

The Relationship Between Traditional and Complementary Therapy Usage, Attitudes, and Health Literacy in Individuals with Hypothyroidism: A Descriptive Study

Hipotiroidisi Olan Bireylerin Geleneksel ve Tamamlayıcı Tedavi Kullanım Durumları, Tutumları ve Sağlık Okuryazarlığı Arasındaki İlişkinin İncelenmesi: Tanımlayıcı Çalışma

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ABSTRACT Objective: This study aimed to investigate the relationship between the use of traditional and complementary medicine usage, attitudes and health literacy among individuals with hypothyroidism. **Material and Methods:** This descriptive and correlational study was carried out with 200 individuals with hypothyroidism. The data were collected using the Patient Information Form, the Holistic Complementary and Alternative Medicine Questionnaire and the Turkish Health Literacy Scale-32. **Results:** Findings revealed that 43% of the participants were aware of traditional and complementary medicine methods, while 20% actively used them. The most commonly utilized traditional and complementary medicine approaches included herbal remedies, particularly dill and walnut products. Participants exhibited generally positive attitudes toward traditional and complementary medicine, but their health literacy levels had lower scores observed in the dimension of evaluating health information. Educational status was found to influence attitudes toward traditional and complementary medicine, as university graduates displayed more favorable perspectives. Moreover, a positive correlation between health literacy and attitudes toward traditional and complementary medicine was identified, with health literacy accounting for 4.5% of the variance in traditional and complementary medicine attitudes. **Conclusion:** Increasing health literacy levels can enable individuals to make more informed decisions regarding traditional and complementary medicine use and health behaviors overall. It is thought that efforts to increase health literacy may contribute to individuals developing a more conscious and positive perspective towards traditional and complementary medicine.

Keywords: Attitude; health literacy; hypothyroidism; complementary therapies

ÖZET Amaç: Bu çalışmada hipotiroidisi olan bireylerde geleneksel ve tamamlayıcı tıp kullanım durumları, tutumları ve sağlık okuryazarlığı arasındaki ilişkinin incelenmesi amaçlanmıştır. **Gereç ve Yöntemler:** Tanımlayıcı ve ilişki arayıcı tipteki bu çalışma 200 hipotiroidisi olan birey ile yürütülmüştür. Veriler; Hasta Bilgi Formu, Bütüncül Tamamlayıcı ve Alternatif Tıbbı Karşı Tutum Ölçeği ve Türkiye Sağlık Okuryazarlığı Ölçeği-32 kullanılarak toplanmıştır. **Bulgular:** Araştırma bulguları katılımcıların %43'ünün geleneksel ve tamamlayıcı tıp yöntemlerinden haberdar olduğunu, %20'sinin ise aktif olarak kullandığını göstermiştir. En sık kullanılan geleneksel ve tamamlayıcı tıp yaklaşımları bitkisel tedaviler, özellikle de dereotu ve ceviz ürünleri olmuştur. Katılımcılar geleneksel ve tamamlayıcı tıbbı karşı genel olarak olumlu tutumlar sergilemiş ancak sağlık okuryazarlık düzeylerinin sağlık bilgilerini değerlendirme boyutunda daha düşük puanlar aldığı gözlemlenmiştir. Eğitim durumunun geleneksel ve tamamlayıcı tıbbı yönelik tutumları etkilediği, üniversite mezunlarının daha olumlu bakış açısı gösterdiği bulunmuştur. Ayrıca, sağlık okuryazarlığı ile geleneksel ve tamamlayıcı tıbbı yönelik tutumlar arasında pozitif bir korelasyon tespit edilmiş ve sağlık okuryazarlığı, geleneksel ve tamamlayıcı tıp tutumlarındaki varyansın %4,5'ini oluşturduğu bulunmuştur. **Sonuç:** Sağlık okuryazarlığı düzeylerinin artırılması, bireylerin geleneksel ve tamamlayıcı tıp kullanımı ve genel sağlık davranışları konusunda daha bilinçli kararlar almasını sağlayabilir. Sağlık okuryazarlığını artırma çabalarının, bireylerin geleneksel ve tamamlayıcı tıbbı karşı daha bilinçli ve olumlu bir bakış açısı geliştirmesine katkıda bulunabileceği düşünülmektedir.

Anahtar Kelimeler: Tutum; sağlık okuryazarlığı; hipotiroidizm; tamamlayıcı terapiler

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Hypothyroidism is an endocrine condition that results from a deficiency of thyroid hormones or, in rare cases, their ineffectiveness at the tissue level, leading to a slowing of metabolic processes.¹ While modern medicine primarily uses pharmacological methods to manage the disease, non-pharmacological methods are also gaining increasing interest.² Traditional and Complementary Medicine (T&CM) encompasses a diverse set of practices and therapies used to enhance conventional Western medical treatments or to serve as alternatives. These approaches often focus on holistic care, addressing physical, emotional, and spiritual well-being.³ The long-standing tradition of using T&CM treatments continues to gain momentum globally and, in our country, driven by changes in health systems.⁴ This situation can create diversity in the treatment search of individuals with hypothyroidism and in their decisions regarding their health.

