

## Original Article

# Obesity and Quality of Life in Female Patients with Hashimoto's Thyroiditis

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### Abstract

**Objective:** To determine the obesity frequency and quality of life in female patients with hashimoto's thyroiditis, and also to determine the factors affecting quality of life.

**Methodology:** The study was conducted with 214 women in Cumhuriyet University Health Services Application and Research Hospital in Sivas, Turkey. Data were collected by the patient diagnosis form and the Short Form-36 (SF-36) Quality of Life Scale. Percentage, mean, kappa consistency measurement, student t test, one way ANOVA and Pearson correlation analysis were used for statistical evaluation.

**Results:** Almost half of the women were in the risk group for abdominal obesity. Participants were found to have the highest quality of life related to pain, and the lowest quality of life related to emotional role limitations. It was determined that women had difficulties in performing their activity daily living due to disease and obese women had lower quality of life in all sub-scales ( $p < 0.05$ ).

**Conclusions:** Obesity was found in more than one third of women with Hashimoto's thyroiditis, the quality of life was found to be low in emotional terms and presence of obesity affect the quality of life in women with Hashimoto's thyroiditis.

**Keywords:** Hashimoto's thyroiditis, obesity, quality of life, woman.

### Introduction

Hashimoto's thyroiditis is a chronic autoimmune destructive inflammation of the thyroid gland, which is the most common cause of hypothyroidism with goitre (Erbas, Dagdelen, 2004; Ciccone et al., 2010). Hashimoto's thyroiditis is often seen in women aged 30-50 years (Ozkan, Kayatas, 2015) and about seven times more in men than women (Kaya et al., 2016). Hashimoto's thyroiditis is often accompanied by obesity, which is considered to be one of the associated risk factors for many diseases and which is a major health problem

(Brumpton et al., 2013; Duntas, Biondi, 2013; Alkac et al., 2014).

Slowmetabolic rate caused by deteriorated thyroid functions in hashimoto's thyroiditis may cause weight gain (Alkac et al., 2014). On the other hand, it is assumed that there is a relationship between body weight, increased Thyroid Stimulating Hormone (TSH) and triiodothyronine (T3) of obese individuals, and the association between weight and TSH may be leptin-mediated (Biondi, 2010). Increased thyroid pathology and obesity, especially in young women, are increasing remarkably, and it can lead to the development of resistance to

weight loss (Alkac et al., 2014). In this context, it is important to determine the risk factors for obesity, to develop strategies to prevent obesity and to provide individual awareness in individuals with hashimoto's thyroiditis.

Symptoms such as exhaustion, fatigue, constipation, cold intolerance, joint pain, muscle cramps and depression are seen in individuals diagnosed with Hashimoto's thyroiditis (Binay, Simsek, 2016). These negative conditions can affect the quality of life of the individuals adversely. Studies have also shown that patients with Hashimoto's thyroiditis have low quality of life (Bianchi et al., 2004; Watt et al., 2009; Uysal, Ayhan, 2016).

This study was conducted because of the limited number of studies about obesity frequency and quality of life in individuals with Hashimoto's thyroiditis in the literature and because of the prevalence of Hashimoto's thyroiditis in women. It is thought that the study will contribute to the literature by drawing attention to the importance of obesity in women who have Hashimoto's thyroiditis and by clarifying the main symptoms of obesity and the change in quality of life of women.

**Objective:** The study was conducted to determine the obesity frequency and quality of life in female patients with hashimoto's thyroiditis, and also to determine the factors affecting quality of life.

### Methodology

**Design and Population and sample:** Cross-sectional and descriptive study and the population of the study consisted of adult female patients who were diagnosed with Hashimoto's thyroiditis and referred to the polyclinic of Endocrinology and Metabolism Diseases of Cumhuriyet University Health Services Application and Research Hospital in Sivas, Turkey between October 01, 2017 and May 31, 2018. It is aimed to reach the whole of the population in the time interval determined without sampling selection. In this context, 214 women who were diagnosed with Hashimoto's thyroiditis for at least 6 months, who have no pregnancy history, no thyroid surgery, no chronic disease such as kidney disease, liver disease, congestive heart failure, cancer, no endocrinological disease or drug use that can lead to obesity, and who agreed to participate in

the study were included in the sample of this study.

### Data collection tools

Data were collected by the Patient Diagnosis Form and the Short Form-36 (SF-36) Quality of Life Scale.

