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Analysis of the relationship between the use of traditional and complementary medical practices and health literacy levels in individuals with type II diabetes mellitus

Murat ZOR [1] *, Nükhet BAYER [2], Zehra GÖLBAŞI [2]

1 Department of Pharmacognosy, Faculty of Pharmacy, Lokman Hekim University, Ankara, Turkey.
2 Department of Nursing, Faculty of Health Sciences, Lokman Hekim University, Ankara, Turkey.
3 Faculty of Pharmacy, Lokman Hekim University, Ankara, Turkey.

* Corresponding Author. E-mail: murat.zor@lokmanhekim.edu.tr (M.Z.); Tel. +90-312-280 08 08.

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ABSTRACT: This research was conducted to examine the relationship between the use of Traditional and Complementary Medicine (TCM) and health literacy levels in individuals with Type II Diabetes Mellitus (DM). Ninety-eight patients staying in a university hospital between x and x and diagnosed with DM for at least one year were included in the study. Data were collected using a questionnaire (about patients' individual characteristics, disease-related characteristics, and TCM-use) and the Turkey Health Literacy Scale-32 (THLS-32). The mean age of the patients was 57.73 ± 14.58 years, 65.3% were female, and 53.1% were receiving oral antidiabetic treatment. It was found that 19.4% used TCM. The most commonly used method (84.2%) was herbal medicine/product. Of the patients, 52.6% used TCM because they thought it would be effective in DM treatment, and 89.5% of this group considered using it again. It was found that 68.4% of the patients did not tell their doctor that they were using TCM. There was a statistically significant difference in the use of TCM in relation with the education level of the patients, working status, complications due to diabetes, and attending regular health check-ups ($p<0.05$). On the other hand, there was no significant difference in patients' behavior of using TCM in relation with their health literacy level. It was found that approximately one fourth of the patients with DM used TCM applications. The use of TCM was more common among patients with low education, those not working, those with complications due to diabetes, and those who did not attend regular health check-ups. Health literacy levels of the patients do not affect the behavior of using TCM.

KEYWORDS: Type II diabetes mellitus; traditional and complementary medicine; health literacy.

1. INTRODUCTION

In recent years, the concept of Traditional and Complementary Medicine (TCM) has been used instead of the concept of alternative medicine, with the emphasis that there can be an alternative treatment other than medicine. Instead of TCM, various terminologies such as public medicine, natural medicine, folk medicine, holistic medicine, supportive medicine, and integrative medicine are also used in different countries [1]. Many countries issued regulations regarding TCM following the strategies developed by the World Health Organization (WHO) on TCM. Thus, TCM applications have started to take place as part of health policies of countries. National recognition and regulation of TCM differ significantly among countries [2]. TCM is a set of knowledge, skills, and practices based on theories, beliefs, and experiences belonging to different cultures, which are used to protect, diagnose, heal, and treat physical and mental illnesses, and to maintain well-being [3]. A striking element in these knowledge-based skills and practices is the concept of health literacy. The World Health Organization (WHO) defines health literacy as cognitive and social skills determining the motivation and ability of individuals to access, understand, and use information in a way that promotes and maintains good health [4].

Health Literacy is the capacity to acquire, communicate, operate, and understand basic information about health services in making the right decision about health. Inadequate/low health literacy prevents the person from using health services effectively, and causes a decrease in the quality of life in the social dimension, and an increase in morbidity and mortality rates [5].

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TCM has been gaining popularity in the general public in recent decades. For example, studies show that TCM use has increased in European countries in the past decade such that more than 98% of European citizens have used TCM [6].

Diabetes Mellitus (DM) is one of the most significant health care problems due to its high prevalence and its association with several health complications. DM has been increasing, especially in developing countries, due to sedentary lifestyle, unhealthy eating habits, and less physical activity [7]. Although DM damages most organs, some organs are affected more than others. For this reason, TCM is also gaining importance in the treatment of DM. Some diabetic patients use TCM in addition to conventional medicine to maintain their health and control their blood sugar [8]. Phytotherapy, a holistic and traditional treatment method involving herbal products and medicines, has been increasingly used as supplementary in the treatment of diabetes, which ranks 3rd among diseases in terms of mortality rate according to WHO statistics. More than 400 herbs and more than 120 products of natural origin are used to support treatment in diabetes [9, 10].