As the utilization of T&CM methods continues to rise, the importance of health literacy is also increasing.⁵ Health literacy refers to the capacity to understand, interpret, and evaluate health information, empowering individuals to make well-informed and effective decisions regarding their overall health.⁶ Individuals with high health literacy can confidently and safely use many beneficial methods, such as massage, music therapy, yoga, and reflexology. In contrast, those with low health literacy may resort to commercial herbal products with uncertain content, some of which could be harmful.⁵

A study investigating the connection between nursing students' health literacy and their attitudes towards T&CM revealed a moderately positive relationship, indicating that higher health literacy aligns with greater knowledge of T&CM practices.⁷ Similarly, a study examining medical students' health literacy and their engagement with T&CM revealed no significant relationship between the two variables. Moreover, it was noted that only a small number of medical students believed they had sufficient knowledge of complementary medicine practices.⁸ In contrast, research conducted with adults showed that as individuals' health literacy levels increased, their attitudes toward T&CM became less favorable.⁵

Currently, there is no study in the Turkish literature exploring the relationship between T&CM usage, attitudes, and health literacy among individuals with hypothyroidism. Therefore, this study aims to address this gap by examining these relationships in individuals diagnosed with hypothyroidism.

MATERIAL AND METHODS

DESIGN, SAMPLE AND SETTING

The study was designed as a descriptive and correlational research to examine the relationship between traditional and complementary therapy usage, attitudes and health literacy among individuals with hypothyroidism. It was conducted on individuals with hypothyroidism who applied the endocrinology and metabolic diseases polyclinic between 15 July and 15 September 2024. The study included individuals who fulfilled the following criteria: (a) a diagnosis of hypothyroidism; (b) 18 years of age or older; (c) the ability to speak, read, and write in Turkish; and (d) consent to participate in the study. The exclusion criteria were: (a) a diagnosis of severe psychiatric disorders; (b) cognitive impairments; or (c) an inability to provide informed consent.

G*Power 3.1.9.4 software was utilized to calculate the required sample size. For a multiple linear regression analysis with the F-test in a fixed model, the estimation was based on the R^2 deviation from zero approach. The parameters included an alpha level of 0.05, a power of 0.80, and 10 predictor variables, with a conservatively assumed effect size of 0.15. Using these parameters, a minimum sample size of 118 participants was determined necessary for the study. In total, 205 individuals with hypothyroidism were initially enrolled in the study. However, 5 participants were removed from the analysis due to incomplete questionnaire responses. Consequently, the analysis was conducted using data from the remaining 200 participants.

DATA COLLECTION PROCEDURE

The study was carried out in the endocrinology and metabolic diseases outpatient clinic, involving individuals attending for routine check-ups. The researchers interviewed participants who willingly

consented to take part in the study. During the interview, participants were informed about the forms. They were then asked to complete the questionnaires, which took approximately 15 to 20 minutes. All forms were treated with confidentiality, and no compensation was provided to participants for completing them.

MEASURES

The data were collected using the Patient Information Form, the Holistic Complementary and Alternative Medicine Questionnaire (HCAMQ) and the Turkish Health Literacy Scale-32 (TSOY-32).

Patient Information Form: This form was designed by researchers drawing from the relevant literature. It includes twenty-six questions that gather information about the age, marital status, gender, employment status, education level, income status, place of residence, comorbid disease and medication status of patients with hypothyroidism. Additionally, it evaluates the patients' knowledge, attitudes and usage of T&CM methods.

HCAMQ: The scale was developed by Hyland et al, and its Turkish validity and reliability study was carried out by Erci in 2007.^{9,10} The scale is a Likert-type scale comprising a total of 11 items, with a score range from 11 to 66 points. It consists of 2 subscales: Complementary and Alternative Medicine (CAM) and Holistic Health (HS). As the scale score decreases, there is an increase in the positive attitude towards complementary and alternative medicine. The scale's reliability coefficient, measured by Cronbach's Alpha, is 0.72.

