ORIGINAL RESEARCH ORİJİNAL ARAŞTIRMA

DOI: 10.5336/jtracom.2024-107881

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

Eda ÜNAL[a], Gülyeter ERDOĞAN YÜCE[b]

[a]Kırşehir Ahi Evran University Faculty of Health Sciences, Department of Nursing, Department of Internal Medicine Nursing, Kırşehir, Türkiye
[b]Aksaray University Faculty of Health Sciences, Department of Emergency Aid and Disaster Management, Aksaray, Türkiye

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 Tıbba 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 tıbba karşı genel olarak olumlu tutumlar sergilemiş ancak sağlık okuryazarlık düzeylerinin sağlık bilgilerini değerlendirme boyutunda daha düşük puanlar aldığı gözlenmiştir. Eğitim durumunun geleneksel ve tamamlayıcı tıbba yönelik tutumları etkilediği, üniversite mezunlarının daha olumlu bakış açısı gösterdiği bulunmuştur. Ayrıca, sağlık okuryazarlığı ile geleneksel ve tamamlayıcı tıbba 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 tıbba karşı daha bilinçli ve olumlu bir bakış açısı geliştirmesine katkıda bulunabileceği düşünülmektedir.

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

TO CITE THIS ARTICLE:
Ünal E, Erdoğan Yüce G. The relationship between traditional and complementary therapy usage, attitudes, and health literacy in individuals with hypothyroidism: A descriptive study. J Tradit Complem Med. 2025;8(2):76-87.

Correspondence: Eda ÜNAL
Kırşehir Ahi Evran University Faculty of Health Sciences, Department of Nursing, Department of Internal Medicine Nursing, Kırşehir, Türkiye
E-mail: edaunl0619@gmail.com

Peer review under responsibility of Journal of Traditional Medical Complementary Therapies.

Received: 24 Dec 2024 ***Accepted:*** 04 Mar 2025 ***Available online:*** 27 Mar 2025

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 were: (a) a diagnosed with hypothyroidism; (b) aged 18 or older; (c) able 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 (Heinrich-Heine University Düsseldorf, Germany) 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 was required. 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 performed on 200 participants.

DATA COLLECTION PROCEDURE

The study was carried out in the endocrinology and metabolic diseases outpatient clinic with individuals attending routine check-ups. Participants who voluntarily consented to take part in the study were informed about the study. They were then asked to

complete the questionnaires, which took approximately 15 to 20 minutes. All data were kept with confidential, and no compensation was provided.

MEASURES

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

Patient Information Form: This form was designed by researchers based on the 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 IBM SPSS Statistics 23.0 (IBM Corporation, USA) 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 $r\geq0.50$ strong. In addition, multiple linear regression analysis was conducted to assess the relationships between indepen-

dent 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 (May 5, 2024, no: 2024/031) and permissions were obtained 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 were fully informed about the study aims and confidentiality and provided written consent to participate. No ethical issues arose during the study.

RESULTS

Table 1 presents participants' sociodemographic, disease characteristics, and T&CM usage. 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 summarizes participants' attitudes toward T&CM and their health literacy scores. The mean T&CM attitude score is 23.14±4.83, holistic health attitude is 7.46±2.20, and overall health literacy is 29.71±8.70. The highest sub dimension score is in using/applying health information (31.26±8.01). (Table 2).

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

Table 3 shows the comparison of participants' attitudes toward T&CM across sociodemographic and clinical characteristics. Participants with a university education had significantly lower attitude scores compared to those with a high school education (p=0.013). Additionally, those who had heard of

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

Variables	X̄±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

			Attitudes towards T&CM	
Sociodemographic and clinical characteristics and T&CM Usage status		X̄±SD	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**
	High school (b)	31.70±5.04		**c<b**
	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

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). No significant differences were observed across the other variables (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 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

TABLE 4: Comparison of participants' attitudes health literacy across sociodemographic and disease characteristics

Sociodemographic and clinical characteristics and T&CM usage status		Health Literacy			
		X̄±SD	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**
	40-49 years (b)	30.38±7.15	30.20 (26.43-34.50)		**a,b>c,d**
	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**
	High school (b)	30.28±5.47	30.20 (28.12-33.85)		**a<b<c**
	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**
	Not working (b)	27.52±8.64	28.64 (22.39-32.81)		**a>b,c**
	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**
	District (b)	24.08±8.89	22.39 (18.48-31.51)		**a>b,c**
	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**
	4-6 years (b)	33.49±7.33	32.81 (28.64-39.19)		**c<a,b**
	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

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

scores com- pared 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). No significant differences were observed in health literacy across other variables (p>0.05).