**Patient Diagnosis Form:** This form questioning the personal information (age, marital status, education status, working status, smoking and alcohol use, etc.), disease information (other chronic disease information, duration of disease, treatment type, regular use of treatment, complaints, etc.), height, weight and waist circumference consists of 18 questions prepared by researchers according to the literature review (4,5). The height and weight of the patients were measured by the researchers. For measuring height and weight, weighing scale and measuring tape were used. By recording the individual's height in cm, kilogram in kilogram (kg), body mass index (BMI) was calculated by  $\text{kg/m}^2$  formula.

### Short Form - 36 (SF-36) Quality of Life Scale:

It was developed by Ware in 1987 to examine the health status and quality of life of individuals. This 36-item measure is divided into the following 8 sub-scales providing information on 36 items: physical function (10 items), social functions (2 items), role limitations due to physical problems (4 items), role limitations due to emotional problems (3 items), general mental health (5 items), vitality and fatigue (4 items), pain (2 items), and general health perception (5 items). The statement "my present health status compared to last year" which question the change in health during the last year in the scoring is not taken into consideration. Instead of giving only one total score, the scale gives a total score for each subscale. Items within subscales are summed up to provide a total score ranging from 0 as negative health to 100 as positive health. The Cronbach Alpha value of the scale was found to be 0.85.

### Application

The data were collected by the researchers face to face in a room where patients can feel comfortable. Filling the data forms, height and weight measurements took about 25-30 minutes.

### Evaluation of the data

The data were interpreted in the SPSS 22.0 package program. In statistical evaluation, the percentage and mean test were used in the distribution of sociodemographic, disease and body weight related characteristics of women.

Kappa consistency measurement was used to compare the consistency between body structure and body weight perception by BMI value. The mean test was used to determine the quality of life levels. Student t test, one-way ANOVA and Pearson correlation analysis were used to compare the SF-36 Quality of Life Scale mean scores with some of the characteristics. Statistical significance was accepted as  $p < 0.05$ .

**Results**

The mean age of the women in the study was  $33.93 \pm 11.08$  (min=17, max=65), 51.9% were married, 50.9% graduated from higher education, 33.2% were working and 25.2% were still smoking. Women with Hashimoto’s thyroiditis were found to have complaints such as weight gain (31.8%), fatigue (16.4%) and joint pain (15.9%).

In table 1, it was determined that about half of the women (49.1%) were in the risk group for abdominal obesity, 27.6% were overweight and 38.8% were obese. However, only 4.2% of women perceived themselves as obese. When BMI and body weight perception of participants were compared, the consistency between them was found to be compatible at a low level ( $K=0.38$ ,  $p=0.000$ ).

In table 2, the distribution of SF-36 Quality of Life Scale subscale mean scores of women are shown. According to this, participants' pain subscale mean score ( $58.00 \pm 23.16$ ) was the highest and emotional role limitations subscale mean score ( $42.83 \pm 39.53$ ) was the lowest.

In table 3, comparison of the mean scores of some characteristics of women and SF-36 Quality of Life Scales is shown. Accordingly, there is a weak and inverse statistically significant difference between all subscales of the SF-36 Quality of Life Scale and age, a weak and inverse statistically significant difference between the duration of disease and the physical and social function subscales, a positive statistically significant difference between the educational status and all subscales of the SF-36 Quality of Life Scale, an inverse statistically significant difference between the smoking status and the pain subscale mean score, and an inverse statistically significant difference between the difficulty in performing daily activities due to disease and obesity, and the mean scores of all subscales of SF-36 Quality of Life Scale ( $p < 0.05$ ).

**Table 1 Distribution of waist circumference averages, Body Mass Index and body weight perceptions of women with Hashimoto’s thyroiditis**

Characteristics	n	%
<b>Waist circumference (cm)</b>		$85.43 \pm 14.39$
88 and below	109	50.9
>88	105	49.1
<b>Body Mass Index (kg/m<sup>2</sup>)</b>		
<18.5		1.4
18.5 - 24.9	69	32.2
25 - 29.9	59	27.6
$\geq 30$	83	38.8
<b>Body weight perception</b>		
Thin	23	10.7
Normal	76	35.5
Overweight	106	49.5
Obese	9	4.2