TSOY-32: This scale is a self-report scale consisting of 32 items designed for individuals who are over 15 years old and literate. This scale, which was developed based on the conceptual framework established by the European Health Literacy Research Consortium (HLS-EU CONSORTIUM, 2012), is also used by the Ministry of Health of the Republic of Türkiye. The validity and reliability of the Turkish version of the TSOY-32 was measured by Okyay et al. in 2016, with the Cronbach Alpha general internal consistency coefficient being determined as 0.927.¹¹ TSOY-32 was structured based on a 2x4 matrix, taking 2 basic dimensions related to health:

treatment/service and disease prevention/health promotion, and 4 processes related to health decision-making and practices: accessing, understanding, evaluating, and applying health information. This structure results in eight components and 32 items. Each item is evaluated on a scale from 1 to 4, with 1 representing "very easy" and 4 representing "very difficult" while the option "I have no idea" is coded as 5. The total score is standardized to range between 0 and 50, with higher scores indicating better health literacy. Health literacy is categorized into 4 levels based on the score: 0 to 25 points indicate inadequate health literacy, 26 to 33 points indicate problematic-limited health literacy, 34 to 42 points indicate sufficient health literacy, and 43 to 50 points indicate excellent health literacy.

DATA ANALYSIS

The data were analyzed using the SPSS 23.0 software package. The sociodemographic characteristics of the participants were summarized using frequency and percentage distributions. Continuous variables were presented as mean±standard deviation for normally distributed data and as median (interquartile range) for non-normally distributed data. The normality of the data was assessed using skewness and kurtosis values. If normality assumptions were violated, non-parametric tests were applied. Additionally, Levene's test was conducted to assess the homogeneity of variances. If the test indicated homogeneity ($p>0.05$), parametric tests were used. If variances were not homogeneous ($p<0.05$), non-parametric alternatives were applied. For comparisons between two independent groups, Student's t-test was used when assumptions were met, whereas the Mann-Whitney U test was applied for non-normally distributed data or when homogeneity of variances was not met. For comparisons among more than two groups, one-way analysis of variance with Bonferroni "post hoc" test was used for normally distributed data with equal variances, while the Kruskal-Wallis test was applied for non-parametric comparisons.

Pearson's correlation coefficient was used to assess the relationships between variables. The strength of the correlations was interpreted based on conventional thresholds, where $r=0.10-0.29$ was considered

weak, $r=0.30-0.49$ moderate, and $r\geq 0.50$ strong. In addition, multiple linear regression analysis was conducted to assess the relationships between independent variables and the dependent variable. Multicollinearity was assessed using the Variance Inflation Factor (VIF) and tolerance values. Additionally, the Durbin-Watson statistic was examined to check for autocorrelation. All statistical analyses were conducted at a 0.05 significance level within a 95% confidence interval.

ETHICAL CONSIDERATIONS

The study protocol was approved by the Ethics Committee of Aksaray University (date: May 5, 2024, no: 2024/031) and the necessary permissions were secured from the hospitals. Additionally, permission for using the scales was acquired from respective authors through e-mail. All research procedures were conducted in accordance with the Helsinki Declaration. Participants received comprehensive information about the study aims and confidentiality protocols before providing their written consent to participate. No ethical concerns were encountered throughout the study.

RESULTS

Participants' sociodemographic and disease characteristics, as well as their usage of T&CM are presented in Table 1. The average age of the participants is 45.15 ± 12.22 , with 91% female. 90.0% of the participants are married, 41.5% have received education at the primary level or below, and 64.5% are unemployed. More than half (67.0%) of the participants report that their income equals their expenses, and 79.5% live in urban areas. The participants with a diagnosis duration of 7 years or more comprise 56.0% of the group, and 39.5% have comorbid diseases. It has been determined that 92.5% of the participants use medication for hypothyroidism, and 96.2% take their medications regularly. Knowledge about T&CM is present in 43.0% of the participants, while 20.0% have previously used T&CM methods. The most commonly used T&CM methods include dill (52.5%) and cupping (22.5%) (Table 1).

Table 2 presents the participants' attitudes toward T&CM and health literacy scores. The average

TABLE 1: Sociodemographic and clinical characteristics of participants and T&CM usage status

Sociodemographic and clinical characteristics and T&CM usage status		n (%)
Age (years)	18-39 years	69 (34.5)
	40-49 years	62 (31.0)
	50-59 years	42 (21.0)
	60 years and over	27 (13.5)
Sex	Male	18 (9.0)
	Female	182 (91.0)
Marital status	Married	180 (90.0)
	Single	20 (10.0)
Education	Primary school	83 (41.5)
	High school	71 (35.5)
	University or higher	46 (23.0)
Employment status	Working	57 (28.5)
	Not working	129 (64.5)
	Retired	14 (7.0)
Income status	Income less than expenses	50 (25.0)
	Income equal to expenses	134 (67.0)
	Income more than expenses	16 (8.0)
Place of residence	City	159 (79.5)
	District	29 (14.5)
	Village	12 (6.0)
Hypothyroidism diagnosis time	1-3 years	46 (23.0)
	4-6 years	42 (21.0)
	7 years and over	112 (56.0)
Comorbid disease	Yes	79 (39.5)
	No	121 (60.5)
Are you using medication for hypothyroidism?	Yes	185 (92.5)
	No	15 (7.5)
Do you take your medication regularly?	Yes	177 (96.2)
	No	7 (3.8)
Do you forget to take your medication?	Yes	82 (44.3)
	No	103 (55.7)
Do you have regular check-ups for hypothyroidism?	Yes	191 (95.5)
	No	9 (4.5)
Have you heard of T&CM for hypothyroidism?	Yes	86 (43.0)
	No	114 (57.0)
Where did you hear about it?	Media/Internet	14 (16.3)
	People around me	68 (79.1)
	Health personnel	2 (2.3)
	Other	2 (2.3)
Have you ever used T&CM for hypothyroidism?	Yes	40 (20.0)
	No	160 (80.0)
What did you use?*	Dill	21 (52.5)
	Cupping therapy	9 (22.5)
	Herbal teas	7 (17.5)
	Walnut and walnut products	6 (15.0)
	Other	6 (15.0)
Are you currently using any T&CM?	Yes	16 (8.0)
	No	184 (92.0)