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 association between health literacy and T&CM attitudes is weak.

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).

DISCUSSION

This study examined the relationship between T&CM usage status and attitudes toward T&CM among individuals with hypothyroidism and their health literacy levels. Notably, it is the first study focusing on T&CM usage in this patient group. In this study, among participants 43% had heard of T&CM methods, while 20% actively used them. Compared to other disease groups, this rate is relatively low. Previous studies have shown T&CM use range between 48.40% and 89.38% in diabetes, 85.09% in cancer, and 49.3% in coagulation disorders.[12-14] Şimşek et al. found a prevalence of 60.5% in a general population where 81% had chronic diseases.[15] Similarly, a systematic review by Lee et al. reported T&CM use between 24% and 71.3% across 14 European countries.[16] Differences in cultural factors, accessibility of T&CM techniques, and people's health, economic and educational status may explain these variations.[12-16]

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

	Unstandardized coefficients		Standardized coefficients			95% confidence interval for B		Collinearity statistics		Durbin-Watson	Adjusted R^2	F	p value
	B	Std. error	Beta	t value	p value	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	0.596	0.552	-0.050	0.094	0.519	1.929				
Sex (Female)	1.284	1.201	0.079	1.069	0.286	-1.084	3.652	0.870	1.149				
Education (primary school)	-0.319	1.266	-0.034	-0.252	0.801	-2.817	2.178	0.264	3.788				
Education (high school)	1.428	1.021	0.147	1.399	0.163	-0.585	3.441	0.431	2.322				
Marital status (married)	-0.220	1.142	-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	0.104	0.917	-1.715	1.907	0.598	1.673				
Income less than expenses	-0.587	1.368	-0.055	-0.429	0.668	-3.285	2.112	0.293	3.416				
Income equal to expenses	-0.304	1.245	-0.031	-0.244	0.808	-2.760	2.152	0.300	3.337				
Hypothyroidism diagnosis time	0.051	0.043	0.093	1.189	0.236	-0.034	0.136	0.770	1.298				
Comorbid disease (yes)	-0.995	0.828	-0.105	-1.202	0.231	-2.627	0.638	0.628	1.593				
Health literacy	-0.127	0.049	-0.238	-2.610	**0.010**	-0.224	-0.031	0.572	1.750				

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

In this study, 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 align with previous studies indicating that herbal treatments are the most common T&CM methods in Türkiye, with cupping also commonly used as part of cultural health practices.[15,17-22] However, the preference for herbal methods over other well-known T&CM methods, such as acupuncture, yoga, or meditation may be explained by cultural familiarity, accessibility, cost, and perceptions of safety and effectiveness. In contrast, methods like acupuncture or yoga may require specialized practitioners and higher costs, reducing their accessibility.[23] Limited awareness and trust may also shape preferences.[15] Studies suggest that individuals with chronic diseases favor methods that are easily accessible, integrate into daily life, and do not require professional supervision.[12-14] Future research could further explore these factors to clarify T&CM preferences in hypothyroidism.

The participants' mean attitude toward T&CM was 30.61±4.65 indicating a positive attitude. Similar mean scores were reported by Şensoy et al. (29.5±5.70), Çürük and Özdemir Alkanat (31.09±4.37), and Özen and Balcıoğlu (32.19±5.41) in studies involving hospital visitors, individuals with chronic diseases and adults attending family medicine clinics, respectively.[20,24,25]

Participants' health literacy level was in the "problematic-limited (26-33)" category for 4 subareas and total score. Although they showed relatively high scores in accessing, understanding and using health-related information, their ability for evaluating information was notably lower. This suggests that they can obtain and comprehend health information but struggle with critically evaluating information. Consistent with these findings, the Türkiye Health Literacy Level study reported that 68.9% had inadequate and problematic-limited health literacy particularly in evaluating information.[26] To improve health lit-

eracy, especially individuals with chronic diseases. workshops and educational programs focused on critical assessment are recommended. Healthcare providers also play a key role by using clear language, visuals, and 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 critically engage with health-related information.

