes Üniversitesi Sağlık Bilimleri Fakültesi Dergisi, 3(2), 140-152.

Akter, N., Qureshi, N. K., Ferdous, H. S. (2017). Subclinical hypothyroidism: A review on clinical consequences and management strategies. Journal of Medicine, 18(1), 30-36. http://dx.doi.org/10.3329/jom.v18i1.31174

Aytap, F., Özer, Z. (2021). Kronik hastalığı olan bireylerde depresyon riski ile hastalık öz yönetimi arasındaki ilişki ve etkileyen faktörler. Turkish Journal of Family Medicine and Primary Care, 15 (2), 212-222. https://doi.org/10.21763/tjfmpc.788814

Basiura, K., Starzomska, D., Rymaszewska, K., et al. (2024). The association between hypothyroidism, mental disorders and physical activity: a comprehensive review. Quality in Sport, 16, 52499-52499. https://dx.doi.org/10.12775/QS.2024.16.52499

Beck, A. T. (1961). An inventory for measuring depression. Archives of General Psychiatry, 4, 561-571.

Boylu, A., Paçacıoğlu, B. (2016). Yaşam kalitesi ve göstergeleri. Journal of Academic Researches and Studies, 15(8), 137-150.

Bozkurt, C., Akay, B., Sinmaz, T. (2020). Kronik obstrüktif akciğer hastalığı olan bireylerde yorgunluk düzeyi ile uyku kalitesinin ilişkisi, Osmangazi Journal of Medicine, 42(6), 627-638. https://doi.org/10.20515/otd.655648

Bukvic, B., Sipetic, S., Stanisavljevic, D. et al. (2014). Quality of life. anxiety and depression in patients with thyroid diseases and correlating factors. Acta Med Mediterranea, 30, 731. https://doi.org/10.1007/s00423-014-1221-7

Can, G., Durna, Z., Aydiner, A. (2004). Assessment of fatigue in and care needs of Turkish women with breast cancer. Cancer Nursing, 27(2), 153-161.

Çaklılı, Ö. T. (2019). Ötiroid hashimoto tiroiditi ve subklinik hipotiroidisi olan hastalarda depresif semptomların değerlendirilmesi. Kocaeli Üniversitesi Sağlık Bilimleri Dergisi, 5(3), 106-108. https://doi.org/10.30934/kusbed.600302

Çiftçi, A., Karaca, E. (2021). Hipotiroidi tanısı almış kadınların yaşam kalitesi ile besin tüketim alışkanlıkları ve bazı antropometrik parametreler arasındaki ilişkinin saptanması. Acıbadem Üniversitesi Sağlık Bilimleri Dergisi, 12(1), 87-93. https://doi.org/10.31067/acusaglik.831638

Demartini, B., Ranieri, R., Masu, A. (2014). Depressive symptoms and majör depressive disorder in patients affected by subclinical hypothyroidism: a crosssectional study. J Nerv Ment Dis, 202(8), 603-637. https://doi.org/10.1097/NMD.0000000000000168

Doğan, A.G., Doğan, M., Karahan, İ. (2020). Kronik yorgunluk sendromuna genel yaklaşım ve adölesanlarda görülme sıklığı. J Health Sci Med, 3(1), 67-70. https://doi.org/10.32322/jhsm.660275

El Najjar, M., Soliman, S. S., Naidany, S. S. E. et al. (2022). Study of study of fatigue in hypothyroid patients.

Menoufia Medical Journal, 1(5), 553-558. https://doi.org/10.4103/mmj.mmj_268_21

Fong, T.C., Chan, J.S., Chan, C.L. et al. (2015). Psychometric properties of the Chalder Fatigue Scale revisited: an exploratory structural equation modeling approach. Qual Life Res, 24(9), 2273-2278. https://doi.org/10.1007/s11136-015-0944-4

Fugger, G., Dold, M., Bartova, L. et al. (2018). Comorbid thyroid disease in patients with major depressive disorder – results from the European group fort he study of resistant depression (GSRD). Eur Neuropsychopharmacol, 28(6), 752-760. https://doi.org/10.1016/j.euroneuro.2019.03.005

Gorkhali, B., Sharma, S., Amatya, M. et al. (2020). Anxiety and depression among patients with thyroid function disorders. Journal of Nepal Health Research Council, 18(48), 373-378. https://doi.org/10.33314/jnhrc.v18i3.2499

Güzel, A., Ergün, G. (2020). Üniversite öğrencilerinde depresyon sıklığı ve ilişkili faktörler. Ankara Sağlık Bilimleri Dergisi, 9(2), 279-289. https://www.doi.org/10.46971/ausbid.763213

Ha, H., Jeong, D., Hahm, B. J. et al. (2018). Cross-cultural validation of the Korean Version of the Chalder Fatigue Scale. Int J Behav Med, 25(3), 351-61. https://doi.org/10.1007/s12529-017-9701-0

Hatiboğlu, B. (2012). Hipotiroidili olgularda THYDQOL (Underactıve Thyroıd-Dependent Qualıty Of Lıfe Questıonnaıre) Yaşam Kalitesi Ölçeğinin Türkçe'ye uyarlanması ve Türkçe Sürümünün geçerliliğinin ve güvenirliliğinin sınanması. Yayınlanmamış Uzmanlık Tezi, Celal Bayar Üniversitesi. Manisa.

