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# The Use Complementary and Alternative Practices among Adult Patients with Diabetes Mellitus: An Example of University Hospital

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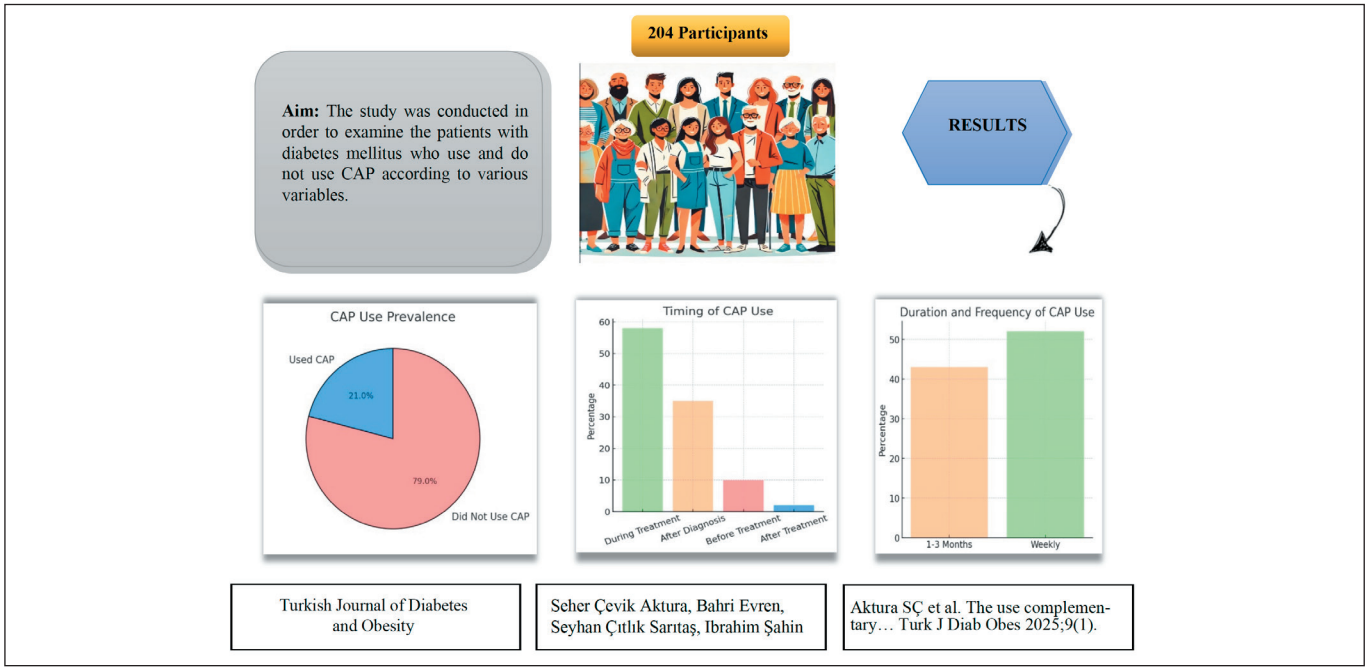
**GRAPHICAL ABSTRACT**




## ABSTRACT

**Aim:** The consequences of diabetes mellitus (DM) have a serious impact on the quality of life. As the results obtained from diabetes management are not satisfactory for some patients, they resort to complementary and alternative practice (CAP) methods. The study was conducted in order to examine the patients with diabetes mellitus who use and do not use CAP according to various variables.

**Material and Methods:** The study was designed as a cross-sectional study. The data were collected between January-July 2020. The research was carried out at endocrine service and outpatient clinics of a university hospital. The data were analyzed using descriptive statistics, and chi-square analysis.

**Results:** In the study, it was determined that 21% of diabetic patients used one of the CAP methods and mostly preferred herbal tea [chamomile, green tea, clove, sage, thyme] and cinnamon. It was found that 54.5% of the patients used CAP practices during the

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treatment process, 31.8% as soon as the diagnosis was made, 11.4% before treatment and 2.3% after treatment. In the study, 70.5% of the patients stated that they knew the effect of the CAP method they used, 56,8% found the CAP method useful, and 81.8% stated that they had no health problems related to the method they used. It was found that 43.2% of the patients used CAP for 1-3 months, 47.7% used it every week.