Among the TCM methods used in the treatment of diabetes, there are applications such as leech therapy, cupping, and bard treatment [1, 11, 12]. Countries benefit from TCM applications according to their own cultures, especially in the treatment of Type 2 diabetes. Many studies have been undertaken to ensure the sensitivity of target tissues to insulin in the treatment of diabetes. For this purpose, many anti-diabetic herbal medicines are used in this field, while traditional methods are preferred in addition to insulin in patients with diabetes [13].

The data obtained indicate that it would be beneficial to use CTM methods of the ancient Eastern medicine as supplementary in addition to conventional Western medicine, i.e., chemical treatment.

2. RESULTS AND DISCUSSIONS

Of the 98 patients participating in the study, 65.3% were women and 34.7% were men. The average age of the patients was 57.73 ± 14.58 years. Of the patients, 73.4% were married, 51.1% were primary school graduates, 39.8% were working, and 56.1% were living in a city. The sociodemographic characteristics of the patients are presented in Table 1.

Table 1. Patients' socio-demographic characteristics (n=98).

Variables	n (%)
Age*	57.73±14.58
Gender	
Female	64 (65.3)
Male	34 (34.7)
Marital Status	
Married	72 (73.5)
Single	26 (26.5)
Education Status	
Primary School	50 (51.1)
Middle School and over	48 (48.9)
Working Status	
Working	39 (39.8)
Retired	22 (22.4)
Not Working	37 (37.8)
Place of Residence	
City	55 (56.1)
District	25 (25.5)
Town/Village	18 (18.4)

* Expressed as mean±standard deviation.

The average time elapsed after the patients were diagnosed with the disease was 11.6 ± 11.46 years. It was found that 53.1% of the patients were on oral antidiabetic treatment and 57.1% of them were hospitalized for the first time due to an illness. There were no complications due to diabetes in 77.5% of the patients, and 68.4% had a history of type II diabetes in their family. Of the patients, 81.6% used the recommended treatment regularly and 66.3% of them had regular health check-ups as recommended. Of the patients, 77.5% received education on type II diabetes and 61.2% had another chronic disease. Table 2 presents disease-related characteristics of the patients. The occurrence of complications related to diabetes in approximately one-fifth of the patients may be an indication that blood sugar cannot be kept under control. As a matter of fact, the presence of patients who do not follow their treatment regularly, do not follow their routine check-ups regularly, and do not receive education from health personnel about the disease may support this idea. In another study conducted in Turkey [14]. İt was found that 59.5% of the individuals with DM received education on DM, and this result is lower than that found in the present study. Ceylan et al. [15] reported that educated patients living in the city, those having diabetes for a longer time, younger patients, and living in crowded families are more likely to use CTM. More than half of CTM users (n=80, 52.7%) reported that these methods improved body strength, psychological well-being, or various symptoms.

Table 2. Distribution of patients based on their disease-related characteristics (n=98).

Variables	n (%)
The time elapsed before the diagnosis of the disease (years)*	11.6±11.46
Current treatment	
Insulin	20 (20.4)
Oral diabetic	52 (53.1)
Insulin + Oral diabetic	26 (26.5)
Hospitalization frequency due to illness	
First	56 (57.1)
At least once a year	31 (31.6)
2-3 times a year	8 (8.2)
4 times a year or more	3 (3.1)
Diabetes-related complications	
Occurred	22 (22.5)
Not occurred	76 (77.5)
History of type II diabetes in the family	
Yes	67 (%68.4)
No	31 (%31.6)
Following the treatment	
Regular	80 (81.6)
Irregular	15 (15.3)
Not attending	3 (3.1)
Attending check-ups	
Regular health check-up	65 (66.3)
Irregular health check-up	31 (31.6)
No health check-up at all	2 (2.1)
Education for type II diabetes	
Received	76 (77.5)
Not received	22 (22.5)
Presence of other chronic diseases	
Yes	60 (61.2)
No	38 (38.8)

* Expressed as mean ± standard deviation.

In the present study, 19.4% of the patients used a TCM application. As the TCM method, 84.2% of the patients used herbal medicine/product, 42.1% heard about the TCM method via visual media, 52.6% used it because they thought that TCM application would be more useful in the treatment of diabetes, and 42.1% obtained this method from an herbalist. While 84.2% of the patients did not receive expert guidance for using TCM, and the doctors of the 68.4% of the patients did not know that their patients used TCM. Of the patients, 84.2% thought that TCM was useful and 89.5% stated that they may use it again. Table 3 presents the characteristics of the patients using TCM.