The study found no statistically significant differences in attitudes toward T&CM based on age, gender, employment status, income status, place of residence, time of diagnosis of hypothyroidism and presence of comorbid diseases. Although comorbid diseases did not affect attitudes, the high proportion of participants with comorbid diseases (39.5%) may lead 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. Education level was the only variable significantly associated with attitudes. Individuals with higher education levels had a more positive attitude towards T&CM. This suggests education may play in shaping attitudes and improving health literacy, potentially enhancing the ability to understand and assess health information. As there is no study in Türkiye specifically evaluating the attitudes towards T&CM in patients with hypothyroidism, comparisons could not be made. However, studies conducted on different sample groups have yielded results contrary to the findings of this study. Bektaş Akpınar et al. found that patients with kidney and ureteral stone with lower education levels had more positive attitudes toward T&CM, while, Gökçe and Gürdoğan reported similar results in hypertension patients, where those with primary school education had a more positive attitude towards T&CM.[27,28]

The study determined that health literacy level were associated with age, employment status, marital status, place of residence, education, comorbid disease, and hypothyroidism diagnosis period. Health literacy increased with higher education; was greater among individuals aged 18-49, employed individuals, and those living in city center. Conversely, married individuals, those diagnosed for seven years or more, and individuals with comorbid diseases had lower health literacy. 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. Erdoğan Yüce and Muz and Dehghan et al. found that married individuals had a lower health literacy level compared to single.30,31 The study conducted by Temel and Çimen found that married individuals had higher health literacy levels compared to single individuals.[29]

The study showed that higher health literacy levels were related to increased positive attitudes towards T&CM, and high health literacy predicted positive attitude towards T&CM. This suggests that as individuals' ability to access, understand and evaluate health information improves, they may may view T&CM as more integral part of their health management. Similar findings are reported in the literature. Dehgan et al. revealed a significant and positive correlation between T&CM usage and health literacy, while Charoencheewakul et al. found that diabetes mellitus patients that those with adequate to excellent health literacy levels demonstrated increased likelihood of T&CM usage.[3,31]

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. However, some limitations should be noted. First, the sample was limited to 200 individuals from two cities, limiting generalizability of the findings. Second, data were self-reported, potentially influenced by participants' subjective perceptions and varying levels of health awareness. Third, the cross-sectional design also prevents the establishment of causal relationships. Additionally, the scales used

may not fully capture the cultural and socioeconomic characteristics of participants, potentially affecting the accuracy and applicability of the results. Future research with larger, more diverse samples and longitudinal designs are recommended to validate and extend 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. Positive attitudes toward T&CM were linked to higher education levels, with university and above education levels had a more positive attitudes. Overall, increased health literacy was associated with more positive attitudes toward T&CM.

These findings suggests that enhancing health literacy may foster more informed and positive perspective on T&CM. They underscore the importance of health policies aimed at 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 could support better-informed healthcare decisions.

Future studies should investigate the specific factors influencing T&CM preferences, including cultural beliefs, accessibility or trust. Longitudinal studies are needed to examine how evolving health literacy influences T&CM use over time. Furthermore, qualitative studies exploring patients' motivations and decision-making processes regarding T&CM could provide deeper insights into their requirements and expectations.

Acknowledgement

Thank you to all individuals who participated in the study.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

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.