**Conclusion:** It was observed that patients with DM who participated in the study frequently used CAP methods to reduce/stabilise blood glucose levels and mostly used information teas and cinnamon. It was observed that half of the patients received information about the CAP method from neighbours/friends and only one third of the patients stated that they benefited from the CAP method they used.

***Keywords:*** *Diabetes mellitus, Patient, Complementary and alternative practices*

# Diabetes Mellituslu Yetişkin Hastalarda Tamamlayıcı ve Alternatif Uygulama Kullanımı: Bir Üniversite Hastanesi Örneği

**GRAFİKSEL ÖZET**


## ÖZ

**Amaç:** Diabetes mellitus (DM)'un sonuçları yaşam kalitesini ciddi şekilde etkilemektedir. DM yönetiminden elde edilen sonuçlar bazı hastalar için tatmin edici olmadığından tamamlayıcı ve alternatif uygulama (TAU) yöntemlerine başvurmaktadırlar. Çalışma, TAU kullanan ve kullanmayan DM hastaları çeşitli değişkenlere göre incelemek amacıyla yapılmıştır.

**Gereç ve Yöntemler:** Çalışma kesitsel bir çalışma olarak tasarlanmıştır. Veriler Ocak-Temmuz 2020 tarihleri arasında toplanmıştır. Araştırma bir üniversite hastanesinin endokrin servisinde ve polikliniklerinde yürütülmüştür. Verilerin analizinde tanımlayıcı istatistikler ve ki-kare analizleri kullanıldı.

**Bulgular:** Çalışmada DM hastalarının %21'inin TAU yöntemlerinden birini kullandığı ve çoğunlukla bitki çayı [papatya, yeşil çay, karanfil, adaçayı, kekik] ve tarçını tercih ettiği belirlendi. Hastaların %54,5'inin TAU uygulamalarını tedavi sürecinde, %31,8'inin tanı konar konmaz, %11,4'ünün tedavi öncesinde ve 2,3'ünün tedavi bitince kullandığı bulundu. Araştırmada hastaların, %70,5'inin kullandığı TAU yönteminin etkisini bildiğini, %56,8'inin kullandığı TAU yöntemini yararlı bulduğunu, %81,8'inin kullandığı yöntemle ilgili sağlık sorunu yaşamadığını ifade ettiği görüldü. Hastaların %43,2'sinin TAU yöntemini 1-3 ay kadar süreyle kullandığı, %47,7'sinin her hafta kullandığı bulundu.

**Sonuç:** Araştırmada diyabetli hastaların sıklıkla kan şekeri düzeylerini düşürmek/dengelemek için TAU yöntemlerini kullandığı ve en çok bilgi çaylarını ve tarçını kullandıkları görüldü. Hastaların yarısının kullandığı TAU yöntemi ile ilgili bilgiyi komşularından\ arkadaşların aldıkları ve sadece üçte birinin kullandığı TAU yönteminden fayda gördüğünü ifade ettikleri görüldü.

***Anahtar Sözcükler:*** *Diabetes Mellitus, Hasta, Tamamlayıcı ve alternatif uygulama*

## INTRODUCTION

Diabetes Mellitus (DM) is a disease which is characterized by insulin deficiency or lack, has high morbidity and mortality with acute and chronic complications, and changes quality of life. With its increasing prevalence across the world, DM has become an important public health problem (1). The World Health Organization reported that it is estimated that DM would be the seventh leading cause of disease by 2030. Its prevalence is higher in countries with low and medium income, and its general prevalence among individuals over 18 years of age is 8.5% (2). In studies conducted, its prevalence in the adult Turkish population was found to be 13.7% (3).

In chronic diseases such as DM, it is necessary to make changes to life style in order to raise the quality of life, to increase longevity, and to adapt to treatment. However, due to the long period of treatment, presence of acute and chronic complications, and difficulties experienced in the transformation of the training provided to the patient into behavior, it becomes difficult to ensure the treatments in question in DM (4). Besides, as the disease is chronic and it wears out the patient both emotionally and physically, the patient may turn to alternative methods of treatment. Among these methods, complementary treatments occupy a significant place. The side effects of diabetes treatment, low cost, accessibility without prescription, and assisting with adaptation to therapy treatment can be listed among the reasons for using CAP (5). In addition, the high cost of new technologies and patients' fear of new treatment and care methods and their side effects have increased the interest in the use of CAP (6).