*Multiple options were selected. T&CM: Traditional and Complementary Medicine

attitude score toward T&CM among participants is 23.14±4.83, while the average holistic health attitude score is 7.46±2.20. According to the subdimensions of health literacy, the highest average is found in the dimension of using health-related information

(31.26±8.01). The overall health literacy score is 29.71±8.70 (Table 2).

Table 3 shows the comparison of participants' attitudes toward T&CM across sociodemographic and clinical characteristics. Participants with a uni-

TABLE 2: Mean scores of participants' attitudes towards T&CM and health literacy

Variables	$\bar{X}\pm SD$	Minimum-maximum	Skewness/Kurtosis
Attitude towards T&CM			
Complementary and alternative medicine	23.14±4.83	12.00-36.00	0.145/-0.132
Holistic health	7.46±2.20	5.00-16.00	1.121/1.368
Total attitude towards T&CM	30.61±4.65	20.00-43.00	0.079/-0.342
Health literacy			
Accessing health information	31.03±10.44	0.00-50.00	-0.668/0.640
Understanding health information	31.09±10.22	0.00-50.00	-0.740/1.166
Evaluating health information	25.48±9.27	0.00-50.00	-0.173/0.235
Using/Applying health information	31.26±8.01	6.25-50.00	-0.477/0.606
Total health literacy	29.71±8.70	2.08-50.00	-0.689/1.189

SD: Standard deviation; T&CM: Traditional and Complementary Medicine

TABLE 3: Comparison of participants' attitudes toward T&CM across sociodemographic and disease characteristics

Sociodemographic and clinical characteristics and T&CM Usage status	$\bar{X}\pm SD$	Attitudes towards T&CM		
		Levene's Test p value	p value	
Sex [†]	Male	30.74±4.66	0.763	0.204
	Female	29.27±4.45		
Age (years) [‡]	18-39 years (a)	30.18±4.92	0.400	0.329
	40-49 years (b)	30.17±4.17		
	50-59 years (c)	31.19±4.85		
	60 years and over (d)	31.77±4.62		
Marital status [†]	Married	30.71±4.74	0.120	0.332
	Single	29.65±3.67		
Education [‡]	Primary school (a)	30.49±4.00	0.616	0.013 c<b
	High school (b)	31.70±5.04		
	University or higher (c)	29.13±4.62		
Employment status [‡]	Working (a)	30.14±4.41	0.737	0.126
	Not working (b)	31.03±4.71		
	Retired (c)	28.64±4.71		
Income status [‡]	Income less than expenses (a)	29.98±3.87	0.256	0.531
	Income equal to expenses (b)	30.85±4.92		
	Income more than expenses (c)	30.56±4.61		
Place of residence [‡]	City center (a)	30.51±4.64	0.806	0.728
	District (b)	31.24±4.98		
	Village (c)	30.33±4.27		
Hypothyroidism diagnosis time [‡]	1-3 years (a)	29.91±3.90	0.276	0.317
	4-6 years (b)	30.21±4.95		
	7 years and over (c)	31.04±4.81		
Comorbid disease [†]	Yes	30.55±4.13	0.191	0.897
	No	30.64±4.98		
Have you heard of T&CM for hypothyroidism? [†]	Yes	28.95±4.14	0.410	<0.001
	No	31.85±4.64		
Have you ever used T&CM for hypothyroidism? [†]	Yes	27.35±3.84	0.311	<0.001
	No	31.42±4.49		

[†]Independent sample t test; [‡]One-way analysis of variance test; T&CM: Traditional and Complementary Medicine

iversity education had significantly lower attitude scores compared to those with a high school education ($p=0.013$). Additionally, those who had heard of T&CM for hypothyroidism had significantly lower attitude scores than those who had not ($p<0.001$), and participants who had previously used T&CM for hypothyroidism had the lowest scores ($p<0.001$). While other sociodemographic and clinical factors, such as sex, age, marital status, employment status, income level, place of residence, duration of hypothyroidism diagnosis, and presence of comorbid diseases, showed some variations in mean scores, these differences were not statistically significant ($p>0.05$).