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Individuals with chronic diseases such as type II DM may experience a disease management involving complex treatment and self-care, and thus, they opt for traditional and complementary methods to treat the disease or alleviate the symptoms [15]. In a literature review involving 18 studies from 9 countries, it was stated that the frequency of using CTM among diabetic patients varies between 17% and 72.8% [16] . In studies conducted in Iran, Pakistan, and United Arab Emirates, the frequency of using TCM in patients with diabetes was found to be 88.4%, 57.8%, 39.3% respectively [6, 7, 17]. Sahin et. al [18]. reported that the frequency of CTM use in patients with diabetes ranges from 25% to 85% in Turkey. In a study conducted by Kaynak and Poalt, [19] it was found that 48.1% of the diabetic patients used CTM methods, and in a study by Ceylan et., [20] 41% of the patients used CTM methods, and both results are higher than that of the present study. However, in these studies, it was stated that the most common method used by patients is herbal products, which is in line with the present results. The reason for this is thought to be due to the easy access and easy use of herbal products.

CTM applications are generally safer when used in parallel with medical treatment and under the supervision of healthcare professionals. However, in the present study, most of the patients used CTM without letting their doctors know about it. Similar to the present result, it was found that 34.6% of the diabetic patients used CTM in a study by Kücükgüclü et al., [21] and 73% of them did not let the doctors or nurses know of this situation. Güner et al., [14] found that 27.6% of the individuals with diabetes used CTM, but unlike both the present and other study results, 73.8% of the patients in their study shared this information with their doctors. It is important for the healthcare personnel to know all other treatment methods used by the patient in addition to medical treatment in order to prevent possible risks.

Table 3. Distribution of patients based on their use of traditional and complementary medicine (TCM) in the treatment of diabetes.

Variables	n (%)
TCM Use	
Yes	19 (19.4)
No	79 (80.6)
TCM method used (n=19)	
Acupuncture	2 (10.5)
Herbal medicine/product	16 (84.2)
Cupping therapy	1 (5.3)
Where did the patient hear about TCM?	
Social media	3 (15.8)
Visual media	8 (42.1)
Internet	1 (5.3)
Friend/neighbor/relative	7 (36.8)
Reason for TCM use	
Side effects of medical treatment	2 (10.5)
Medical treatment not working	5 (26.3)
Believing that TCM is effective in DM treatment	10 (52.6)
Other	2 (10.6)
Where did the patient get TCM materials?	
Local herbalist	8 (42.1)
Internet	5 (26.3)
Friend/neighbor/relative	4 (21.1)
Other	2 (10.5)
Did the patient receive guidance for TCM use from an expert?	
Yes	3 (15.8)
No	16 (84.2)
Does the doctor know about the patient's TCM use?	
Yes	6 (31.6)
No	13 (68.4)
Does the patient find TCM useful?	
Yes	16 (84.2)
No	3 (15.8)
Does the patient plan to use TC again?	
Yes	17 (89.5)
No	2 (10.5)

It was found that 51.1% of the patients had inadequate health literacy, 26.5% had problematic-limited health literacy, 15.3% had sufficient health literacy, and 7.1% had excellent health literacy. Table 4 shows the health literacy levels of the patients.

Health literacy is defined as the capacity to acquire, interpret, and understand basic health information and services in a way to protect improve and protect health or to ameliorate one's own deteriorated health. In a study conducted nationwide in Turkey, 64.6% of the individuals over the age of 18 were found to have problematic/limited health literacy [22] Although there are not many studies regarding the health literacy of individuals with diabetes in Turkey, Akyol Güner et al. [14] found that 56.4% of the individuals with diabetes had "insufficient" and 13.6% had "problematic/limited" health literacy. Özonuk and Yılmaz [5] reported that the health literacy level of older, female, and diabetic individuals and those with low education level is low.

Table 4. Distribution of patients by health literacy levels (n=98).

Health Literacy Levels	**n (%)**
Poor health literacy	50 (51.1)
Problematic-limited health literacy	26 (26.5)
Adequate health literacy	15 (15.3)
Excellent health literacy	7 (7.1)

There was no significant difference in the use of CTM in terms of age, gender, and marital status of the patients ($p>0.05$). There was a statistically significant difference in the use of CTM in terms of the education level and working status of the patients ($p<0.05$). It was found that 73.7% of the patients using CTM were primary school graduates and 63.2% did not work. Table 5 presents the data regarding the use of CTM in terms of the patients' individual characteristics.