CAP methods include health care applications and products used in order to improve and protect general health, to treat diseases, and to keep symptoms under control. Traditional methods are shaped under the influence of the cultural structures, beliefs, attitudes, and experiences of societies. In this regard, they differ from modern medicine (7). In spite of successful modern diagnosis, treatment and care methods that emerge along with developing technologies, CAP practices are still being used widely (6). DM patients mostly use CAP practices in order to control their blood glucose level and for general health purposes. Complementary therapies most commonly used by DM patients are multivitamins, herbal medication, nutrition recommendations, spiritual healing, and relaxing techniques (8, 9).

When the literature is reviewed, it is seen that there are studies examining CAP use (6, 8, 10). However, as mentioned above, the rates and diversity of CAP use vary according to cultures. In this sense, the study was conducted in order to compare individuals who use CAP and those who do not use CAP in a province located in the east of Turkey in terms of various variables.

## MATERIAL and METHODS

### Population and Sample

The study was designed as a cross-sectional study. Prior to the research, written permission from Scientific Research and Publications Ethics Board of Inonu University (Decision No: 2019/327) were obtained. In addition, verbal consent was taken from the patients included in the research.

The study was carried out at a university hospital located in the east of Turkey. The population of the research consisted of Turkish patients with DM who presented to endocrine service and outpatient clinics of the hospital. G power 3.1 was used in sample calculation (11). The sample of the research was composed of 204 DM patients through a power analysis with 0.05 error, 0.95 confidence interval, and 0,95 representative power of the population. The DM patients were chosen among the population through convenient random sampling method.

### Data Collection

The data were collected between January-July 2020 through face-to-face interview technique at convenient time intervals for the DM patients. The data were collected by data collection form prepared by the researchers. The questions in the printed form were read to the DM patients without any interpretation and they were asked to answer. The responses of the patients were marked on the form. Each interview lasted approximately 10-15 minutes. The interviews were held with hospitalized patients in the endocrine clinic and with the patients presenting to the outpatient clinics in the interview room. The questions asked by the patients were answered by the researchers without adding any comments.

### Data Collection Form

The form was created by the researchers in order to investigate the sociodemographic and DM related data of the patients included in the research and their characteristics related to complementary therapy use (12, 13). There are 29 questions in the form. These questions seek answers to the CAP use status of the patients, their age, gender, educational status, occupation, income status, place of residence, DM type, form of treatment, training status on DM, finding the training received sufficient, presence of a disease other than DM, presence of complications related to DM, variation of blood sugar values, CAP method used, source of information on DM, period of using CAP, reason for CAP use, source where CAP is obtained, status of knowing the effect

of the method used, finding the methods used beneficial, experiencing health issues related to the method used, duration and frequency of CAP use, stopping receiving medical treatment during CAP use, getting the expected result from CAP use, continuing CAP use, and recommending the CAP method used to others.

Sociodemographic variables include factors such as patients' age, gender, education level, occupation, income status, and place of residence. These variables can influence individuals' access to healthcare services and their inclination toward alternative treatment methods. Diabetes-related variables include the type of DM (Type 1 or Type 2), the form of treatment applied (insulin, oral antidiabetic drugs, or lifestyle modifications), the status of receiving diabetes education, finding the education received sufficient or not, the presence of diseases other than diabetes, the presence of diabetes-related complications, and the variability of blood sugar levels. These variables can help understand how patients shape their disease management processes.

In addition, the study examines in detail the patients' use of CAP. In this context, whether the patients use any CAP method, the specific methods they prefer (herbal treatments, acupuncture, massage therapy, etc.), their sources of information about diabetes, the duration and frequency of CAP use, the reasons for using CAP (e.g., reducing side effects, controlling blood sugar levels, strengthening immunity), and the source from which they obtain CAP (pharmacies, herbalists, online sources, or healthcare professionals) are analyzed. Furthermore, the study investigates whether patients are knowledgeable about the effects of the CAP methods they use, whether they find these methods beneficial, and whether they experience health problems due to CAP use. The study also evaluates whether CAP use leads patients to discontinue medical treatment, whether they achieve the expected results, whether they continue using CAP, and whether they recommend the methods to others, thereby revealing the impact of complementary treatment approaches on DM management.