Table 4 shows the comparison of participants' health literacy levels across sociodemographic and clinical characteristics. Health literacy scores significantly decreased with increasing age, with participants aged 18-39 years and 40-49 years having significantly higher scores than those aged 50 years and older ($p<0.001$). Single participants had significantly higher health literacy scores than married participants ($p<0.001$). Education level was a strong determinant, with university-educated participants showing the highest scores, followed by high school graduates and primary school graduates ($p<0.001$). Similarly, employed individuals had significantly higher health literacy than unemployed and retired

TABLE 4: Sociodemographic and clinical characteristics and T&CM Usage status

Sociodemographic and clinical characteristics and T&CM usage status		$\bar{X}\pm SD$	Health Literacy		
			Median (Q1-Q3)	Levene's Test p	p value
Sex [†]	Male	29.59±8.63	33.85 (30.33-35.15)	0.792	0.527
	Female	30.96±9.57	30.20 (25.52-34.37)		
Age (years) [‡]	18-39 years (a)	33.25±7.72	32.81 (28.90-40.62)	0.223	<0.001 a,b>c,d
	40-49 years (b)	30.38±7.15	30.20 (26.43-34.50)		
	50-59 years (c)	25.89±8.52	28.38 (20.83-32.42)		
	60 years and over (d)	25.09±10.46	27.08 (25.00-31.77)		
Marital status [§]	Married	29.01±8.48	30.20 (25.52-33.85)	0.607	<0.001
	Single	36.01±8.39	37.76 (29.29-42.70)		
Education [¶]	Primary school (a)	24.65±8.66	26.04 (20.83-30.72)	<0.001	<0.001 a>b>c
	High school (b)	30.28±5.47	30.20 (28.12-33.85)		
	University or higher (c)	37.97±5.87	37.76 (32.81-42.70)		
Employment status [‡]	Working (a)	35.15±5.73	33.85 (30.72- 39.32)	0.095	<0.001 a>b,c
	Not working (b)	27.52±8.64	28.64 (22.39-32.81)		
	Retired (c)	27.82±10.11	30.46 (25.39-35.15)		
Income status [¶]	Income less than expenses (a)	30.50±6.10	30.46 (26.95-34.37)	0.031	0.935
	Income equal to expenses (b)	29.28±9.43	30.72 (23.95-34.89)		
	Income more than expenses (c)	30.89±9.52	29.16 (26.30-39.71)		
Place of residence [‡]	City center (a)	31.11±8.02	30.72 (28.12-35.41)	0.152	<0.001 a>b,c
	District (b)	24.08±8.89	22.39 (18.48-31.51)		
	Village (c)	24.82±10.35	24.47 (17.96-33.46)		
Hypothyroidism diagnosis time [‡]	1-3 years (a)	32.12±6.33	31.77 (28.51-36.06)	0.082	<0.001 c<a,b
	4-6 years (b)	33.49±7.33	32.81 (28.64-39.19)		
	7 years and over (c)	27.31±9.28	29.16 (22.39-32.81)		
Comorbid disease [†]	Yes	26.14±9.21	28.64 (21.35-32.29)	0.140	<0.001
	No	32.05±7.52	31.25 (27.60-37.23)		
Have you heard of T&CM for hypothyroidism? [§]	Yes	31.49±6.38	31.77 (27.08-34.89)	0.003	0.022
	No	28.38±9.93	29.68 (22.39-33.85)		
Have you ever used T&CM for hypothyroidism? [†]	Yes	30.83±6.55	30.98 (26.69-34.76)	0.098	0.367
	No	29.44±9.16	30.20 (25.52-34.89)		

[†]Independent sample t-test; [‡]One-way analysis of variance test; [§]Mann-Whitney U test; [¶]Kruskal-Wallis test; SD: Standard deviation; T&CM: Traditional and Complementary Medicine

individuals ($p < 0.001$). Participants living in city centers had significantly higher health literacy scores than those residing in districts and villages ($p < 0.001$). The duration of hypothyroidism diagnosis also influenced health literacy, with those diagnosed for 7 years or more having significantly lower scores compared to those diagnosed for 1-6 years ($p < 0.001$). Participants without comorbid diseases had significantly higher health literacy than those with comorbidities ($p < 0.001$). Moreover, individuals who had heard of T&CM for hypothyroidism had significantly higher health literacy levels than those who had not ($p = 0.022$). However, no significant differences were observed in health literacy based on sex ($p = 0.527$), income status ($p = 0.935$), or prior use of T&CM for hypothyroidism ($p = 0.367$). These findings indicate that demographic factors such as younger age, being single, higher education, employment, urban residence, and absence of comorbid diseases are associated with higher health literacy.