Hegedüs, L., Bianco, A. C., Jonklaas, J. et al. (2022). Primary hypothyroidism and quality of life. Nature Reviews Endocrinology, 18(4), 230-242. https://doi.org/10.1038/s41574-021-00625-8

Hirsch, J. K., Sirois, F. M. (2016). Hope and fatigue in chronic illness: The role of perceived stress. J Health Psychology, 21(4), 451-456. https://doi.org/10.1177/1359105314527142

Hisli, N. (1989). Beck Depresyon Envanterinin üniversite öğrencileri için geçerliği ve güvenirliği. Psikoloji Dergisi, 7(23), 3-13.

Hong, J. W., Noh, J. H., Kim, D. J. (2018). Association between subclinical thyroid dysfunction and depressive symptoms in the Korean adult population: The 2014 Korea National Health and Nutrition Examination Survey. PloS one, 13(8), e0202258.

Jansen, H. I., Boelen, A., Heijboer, A. C., et al. (2023). Hypothyroidism: the difficulty in attributing symptoms to their underlying cause. Frontiers in endocrinology, *14*, 1130661. https://doi.org/10.3389/fendo.2023.1130661

Kelderman-Bolk, N., Visser, T. J., Tijssen, J. G. et al. (2015). Quality of life in patients with primary hypothyroidism is related to BMI. European Journal Of Endocrinology, 173(4), 507-515. https://doi.org/10.1530/EJE-15-0395

Loh, H. H., Lim, L. L., Yee, A. et al. (2019). Association between subclinical hypothyroidism and depression: an updated systematic review and metaanalysis. BMC Psychiatry, 19(1), 12. https://doi.org/10.1186/s12888-018-2006-2

McMillan, C.V., Bradley, C., Woodcock, A. et al. (2004). Design of new questionnaires to measure quality of life and treatment satisfaction in hypothyroidism. Thyroid, 14, 916–925. https://doi.org/10.1089/thy.2004.14.916

Murphy, S., Niemiec, S. S. (2014). Aging. fatigue. and fatigability: İmplications for occupational and physical therapists. Curr Geriatr Rep, 3,135–141. https://doi.org/10.1007/s13670-014-0093-6

Özen, Ö. Z., Cander, S., Ersoy, C. (2018). Subklinik hipotiroidi nedir? Tedavi edilmeli midir? Uludağ Üniversitesi Tıp Fakültesi Dergisi, 44(2), 129-134. https://doi.org/10.32708/uutfd.435351

Piper, B. F., Dibble, S. L., Dodd, M. J. et al. (1998). The revised Piper Fatigue Scale: Psychometric evaluation in women with breast cancer. Oncol Nurs Forum, 25, 677-684.

Raij, T., Raij, K. (2024). Association between fatigue, peripheral serotonin, and L-carnitine in hypothyroidism and in chronic fatigue syndrome. Frontiers in Endocrinology, 15, 1358404. https://doi.org/10.3389/fendo.2024.1358404

Ruíz-Pacheco, M. G., Hernández, I., Hernández-Estrella, G., et al. (2023). Severity of fatigue and its relationship with TSH before and after levothyroxine replacement therapy in patients with primary hypothyroidism. Biomedicines, 11(3), 811. https://doi.org/10.3390/biomedicines11030811

Shah, R. (2017). In older adults with subclinical hypothyroidism, levothyroxine did not improve symptoms or tiredness. Annals of Internal Medicine, 167, JC14. https://doi.org/10.7326/acpjc-2017-167-4-014

Shivaprasad, C., Rakesh, B., Anish, K. et al. (2018). Impairment of health related quality of life among Indian patients with hypothyroidism. Indian Journal of Endocrinology and Metabolism, 22(3), 335-338. https://doi.org/10.4103%2Fijem.IJEM_702_17

Siegmann, E. M., Müller, H., Luecke, C. et al. (2018). Association of depression and anxiety disorders with autoimmune thyroiditis: A systematic review and meta-analysis. JAMA Psychiatry, 75(6), 577-584. https://doi.org/10.1001/jamapsychiatry.2018.0190

Werneck, F. Z., Coelho, E. F., Almas, S. P. et al. (2018). Exercise training improves quality of life in women with subclinical hypothyroidism: A randomized clinical trial. Arch. Endokrinol. Metab, 62 (5), 530-536. https://doi.org/10.20945/2359-3997000000073

Wilson, S. A., Stem, L. A., Bruehlman, R. D. (2021). Hypothyroidism: Diagnosis and treatment. American Family Physician, 103(10), 605-613. https://familydoctor.org/condition/hypothyroidism/

Yontar, G., Semiz, M., Kuğu, N. et al. (2015). Hipotiroidi ile ilişkili psikotik mani: Bir vaka sunumu. Journal of Mood Disorders, 5(3),134-137. https://doi.org/10.5455/jmood.20140622094055