### Statistical Analysis

After the data were coded by the researcher, they were analyzed by the IBM SPSS (Statistical Package for Social Sciences; SPSS Inc., Chicago, IL, USA) 22.0 statistical package software. The data were analyzed using descriptive statistics, and chi-square analysis. The results were evaluated at 95% confidence interval and p<0,05 significance level.

## RESULTS

It was found in the research that 21% of the DM patients used one of the CAP methods. It was determined that 47.7% of the patients using CAP and 50% of the patients not using CAP had primary school education, and that 47.8% of the patients using CAP and 23.1% of the patients not using CAP were employed. No statistically significant difference was found between the two groups in terms of sociodemographic characteristics (Table 1).

It was determined in the research that 86.4% of the patients using CAP had Type 2 DM, that 38.6% used oral antidiabetic drugs and insulin together, that 77.3% had received training on DM and 65.9% of them found the training received sufficient, that 54.5% had a chronic disease other than DM, that 59.1% did not have a complication related to DM, and that 52.3% had continuously varying blood sugar values. On the other hand, it was found that 80.6% of the patients not using CAP had Type 2 DM, that 45% used oral antidiabetic drugs and insulin in combination, that 69.4% had received training on DM and 63.1% of them found the training re-

**Table 1.** Sociodemographic characteristics of the patients

| Socio-demographic factors* | CAP users (n=44) | Non- CAP users (n=160) | Statistical test |
|---|---|---|---|
| Using CAP | 44 (21.6) | 160 (78.4) | |
| Age groups | | | |
| <40 years | 6 (13.7) | 35 (21.9) | $X^2$=0.787 |
| 41-60 years | 23 (52.3) | 74 (46.2) | p=0.375 |
| >61 years | 15 (34) | 51 (31.9) | |
| Gender | | | |
| Female | 22 (50) | 92 (57.5) | $X^2$=0.787 |
| Male | 22 (50) | 68 (42.5) | p=0.375 |
| Educational level | | | |
| Literate | 10 (22.7) | 29 (18.1) | $X^2$=1.303 |
| Primary education | 21 (47.7) | 80 (50) | p=0.728 |
| High school | 8 (18.2) | 38 (23.8) | |
| University | 5 (11.4) | 13 (8.1) | |
| Occupation | | | |
| Working | 21 (47.8) | 38 (23.1) | $X^2$=2.9 |
| Not working | 23 (52.2) | 122 (76.9) | p=0.089 |
| Income status | | | |
| Income is less than expense | 5 (11.4) | 48 (30) | $X^2$=6.264 |
| Income is equal to expense | 33 (75) | 96 (60) | p=0.441 |
| Income is more than expense | 6 (13.6) | 16 (10) | |
| Living place | | | |
| Rural | 7 (15.9) | 27 (16.9) | $X^2$=1.554 |
| Town | 4 (9.1) | 26 (16.3) | p=0.46 |
| City | 33 (75) | 107 (66.9) | |

*Data are shown as n(%)

ceived sufficient, that 58.8% had a chronic disease other than DM, that 55% did not have a complication related to DM, and that 50% had continuously changing blood sugar values. It was determined that there was no statistically significant difference between those using CAP and those not using CAP in terms of the mentioned variables (Table 2).

It was determined in the study that 31.8% of the patients using CAP used herbal tea [chamomile tea, green tea, clove, sage, and thyme tea], and 25% used cinnamon, 9.1% okra seed and hawthorn vinegar, 6.6% stinging nettle, 4.5% ginger, natural honey and reishi mushroom. It was observed that 45.5% of the patients received information about CAP from their neighbors/friends, 25% from television/newspapers/Internet, 15.9% from their relatives, and 13.6% from doctors/pharmacists. It was determined that 54.5% of the patients used CAP practices during treatment process, 31.8% as soon as they were diagnosed, 11.4% before the treatment, and 2.3% after the completion of treatment. It was also observed that 88.6% used CAP in order to decrease/balance their blood sugar level, and 11.4% used it in order to prevent DM related complications. It was found that 68.2% of the patients bought the CAP products they used from herbalists, that 22.7% collected the products themselves, and that 9.1% bought these products through television/Internet.