In a literature review, Joelintina et al [8] emphasize that determinants associated with the TCM use in patients with DM were age, gender, family income, occupation, residence, and the characteristics of the disease, such as the length of time since diagnosed and complications. In Pakistan, Raja et al. found that use of TCM sowed significant association with female gender, older age, divorced/widow marital status, lower education, unemployment, longer duration of diabetes, diabetes-related complications and poor glycemic control. Radwan et al [7] showed that TCM use was significantly associated with age, gender, education, employment, and having health insurance.

Table 5. The status of CTM use in terms of the individual characteristics of the patients (n=98).

Variables	**Those using CTM (n=19)**	**Those not using CTM (n=79)**	**p**
	n (%)	**n (%)**	
Age			
50 years old or younger	3 (15.8)	26 (32.9)	NS
Over 50 years old	16 (84.2)	53 (67.1)	
Gender			
Female	15 (78.9)	49 (62.1)	NS
Male	4 (21.1)	30 (37.9)	
Marital Status			
Married	15 (78.9)	57 (72.1)	NS
Single	4 (21.1)	22 (27.8)	
Education Status			
Primary school or below	14 (73.7)	36 (45.6)	**
Secondary school or over	5 (26.3)	43 (54.4)	
Working Status			
Working	6 (31.6)	33 41.8)	**
Retired	1 (5.2)	21 (26.5)	
Not working	12 (63.2)	25 (31.7)	

*p<0.05; NS: non-significant

Table 6 presents the evaluation of patients' use of CTM in relation with their disease-related characteristics. There was no statistically significant difference in the use of CTM in relation with the current treatment of the patients, the frequency of hospitalization, the presence of type II diabetes in the family, the status of using the treatment, the education status regarding type II diabetes, and the presence of other chronic diseases ($p>0.05$). There was a statistically significant difference in the use of CTM application in terms of the development of complications due to diabetes and the status of attending regular health check-ups ($p<0.05$). While 52.6% of the patients using CTM developed complications, only 15.2% of the patients who did not use CTM developed complications ($p<0.05$). While 47.4% of the patients using CTM attended regular health check-ups, 70.9% of those who did not use CTM attended regular health check-ups ($p<0.05$).

It was emphasized previously that the use of CTM in people with type II diabetes is affected by their experiences, beliefs, and attitudes towards CTM as well as their behaviors towards disease management rather than their demographic characteristics [16]. In the present study, the higher frequency of CTM use in patients with diabetes complications may be related to their incompetent behavior towards disease management or their negative attitude towards the medical treatment of diabetes. As a matter of fact, in the present study, those who used CTM more frequently attended health check-ups less than those who did not.

Table 6. Patients' CTM use in relation to their disease-related characteristics (n=98).

Variables	Those using CTM (n=19)	Those not using CTM (n=79)	p
Current treatment			
Insulin	2 (10.53)	18 (22.78)	NS
Oral diabetic	8 (42.11)	44 (55.7)	
Insulin + Oral Diabetic	9 (47.37)	17 (21.52)	
Hospitalization due to disease			
First	10 (52.6)	46 (58.2)	NS
At least once a year	9 (47.4)	33 (41.8)	
Occurrence of diabetes-related complications			
Yes	10 (52.6)	12 (15.2)	*
No	9 (47.4)	67 (84.8)	
Family history of type II diabetes			
Yes	13 (68.4)	54 (68.4)	NS
No	6 (31.6)	25 (31.6)	
Following the treatment			
Regular	12 (63.2)	68 (86.1)	NS
Irregular	6 (31.6)	9 (11.4)	
Not at all	1 (5.2)	2 (2.5)	
Attending health check-ups			
Regular	9 (47.4)	56 (70.9)	*
Irregular	8 (42.1)	23 (29.1)	
Not at all	2 (10.5)	0 (0)	
Having received type II diabetes education			
Yes	17 (89.5)	59 (%74.7)	NS
No	2 (10.5)	20 (%25.3)	
Another chronic disease			
Yes	15 (78.9)	45 (56.9)	NS
No	4 (21.1)	34 (43.1)	

*p<0.05; NS: non-significant

Table 7 presents the evaluation of patients' use of CTM in relation with their health literacy levels. There was no statistically significant difference in the health literacy levels of patients in relation with their CTM use ($p>0.05$).