REFERENCES

1. Çiftçi A, Karaca E. Hipotiroidi tanısı almış kadınların yaşam kalitesi ile besin tüketim alışkanlıkları ve bazı antropometrik parametreler arasındaki ilişkinin saptanması [The relationship between quality of life and dietary habits and some anthropometric parameters of women with hypothyroid]. Acıbadem Üniv. Sağlık Bilim. Derg. 2020;12(1):87-93. [Crossref]
2. Aktaş B. Hemşirelik öğrencilerinin bütüncül tamamlayıcı ve alternatif tıbba karşı tutumları [Attitudes of nursing students toward holistic complementary and alternative medicine]. Journal of Academic Research in Nursing. 2017;3(2):55-9. [Link]
3. Charoencheewakul C, Laohasiriwong W, Suwannaphant K, Sopon A. Health literacy and complementary and alternative medicine use among type 2 diabetes mellitus patients in the Northeast of Thailand. Kathmandu Univ Med J (KUMJ). 2019;17(66):107-13. [PubMed]
4. Ünsat E, Albayrak S. Geleneksel ve tamamlayıcı tıbba yönelik tutumlar: KETEM örneği [Attitudes towards traditional and complementary medicine: example of KETEM]. Hemşirelikte Araştırma Geliştirme Dergisi. 2023;25(3):23-32. [Link]
5. Dursun Sİ, Vural B, Keskin B, Kaçar HK, Beyhan A, Kadıoğlu H. Yetişkinlerde geleneksel/tamamlayıcı tıp tutumu ile sağlık okuryazarlığı ve sağlık algısı arasındaki ilişki [The relationship between traditional/complementary medical attitude and health literacy and health perception in adults]. Halk Sağlığı Hemşireliği Dergisi. 2019;1(1):1-10. [Link]
6. Çopurlar CK, Kartal M. Sağlık okuryazarlığı nedir? nasıl değerlendirilir? neden önemli? [What is health literacy? how to measure it? why is it important?] Turk J Fam Med Prim Care. 2016;10(1). [Crossref]
7. Buran G, Kaçan CY. Hemşirelik öğrencilerinin sağlık okuryazarlığı ile geleneksel ve tamamlayıcı tıp tutumları arasındaki ilişkinin incelenmesi [Examining the relationship between nursing students' health literacy and traditional and complementary medicine attitudes]. Balıkesir Sağlık Bilimleri Dergisi. 2023;12(1):118-25. [Crossref]
8. Köse E, Oturak G, Ekerbiçer H. Bir grup tıp fakültesi öğrencisinde geleneksel ve tamamlayıcı tıp tutumu ve sağlık okuryazarlığı ilişkisinin incelenmesi [Examination of the relationship between traditional and complementary medicine attitude and health literacy in a group of medical faculty students]. Sakarya Tıp Dergisi. 2021;11(2):373-80. [Link]
9. Hyland ME, Lewith GT, Westoby C. Developing a measure of attitudes: the holistic complementary and alternative medicine questionnaire. Complement Ther Med. 2003;11(1):33-8. [PubMed]
10. Erci B. Attitudes towards holistic complementary and alternative medicine: a sample of healthy people in Turkey. J Clin Nurs. 2007;16(4):761-8. [Crossref] [PubMed]
11. Okyay P, Abacıgil F, Harlak H. Türkiye sağlık okuryazarlığı ölçekleri güvenilirlik ve geçerlilik çalışması. Türkiye Sağlık Okuryazarlığı Ölçeği-32 (TSOY-32). 2016:43-61. [Link]
12. Alzahrani AS, Price MJ, Greenfield SM, Paudyal V. Global prevalence and types of complementary and alternative medicines use amongst adults with diabetes: systematic review and meta-analysis. Eur J Clin Pharmacol. 2021;77(9):1259-74. [PubMed] [PMC]
13. Jędrzejewska A, Ślusarska BJ, Szadowska-Szlachetka Z, Rudnicka-Drożak E, Panasiuk L. Use of complementary and alternative medicine in patients with cancer and their relationship with health behaviours-cross-sectional study. Ann Agric Environ Med. 2021;28(3):475-82. [PubMed]
14. Bordbar M, Pasalar M, Aresehiri R, Haghpanah S, Zareifar S, Amirmoezi F. A cross-sectional study of complementary and alternative medicine use in patients with coagulation disorders in Southern Iran. J Integr Med. 2017;15(5):359-64. [Crossref] [PubMed]
15. Şimşek B, Aksoy DY, Basaran NC, Taş D, Albasan D, Kalaycı MZ. Mapping traditional and complementary medicine in Turkey. Eur J Integr Med. 2017;15:68-72. [Crossref]
16. Lee EL, Richards N, Harrison J, Barnes J. Prevalence of use of traditional, complementary and alternative medicine by the general population: a systematic review of national studies published from 2010 to 2019. Drug Saf. 2022;45(7):713-35. [PubMed] [PMC]
17. Alay İ, Dagdeviren H, Kanawati A, Eren E, Kaya C, Cengiz H. Jinekoloji polikliniğine başvuran hastalarda tamamlayıcı alternatif tıp uygulamalarının kullanımı [Complementary and alternative medicine practices in patients who admitted to gynecology outpatient clinic]. Ahi Evran Med J. 2018;2(3):53-7. [Link]
18. Cevik C, Tari Selcuk K. Prevalence and Correlates of the Use of Complementary and Alternative Medicine in Adults Living in a Rural Area. Holist Nurs Pract. 2019;33(1):36-44. [Crossref] [PubMed]
19. Ince N, Kaya Ş, Esen Yıldız İ, Parlak E, Bayar B. Use of complementary and alternative medicine in patients with chronic viral hepatitis in Turkey. Complement Ther Med. 2020;48:102229. [Crossref] [PubMed]
20. Özen Ö, Balcıoğlu H. Aile hekimliği polikliniğine başvuran 18 yaş üzeri erişkinlerin geleneksel ve tamamlayıcı tıp kullanım sıklığı, bu konudaki bilgi ve tutumlarının incelenmesi: Kesitsel çalışma [Examination of the frequency of use of traditional and complementary medicine, knowledge and attituders of adults over the age of 18 who applied to the family medicine outpatient clinic: cross-sectional study]. Journal of Traditional Medical Complementary Therapies. 2024;7(1):76-81. [Crossref]
21. Kılıç G, Polat Ö, Eşbah AÜ. Cerrahi tedavi planlanan lomber disk hernisi hastalarında geleneksel ve tamamlayıcı tıp tekniklerinin kullanımı: anket çalışması [The use of traditional and complementary medicine techniques in patients with lumbar disc herniation and undergoing surgical treatment: a questionnaire study]. Sağlık Bilimlerinde Değer. 2023;13(1):67-72. [Crossref]
22. Hacılar E, Okka B, Şahin TK, Demir GS. 18 yaş üstü bireylerin geleneksel ve tamamlayıcı tıp yöntemleri hakkında tutum ve davranışlarının değerlendirilmesi: Kesitsel bir araştırma [Evaluation of attitudes and behaviors of individuals over the age of 18 about traditional and complementary medicine methods: a cross-sectional study]. J Tradit Complem Med. 2024;7(1):66-75. [Crossref]
23. Mortada EM. Evidence-based complementary and alternative medicine in current medical practice. Cureus. 2024;16(1):e52041. [PubMed] [PMC]
24. Şensoy N, Özdinç Ş, Yılmaz O, Çetin MD, Tola D, Doğantekin P, et al. Üniversite hastanesine başvuran hastaların tamamlayıcı ve alternatif tedavi kullanımına yönelik tutum ve davranışları [The attitudes and behaviors of patients admitted to university hospital towards complementary and alternative therapies]. Kocatepe Tıp Dergisi. 2020;21(3):258-63. [Crossref]
25. Çürük GN, Özdemir Alkanat H. Kronik hastalığı olan bireylerin COVID-19 pandemisinde tamamlayıcı alternatif tedaviye yönelik tutum ve davranışları: Tanımlayıcı bir araştırma [Attitudes and behaviors of individuals with chronic disease toward complementary alternative methods in the COVID-19 pandemic: a descriptive study]. Journal of Traditional Medical Complementary Therapies. 2023;6(3):219-28. [Crossref]
26. Özkan S, Baran Aksakal FN, Çalışkan D, Dikmen AU, Tüzün H, Taşçı Ö, et al. Türkiye Sağlık Okuryazarlığı Düzeyi ve İlişkili Faktörleri Araştırması. T.C. Sağlık Bakanlığı Sağlığın Geliştirilmesi Genel Müdürlüğü. 2018. [Link]
27. Bektaş Akpınar N, Akpınar Ç, Özcan Yüce U. Böbrek ve üreter taşı olan hastaların ağrı düzeyi ile tamamlayıcı ve bütünleyici tedavi kullanımı arasındaki ilişki: Tanımlayıcı bir çalışma [The relationship between pain and use of complementary and integrative therapy in patients with kidney and ureteral stones: a descriptive study]. J Tradit Complem Med. 2024;7(1):1-7. [Crossref]