Table 5 examines the correlations between attitudes toward T&CM and health literacy levels. The results indicate that there are predominantly weak negative correlations between attitudes toward T&CM and the dimensions of health literacy. Specifically, weak but significant negative correlations were found between accessing health information ($r = -0.206$, $p < 0.001$), understanding health information ($r = -0.151$, $p < 0.01$), evaluating health information ($r = -0.286$, $p < 0.01$), using/applying health information ($r = -0.175$, $p < 0.01$), and total health literacy ($r = -0.222$, $p < 0.01$) with attitudes toward T&CM. Although the relationships are statistically significant, their magnitude suggests that the associ-

ation between health literacy and T&CM attitudes is weak. These findings suggest that individuals with higher health literacy levels tend to have slightly more positive attitude toward complementary medicine

Table 6 shows the results of multiple linear regression analysis examining the effect of health literacy on attitudes toward T&CM. The model explained a small portion of the variance in attitudes (Adjusted $R^2 = 0.052$, $F = 2.000$, $p = 0.030$), indicating that the included variables had a limited overall effect. Among the predictors, health literacy was found to be a significant predictor of attitudes toward T&CM ($B = -0.127$, $p = 0.010$), suggesting that higher health literacy was associated with more positive attitudes toward T&CM. Other sociodemographic and clinical variables, including age, sex, education level, marital status, employment status, income, hypothyroidism diagnosis time, and presence of comorbid diseases, were not significant predictors of attitudes ($p > 0.05$). The Durbin-Watson statistic (1.780) indicated no major autocorrelation issues, and collinearity statistics (Tolerance > 0.20 , VIF < 4) suggested that multicollinearity was not a concern. These findings highlight that while health literacy has a small but significant impact on attitudes toward T&CM, other demographic and clinical factors do not show a meaningful effect.

DISCUSSION

This study examined the relationship between the T&CM usage status and attitudes toward T&CM among individuals with hypothyroidism and their

TABLE 5: The relationship between participants' attitudes towards T&CM and health literacy

Variables	1	2	3	4	5	6	7
Complementary and alternative medicine	1						
Holistic health	-0.306**	1					
Total attitudes towards T&CM	0.893**	0.155*	1				
Accessing health information	0.244**	0.101	-0.206**	1			
Understanding health information	-0.189**	0.096	-0.151*	0.870**	1		
Evaluating health information	-0.297**	0.047	-0.286**	0.822**	0.819**	1	
Using/applying health information	-0.182**	0.030	-0.175*	0.744**	0.738**	0.702**	1
Total health literacy	-0.250**	0.078	-0.222**	0.945**	0.942**	0.914**	0.856**

* $p < 0.05$; ** $p < 0.01$; T&CM: Traditional and Complementary Medicine

TABLE 6: Multiple linear regression analysis of the effect of health literacy on attitudes toward T&CM

	Unstandardized coefficients		Standardized coefficients		t value	p value	95% confidence interval for B		Collinearity statistics			Durbin-Watson	Adjusted R ²	F	p value
	B	Std. error	Beta	Beta			Lower bound	Upper bound	Tolerance	VIF					
(Constant)	32.264	3.058			10.549	0.000	26.231	38.297							
Age	0.022	0.037	0.057	0.057	0.596	0.552	-0.050	0.094	0.519	1.929					
Sex (Female)	1.284	1.201	0.079	0.079	1.069	0.286	-1.084	3.652	0.870	1.149					
Education (primary school)	-0.319	1.266	-0.034	-0.034	-0.252	0.801	-2.817	2.178	0.264	3.788					
Education (high school)	1.428	1.021	0.147	0.147	1.399	0.163	-0.685	3.441	0.431	2.322					
Marital status (married)	-0.220	1.142	-0.014	-0.014	-0.193	0.847	-2.473	2.033	0.875	1.143	1.780	0.052	2.000	0.030	
Employment status (working)	0.096	0.918	0.009	0.009	0.104	0.917	-1.715	1.907	0.598	1.673					
Income less than expenses	-0.587	1.368	-0.055	-0.055	-0.429	0.668	-3.285	2.112	0.293	3.416					
Income equal to expenses	-0.304	1.245	-0.031	-0.031	-0.244	0.808	-2.760	2.152	0.300	3.337					
Hypothyroidism diagnosis time	0.051	0.043	0.093	0.093	1.189	0.236	-0.034	0.136	0.770	1.298					
Comorbid disease (yes)	-0.995	0.828	-0.105	-0.105	-1.202	0.231	-2.627	0.638	0.628	1.593					
Health literacy	-0.127	0.049	-0.238	-0.238	-2.610	0.010	-0.224	-0.031	0.572	1.750					