In the research, it was observed that 70.5% of the patients knew the effect of the CAP method they used, that 56.8% found CAP method beneficial, and that 81.8% did not report experiencing a health issue related to the method they used. It was determined that 43.2% of the patients used CAP method for 1-3 months, that 47.7% used it every week, and that 75% did not stop medical treatment during CAP use. 31.8% of the patients reported that they obtained the result they expected from the method they used, 25% expressed that they did not obtain the expected result yet, 15.9% said the CAP method did not treat the disease but provided comfort, 15.9% stated they did not receive any benefits, and 11.4% reported that they did not receive a harm or benefit due to irregular use. 50% of the patients stated that they currently continued to use the CAP methods they used, and 72.7% attributed this to their belief that it helped with their treatment. It was observed that 68.2% of those who did not continue CAP use reported that they did not receive any benefits from the CAP method they used (Table 3).

**Table 2.** DM related characteristics of the patients

| Type of DM* | CAP users (n=44) | Non- CAP users (n=160) | Statistical test |
|---|---|---|---|
| | | n(%) | |
| Type 1 | 6 (13.6) | 31 (19.4) | $X^2$=0.765 |
| Type 2 | 38 (86.4) | 129 (80.6) | p=0.509 |
| Management of diabetes | | | |
| Diet + Exercise | 4 (9.1) | 8 (5) | |
| Oral hypoglycaemic | 14 (31.8) | 48 (30) | $X^2$=1.722 |
| Oral hypoglycaemic + Insulin | 17 (38.6) | 73 (45) | p=0.7 |
| Insulin | 9 (20.5) | 31 (19.4) | |
| Getting training on DM | | | |
| Yes | 34 (77.3) | 111 (69.4) | $X^2$=1.047 |
| No | 10 (22.7) | 49 (30.6) | p=0.306 |
| The state of finding sufficient education | | | |
| Sufficient | 29 (65.9) | 101 (63.1) | $X^2$=0.062 |
| Insufficient | 12 (27.3) | 46 (28.7) | p=0.804 |
| Chronic disease other than DM | | | |
| Yes | 24 (54.5) | 94 (58.8) | $X^2$=0.25 |
| No | 20 (45.5) | 66 (41.3) | p=0.617 |
| Diabetes complications | | | |
| Yes | 18 (40.9) | 72 (45) | $X^2$=0.234 |
| No | 26 (59.1) | 88 (55) | p=0.628 |
| Level of glucose in the blood | | | |
| Normal | 11 (25) | 37 (23.1) | $X^2$=0.315 |
| Bad | 10 (22.7) | 43 (26.9) | p=0.854 |
| Changeable | 23 (52.3) | 80 (50) | |

*Data are shown as n(%)

## DISCUSSION

Diabetes Mellitus is a disease of critical importance, and its prevalence is gradually increasing on a global scale. The consequences of DM have a serious impact on the quality of life, and it has negative effects on national budgets. As the results obtained from DM management are not satisfactory for some patients, they resort to complementary and alternative practice methods. Complementary practice methods are health practices that are used instead of traditional medicine (14).

It was found in the research that there was no statistically significant difference between the patients using CAP and those not using CAP in terms of their sociodemographic characteristics. Similarly, in the study conducted by Polat and Kaynak, no statistically significant difference except age was found between the patients using CAP and those not using CAP in terms of sociodemographic characteristics. They found in their study that CAP use was significantly high in the patients aged between 41-67 years (13). In a similar vein, in the studies conducted by Selcuk-Tosun et al., Manya et al., and Kamel et al., no significant difference was found between the patients using CAP and those difference was found between age groups in the present study