28. Gökçe H, Gürdoğan EP. Complementary and alternative therapy usage status and attitudes of hypertension patients. Euras J Fam Med. 2019;8(2):59-68. [Crossref]

29. Temel AB, Çimen Z. Kronik hastalığı olan yaşlı bireylerde sağlık okuryazarlığı, sağlık algısı ve ilişkili faktörler [Investigation of health literacy, perception of health and related factors in elderly patients with chronic illness]. Ege Üniversitesi Hemşirelik Fakültesi Dergisi. 2017;33(3):105-25. [Link]

30. Erdoğan Yüce G, Muz G. Kronik hastalığı olan bireylerde sağlık okuryazarlığı düzeyinin kronik hastalığa uyum ile ilişkisi: Kesitsel bir çalışma [Investigation of the relationship between health literacy level and adjustment to chronic disease in individuals with chronic disease: a cross-sectional study]. Gümüşhane Üniversitesi Sağlık Bilimleri Dergisi. 2023;12(3):1115-23. [Crossref]

31. Dehghan M, Rad MM, Lari LA, Ghorbani-Nejad B, Mohebi-Rad M. The relationship between use of complementary and alternative medicine and health literacy in chronically ill outpatient cases: a cross-sectional study in southeastern Iran. Front Public Health. 2023;11:988388. [Crossref]