T&CM: Traditional and Complementary Medicine; VIF: Variance Inflation Factor

levels of health literacy. Notably, this study is the first to explore the use of T&CM in patients with hypothyroidism. In this study, the percentage of hearing about T&CM methods among individuals with hypothyroidism was found to be 43%, while 20% actively used these methods. The prevalence of T&CM use varies across different disease populations. For instance, the rate of T&CM use among patients with diabetes has been reported to range between 48.40% and 89.38%, while it was found to be 85.09% in cancer patients, and 49.3% in patients with coagulation disorders.¹²⁻¹⁴ Additionally, in the study conducted by Şimşek et al. to evaluate the T&CM use status of 5882 individuals, 81% of whom were individuals with chronic diseases, the general population's T&CM use was found to be 60.5%.¹⁵ The systematic review carried out by Lee et al. on the scope of T&CM use in the general population in 14 different European countries determined that T&CM use varied between 24% and 71.3% in different countries.¹⁶ When compared with these rates, the rate of T&CM use among individuals with hypothyroidism appears relatively low. Several factors, including cultural influences, accessibility of T&CM techniques, and people's health, economic and educational status could all be responsible for these variations in T&CM use.¹²⁻¹⁶

In this study, it was determined that the most commonly used methods by individuals with hypothyroidism were herbal methods such as dill, walnut products, herbal teas, and cupping, which were used less frequently. These results are consistent with the findings of previous studies. Studies indicate that herbal treatments are the most commonly used T&CM method in Türkiye.^{15,17-20} Another of the most frequently applied methods culturally is cupping.^{15,20-22} However, the predominance of herbal methods in this study raises the question of why other well-known T&CM methods, such as acupuncture, yoga, or meditation, were less preferred. Factors like cultural familiarity, accessibility, cost, and perceived effectiveness may play a role. Herbal treatments are often deeply rooted in tradition and more accessible, as many people believe they are natural, safer, and healthier.

In contrast, methods like acupuncture or yoga may require specialized practitioners and higher costs, which can limit their accessibility.²³ Additionally, limited awareness and trust in these approaches may influence preferences.¹⁵ Studies suggest that individuals with chronic diseases tend to prefer easily accessible methods that fit into daily routines without requiring professional supervision.¹²⁻¹⁴ Future research could further explore these factors to better understand T&CM preferences among individuals with hypothyroidism.

The average attitude score of the participants towards T&CM was determined as 30.61 ± 4.65 . This result may suggest that the participants generally exhibited a positive attitude towards T&CM. Different studies have reported similar mean scores regarding the average attitude towards T&CM. Accordingly, the total mean score of attitude towards T&CM was determined as 29.5 ± 5.70 in the study carried out by Şensoy et al. on 700 participants who visited a university hospital, 31.09 ± 4.37 in the study conducted by Çürük and Özdemir Alkanat which involved 396 individuals with chronic diseases, and 32.19 ± 5.41 in the study conducted by Özen and Balcıoğlu which included 325 adults visiting a family medicine clinic.^{20,24,25}

The participants' health literacy level was in the "problematic-limited health literacy (26-33 score range)" category for the 4 sub-areas and the total score. While relatively high scores were obtained for accessing, understanding and using health-related information, a lower average score was determined for the dimension of evaluating information. This may indicate that the participants are sufficient in accessing health information but may have difficulty in critically evaluating information. In the Türkiye Health Literacy Level study, in parallel with the results of this study, it was determined that 68.9% of the participants had inadequate and problematic-limited health literacy and that the area with the highest frequency of inadequate health literacy was in the area of evaluating information.²⁶ In order to improve health literacy, various strategies can be used. Workshops and structured educational programs that emphasize the critical evaluation of health information should be created, with a special focus on people with

chronic diseases. Healthcare providers can play a key role by using clear and simple language, integrating visual aids, and promoting interactive communication with patients. Additionally, integrating health literacy education into school curricula and adult learning programs could contribute to long-term improvements in individuals' ability to understand and critically assess health-related information.

The results of the study indicated that no statistically significant difference was found on the attitude towards T&CM in terms of variables such as age, gender, employment status, income status, place of residence, time of diagnosis of hypothyroidism and presence of comorbid disease in individuals with hypothyroidism. Although the results show that the presence of comorbid diseases does not affect attitudes towards T&CM, the fact that a significant portion of the participants (39.5%) had comorbid diseases may have caused them to stay away from T&CM methods. This may be because they believe that these treatments could interact with their medical treatments and put their health at risk. Only the effect of education level on the attitude towards T&CM was significant. It was determined that individuals with higher education levels had a more positive attitude towards T&CM. This situation shows that individuals' positive attitude towards T&CM increases with increasing education level and that education level may be an important factor affecting attitudes towards T&CM and health literacy. Increasing education levels may strengthen individuals' ability to understand better and evaluate health information, which may support positive attitudes towards T&CM. There is no study evaluating the attitudes towards the use of T&CM in patients with hypothyroidism in Türkiye. Therefore, it was not possible to compare the effect of education level on attitude towards T&CM. However, studies conducted on different sample groups have yielded results contrary to the findings of this study regarding the effect of education level on attitudes towards T&CM. In a study conducted by Bektaş Akpınar et al. on patients with kidney and ureteral stones, it was revealed that individuals with lower education levels exhibited a more positive attitude towards the use of T&CM, contrary to this study.²⁷ Similarly, in their study on hyperten-

sion patients, Gökçe and Gürdoğan reported that patients with primary school education had a more positive attitude towards T&CM.²⁸