**Table 2 Distribution of SF-36 Quality of Life Scale subscale mean scores of women**

SF-36 Quality of Life Scale	Marked Min-Max	Mean $\pm$ SD
Physical function	0-100	56.30 $\pm$ 26.51
Physical role limitations	0-100	46.61 $\pm$ 37.02
Emotional role limitations	0-100	42.83 $\pm$ 39.53
Energy / vitality	0-95	46.40 $\pm$ 16.91
Mental health	0-88	52.50 $\pm$ 15.54
Social function	12.50-100	54.03 $\pm$ 23.59
Pain	0-100	58.00 $\pm$ 23.16
General health perception	20-100	47.28 $\pm$ 14.63

## Discussion

Hashimoto's thyroiditis, the most common cause of hypothyroidism, is associated with weight changes and weight gain (Diez, Iglesias, 2011; Poplawska-Kita et al., 2014; Valea et al., 2018). The increase in incidence of thyroid disorders especially in young women is striking and often accompanied by obesity (Alkac et al., 2014). Regarding the association between thyroid autoimmunity and obesity, leptin has an important role (Marzullo et al., 2010; Valea et al., 2018). It is also known that abdominal obesity is particularly associated with many endocrine disorders, including thyroid dysfunction, and that T3 regulates the energy metabolism and thermogenesis, and plays an important role in glucose and lipid metabolism, food regulation, and oxidation of fatty acids (Poplawska-Kita et al., 2014). In this study, it was determined that more than one third of women were obese and nearly half of them had abdominal obesity. When the literature is examined, it is observed that the frequency of hypothyroidism changes between 8% and 29% in obese individuals (Alkac et al., 2014; Valea et al., 2018). In a study, included 53 patients with euthyroid hashimoto's thyroiditis and 28 healthy individuals to her study, and applied all the participants thyroid ultrasonography and body fat analysis with BMI (Poplawska-Kita et al., 2014). At the end of the same study, patients with hashimoto's thyroiditis were reported to have

significantly higher body weight averages, BMI, waist-hip ratio and fat mass according to body weight than control group even though control group had euthyroidism. This study finding shows the necessity of determining individual risk factors in terms of obesity in individuals with hashimoto's thyroiditis, following of parameters such as body weight, BMI and waist circumference during periodic controls, excessive weight gain and obesity awareness. Women in this study mostly complained about weight gain (31.8%), fatigue (16.4%) and joint pain (15.9%). In a similar study, complaints such as chronic fatigue, rapid fatigue, rapid irritation and persistent nervousness were common, and increased symptom burden caused low quality of life in women (Ott et al., 2011). Health-related quality of life is an important subjective component in the assessment of any therapeutic intervention perceived by the patient. In some cases, especially in chronic diseases, the aim of these interventions is to preserve the quality of life of the patients at the highest level. These diseases include thyroid disorders such as goiter, hashimoto's thyroiditis, hyperthyroiditis (Bianchi et al., 2004). There is evidence that the presence of circulating thyroid-specific antibodies may affect psychological well-being in Hashimoto's thyroiditis patients (Ott et al., 2011; Mussig et al., 2012).

**Table 3** Comparison of some characteristics of women with Hashimoto’s thyroiditis and SF-36 Quality of Life Scale mean scores