Elderly people with low health literacy have a higher risk of mortality, according to a retrospective study examining the relationships between health literacy and health outcomes. It was stated that low health literacy also affects other health outcomes such as the implementation of medical instructions, adherence to treatment, self-efficacy, smoking and alcohol use, review of prescription information, asthma severity and control, diabetes control and related symptoms, hypertension control, and quality of life [23].

While health literacy affects the health levels of individuals positively, the inability to find a connection between the use of CTM and health literacy in our study shows that people prefer CTM to improve their health levels.

Table 7. The patients' use of CTM in relation with their health literacy levels (n=98).

Health Literacy Levels	Those using CTM (n=19)	Those not using CTM (n=79)	p
Poor health literacy	7 (36.84)	43 (54.43)	NS
Problematic-limited health literacy	5 (26.32)	21 (26.58)	
Adequate health literacy	5 (26.32)	10 (12.66)	
Excellent health literacy	2 (10.53)	5 (6.33)	

NS: non-significant

3. CONCLUSION

The results obtained in the present study show that approximately one quarter of the patients with type II DM use CTM and the most commonly used CTM application is herbal medicine/product. The patients used CTM applications because they thought it would be effective in the treatment of DM and most of them stated that they benefited from CTM. However, patients often used CTM without the guidance of an expert and without the knowledge of their doctor. It can be said that patients with DM have a low level of health literacy. However, the level of health literacy does not affect patients' use of CTM. The frequency of using CTM is lower among patients who attend regular health check-ups, who do not suffer from diabetes, who have a high education level, and who are working. Healthcare professionals should question the patients with diabetes in terms of their behaviors of using CTM for the treatment of the disease, and they should inform them about it. Especially, patients with low education level, who do not work, who do not attend regular health check-ups, and who experience some diabetes-related complications should be monitored more closely in terms of their use of CTM.

4. MATERIALS AND METHODS

4.1. Study sample and setting

This descriptive cross-sectional study was conducted between June 1, 2020 and September 30, 2020 in a university hospital in Ankara. Individuals who presented to the hospital between the specified dates and met the inclusion criteria of the study were included in the sample. Being literate and having a diagnosis of DM for at least one year were the inclusion criteria.

Those who met these two criteria were included in the study. After the patients were informed about the study, their written consents were obtained and data collection forms were distributed to the patients for them to fill them out. The completed forms were submitted to the researchers. Forms collected from a total of 120 patients were checked, and the data forms of 98 patients were included in the analysis after the incomplete forms were eliminated. Before the study, ethical approval was obtained from the Lokman Hekim University Non-Invasive Clinical Research Ethics Committee and written permission was obtained from the chief physician of the hospital where the research was conducted.

4.2. Data collection and evaluation

Research data were collected using two forms. The first form was developed by the researchers, and it included some sociodemographic characteristics of the patients (age, gender, education status, etc.), disease-related characteristics (duration of the disease, treatments used, complications development, etc.) and CTM usage status (CTM usage status, reason for use CTM, where they heard about CTM, where they get materials for CTM, whether their doctor knew about it, etc.). This form consists of 20 questions in total.

The Turkey Health Literacy Scale-32 (TSOY-32) was developed by Okyay Abacıgil and Harlan [22] and they established its validity and reliability. This scale consists of 32 questions and 2 sub-dimensions

(Treatment-Service and Disease prevention/health promotion). The TSOY-32 has high reliability along with its treatment and service sub-dimension (0.920) and disease prevention and health promotion sub-dimension (0.942). The scale comprises 5-point Likert type items: "1" very easy, "2" easy, "3" difficult, "4" very difficult, and "5" I have no idea. The evaluation of the scale is calculated using the following formula: "Index = (mean-1) x (50/3)". The result is standardized between 0 and 50. After this calculation, 0 indicates the lowest health literacy and 50 the highest health literacy. The score obtained is classified in four categories; (0-25) points: poor health literacy, (>25-33): problematic/limited health literacy, (>33-42): adequate health literacy, (>42-50): excellent health literacy.

4.3. Data Analysis

Data analysis was performed using the SPSS (Windows 20.0) program. Continuous data (age, duration of illness, etc.) are presented as mean and standard deviation. Categorical data are presented as n (%). Chi-square test was used in the analysis of categorical variables. For statistical significance, $p<0.05$ was accepted as the level of significance.

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