The study determined that age, employment status, marital status, place of residence, education, comorbid disease, and hypothyroidism diagnosis period are related to health literacy level. It was determined that health literacy increases as education level increases; individuals aged 18-49 have higher health literacy than individuals aged 50 and over, employed individuals have higher health literacy than unemployed and retired individuals, and those living in city centres have higher health literacy than those living in districts and villages. It was found that married individuals have lower health literacy than single individuals, individuals with a hypothyroidism diagnosis period of seven years or more have lower health literacy than those with a diagnosis period of less than 6 years, and those with comorbid diseases have lower health literacy than those without. Similar to these results, other studies have shown that the health literacy level decreases as age increases and the level of education decreases.²⁹⁻³¹ Age-related changes in cognitive functions and the resulting difficulties in understanding complex health information may contribute to a decline in health literacy. The level of health literacy of those living in villages and districts is lower than those living in the city centre.^{29,31} Previous studies have found different results regarding the connection between health literacy and marital status. In the studies conducted by Erdoğan Yüce and Muz and Dehghan et al. on individuals with chronic diseases, it was observed that married individuals had a lower health literacy level compared to single individuals.^{30,31} The study conducted by Temel and Çimen on elderly individuals with chronic diseases, it was found that married individuals had higher health literacy levels compared to single individuals.²⁹

As a result of the study, it was revealed that higher health literacy levels were related to increased positive attitudes towards T&CM, and high health literacy predicted a positive attitude towards T&CM. These findings reveal that individuals may increase their positive attitudes towards T&CM as their ability to access, understand and evaluate health information improves, and they may be more inclined to

see T&CM methods as a part of their health. Some studies in the literature also suggest that individuals with high health literacy evaluate T&CM usage more positively. A study by Dehghan et al. on 400 chronic disease patients revealed a significant and positive correlation between T&CM usage and health literacy.³¹ Charoencheewakul et al. found in their study of 1012 type 2 diabetes mellitus patients that those with adequate to excellent health literacy levels demonstrated increased likelihood of T&CM usage.³

LIMITATIONS

This study contributes to the existing literature by examining the relationship between health literacy and attitudes toward T&CM among individuals with hypothyroidism, an area that has been relatively understudied. On the other hand, this study has some limitations. First, the sample size was limited to 200 individuals with hypothyroidism from only two cities, which may restrict the generalizability of the findings to broader populations. Second, the data were collected through self-reported questionnaires, which may be influenced by participants' subjective perceptions and varying levels of health awareness. Third, the cross-sectional design of the study prevents the establishment of causal relationships between health literacy, attitudes, and the use of T&CM. Additionally, the scales used in this study may not fully capture the cultural and socioeconomic characteristics of the participants, potentially affecting the accuracy and applicability of the results. Future research with larger, more diverse samples and longitudinal designs is recommended to validate and expand upon these findings.

CONCLUSION

As a result of this study, the rate of T&CM approaches utilized by individuals with hypothyroidism was found to be 20%. It was revealed that the most commonly preferred T&CM approaches were herbal treatments, particularly dill and walnut products. Participants generally had a positive attitude towards T&CM, although their health literacy was low, especially in evaluating information. It was observed that the positive attitude towards T&CM was related to the level of education, and individuals with univer-

sity and above education levels had a more positive attitude towards T&CM. It was determined that health literacy level in individuals with hypothyroidism affected their attitudes towards T&CM, and as the health literacy level increased, individuals' positive attitudes towards T&CM increased.

In line with these results, it is believed that efforts to improve health literacy could help individuals develop a more informed and positive perspective towards T&CM. These findings highlight the need for health policies that focus on improving health literacy among individuals with chronic diseases, including hypothyroidism. Integrating health literacy programs into routine healthcare services and providing evidence-based guidance on T&CM practices could help individuals make more informed decisions regarding their healthcare.

Future studies should concentrate on identifying the specific factors influencing T&CM preferences, including cultural beliefs, accessibility or trust. Longitudinal studies are needed to examine how changes in health literacy over time impact T&CM usage pat-

terns. Furthermore, qualitative studies exploring patients' motivations and decision-making processes regarding T&CM could provide deeper insights into their requirements and expectations.

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

All authors contributed equally while this study preparing.

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