Characteristics	SF-36 Quality of Life Scale Sub-Scales (Mean±SS)							
	Physical function	Physical role limitations	Emotional role limitations	Energy/vitality	Mental health	Social function	Pain	General health perceptions
<b>Age</b>								
r	-0.202	-0.384	-0.201	-0.272	-0.237	-0.281	-0.213	-0.290
p	0.003*	0.000*	0.003*	0.000*	0.000*	0.000*	0.002*	0.000*
<b>Duration of disease (year)</b>								
r	-0.190	-0.038	0.014	-0.077	-0.039	-0.255	-0.018	-0.092
p	0.005*	0.584	0.834	0.262	0.570	0.000*	0.799	0.151
<b>Educational status</b>								
Primary school	45.15±20.22	21.96±11.71	22.72±17.52	41.06±12.81	45.57±13.04	43.75±20.71	47.80±19.9	38.78±8.04
Secondary school	56.02±29.51	45.51±32.48	52.13±44.45	46.28±20.95	54.15±15.86	50.32±26.20	57.17±24.7	49.35±12.41
Higher education	63.16±26.65	61.92±34.29	51.68±39.67	49.67±16.80	56.11±15.56	61.58±21.69	64.47±22.3	51.69±16.24
F	10.317	30.634	13.833	5.567	10.578	13.817	11.746	19.296
p	0.000*	0.000*	0.000*	0.004*	0.000*	0.000*	0.000*	0.000*
<b>Difficulty in performing daily activities due to disease</b>								
Yes	47.96±25.36	31.25±24.98	29.86±35.69	40.26±16.64	48.16±16.79	41.66±19.16	49.89±21.5	38.48±9.40
No	63.09±25.57	59.11±33.91	53.38±39.49	51.39±15.48	56.03±13.53	64.08±22.08	64.59±22.4	54.44±14.24
T	-4.318	-5.893	-4.524	-5.060	-3.376	-7.834	-4.855	-9.430
p	0.000*	0.000*	0.000*	0.000*	0.000*	0.000*	0.000*	0.000*
<b>Obesity</b>								
Yes	45.96±23.65	29.21±20.44	30.92±21.99	43.61±14.71	46.02±13.66	50.75±22.71	53.28±21.7	43.97±12.16
No	62.86±26.22	57.63±36.67	50.38±42.03	48.16±17.99	56.61±15.31	56.10±23.98	60.99±23.6	49.38±15.68
T	-4.769	-5.888	-3.606	-1.931	-5.135	-1.624	-2.398	-2.674
p	0.000*	0.000*	0.000*	0.055	0.000*	0.106	0.017*	0.008*

\*p:0.05;

**Discussion contin.**

In this study, women had the highest quality of life related to pain and lowest quality of life related to emotional role limitations. In a similar study, it was shown that the reduction of all areas of quality of life was caused by the limitation of daily activities (both physical and emotional). The emotional role limitations is present in a large proportion of patients and is significantly associated with low quality of life (Bianchi et al., 2004). In another study, it was determined that deteriorated quality of life of patients with hashimoto's thyroiditis improved significantly after surgical treatment (Zivaljevic et al., 2015). This study finding shows the necessity of supporting women more emotionally in their daily lives. In this study, it was determined that as the age increases, the quality of life decreases, as the duration of disease increases, physical function and social function are adversely affected, and as the educational status increases, the quality of life increases. It was determined that non-smoking women had higher quality of life related to pain and women who had difficulties in performing their daily activities due to disease and obese women had lower quality of life in all sub-scales. In a study, it was determined that the quality of life was adversely affected only by autoimmune thyroid disorder independent of thyroid functions. In the same study, it was stated that physiological and psychological symptoms affect the quality of life and emotional changes are more effective (Watt et al., 2012). Studies conducted with the control group have reported that the quality of life of patients with Hashimoto's thyroiditis deteriorated independent of drug treatment (Yalcin et al., 2017) and the quality of life of individuals with autoimmune thyroid disorder significantly decreased than those with other thyroid disorders or health ones (Gerenova, Petrov, 2015). Other studies have suggested that deteriorated quality of life in patients with Hashimoto's thyroiditis may be associated with depression and

anxiety (Watt et al., 2012; Zivaljevic et al., 2015; Yalcin et al., 2017).

**Limitations:** Since the study was conducted with female patients who referred to a single university hospital for a certain period of time and agreed to participate in the study, it is a major limitation that their outcomes can be generalized to their own population. In addition, information on quality of life is based on the self-report of women.

**Conclusion;** The quality of life of women with Hashimoto's thyroiditis decreases and their body weights increase due to symptoms of the disease. In order to maximize the quality of life by minimizing the symptom burden experienced, it will be useful to determine the quality of life levels and factors affecting patients with Hashimoto thyroiditis. It is important to organize training sessions in order to improve the quality of life of women due to the burden of symptoms experienced by women. In particular, guidelines to be developed according to the results of follow-up studies investigating the relationship between thyroid hormone level, thyroid antibody level, treatment modality and individual factors with quality of life level will provide effective chronic disease management in patients with Hashimoto thyroiditis. Furthermore, it is considered that weight control interventions such as nutrition education, regular physical activity and individual training/counseling should be planned simultaneously with medical treatment for all patients diagnosed with Hashimoto thyroiditis and this will contribute to the fight against obesity.

**Ethical dimension:** Before the data collection, written permission was obtained from the ethics committee of a university (Decision no. 2017-01/09) and the institution from which the research was conducted. In addition, every woman who would take part in the study was informed about the content of the research and voluntary participation, and their verbal consents were taken.

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