**Table 3.** The characteristics of DM patients regarding CAP use

| Type of CAP used for DM* | Findings (n=160) |
|---|---|
| Okra seed | 4 (9.1) |
| Cinnamon | 11 (25) |
| Herbal teas (Chamomile tea, green tea, clove, sage tea, thyme tea) | 14 (31.8) |
| Ginger | 2 (4.5) |
| Natural honey | 2 (4.5) |
| Bitter almond | 1 (2.3) |
| Vegetable oil | 1 (2.3) |
| Hawthorn vinegar | 4 (9.1) |
| Dead nettle | 3 (6.8) |
| Reishi mushroom | 2 (4.5) |
| Recommendation of CAP | |
| Neighbors \ friends | 20 (45.5) |
| Relatives | 7 (15.9) |
| Television \ newspaper \ internet | 11 (25) |
| Doctor \ pharmacist | 6 (13.6) |
| Start of using CAP | |
| As soon as you are diagnosed | 14 (31.8) |
| Before treatment | 5 (11.4) |
| In the treatment process | 24 (54.5) |
| When the treatment is over | 1 (2.3) |
| Reason for using CAP** | |
| Lowering / balancing blood sugar | 39 (88.6) |
| Prevent diabetes complications | 5 (11.4) |
| Psychological relaxation | 13 (6.4) |
| Information obtained through research | 10 (4.9) |
| To have done everything against the disease | 8 (3.9) |
| Presence of beneficial patients | 20 (9.8) |
| The source from which CAP is provided. | |
| From herbalists | 30 (68.2) |
| Own collection | 10 (22.7) |
| Television \ internet | 4 (9.1) |
| Knowing the effect of the method used | |
| Those who know | 31 (70.5) |
| Those who do not know | 13 (29.5) |
| Thinking that the methods used are useful | |
| Useful | 25 (56.8) |
| Unhelpful | 11 (25) |
| Unstable | 8 (18.2) |
| Having a health problem related to the method used | |
| Having problems | 8 (18.2) |
| Having no problems | 36 (81.8) |
| CAP usage period | |
| 1-3 Month | 19 (43.2) |
| 4-6 Month | 9 (20.5) |
| More than 6 month | 16 (36.4) |
| Frequency of using TAT | |
| Everyday | 14 (31.8) |
| Every week | 21 (47.7) |
| Monthly | 4 (9.1) |
| Sometimes | 5 (11.4) |

*Data are shown as n(%) ** More than one answer was marked.

may imply that all age groups started to use CAP methods as these methods have become widespread (12,15,16). In the research, it was found that there was no statistically significant difference between the patients using CAP and those not using CAP in terms of their DM related characteristics. Sari et al. also reported similar results in the study they conducted on DM patients (10). In addition, in the studies they conducted on DM patients, Guven, and Khalaf and Whitford reported no significant difference between DM related characteristics and CAP use status (17, 18).

It was determined in the research that one fifth of the patients included in the research used at least one CAP method, and that they used herbal tea the most (chamomile tea, green tea, clove, sage, thyme tea) and cinnamon. Various results were obtained in other studies conducted. In the study carried out by Mohamed et al., (19) while Southeast Asians (47.7%) were found to be those who used CAP the most frequently, they were followed by Iranians (37.6%) and Arabs (14.6%). While Solaiman et al. reported that more than three fourths of DM patients used at least one of CAP methods, Selcuk-Tosun et al. and Radwan et al. found this figure as more than one third of DM patients, Charoencheewakul at el. as about one third, Manya et al. as one fourth, Ogbera et al. and Yarash et al. as about half of DM patients, and Jawed et al. as more than half of DM patients (12, 16, 20-25). In the studies conducted on Type 2 DM patients in Saudi Arabia, India, and Pakistan, it was found that the CAP method used the most was herbs and spices (24, 26, 27). In addition, in studies conducted on DM patients in various countries regarding CAP use, the methods used the most were found as massage and spices in Thailand, cinnamon and black cumin in Turkey, multivitamins and cinnamon in Sydney and Spain, herbs in Pakistan, home made products and vitamins in North Carolina, herbs in Iran, and bitter squash in Malaysia (12, 16, 20, 28-34).

It was determined in the research that about half of the patients using CAP had received information on CAP from their neighbors/friends. In the study conducted by Almogbel et al., it was reported that the patients had received information and recommendation from their friends the most, and in the studies conducted by Yaghmour et al., it was reported that DM patients received information and recommendation from their neighbours the most (35-37). While Guven found in his study that patients received information from doctors the most, Kaynak and Polat determined that DM patients received information on CAP from their neighbors/friends and television/newspapers/Internet the most (13, 17). Especially in the Turkish culture, people share a lot with other people. Therefore, they also share the stories of their illnesses, their experiences and the treatments they

receive very frequently. In this regard, the results obtained can be thought to be expected.

It was found in the research that more than half of the patients used CAP method in their treatment process together with their treatment. There are studies in the literature supporting our findings (37-39). Almost all the patients reported that they used CAP in order to decrease/balance their blood sugar level. Similarly, Adeniyi et al. and Şanlıtürk and Kaplan found that they use CAP mostly decrease/balance their blood sugar level (40, 41).

In the research, it was found that more than two thirds of the patients purchased their CAP methods from herbalists. When it is considered that most of the patients used herbal tea (chamomile tea, green tea, clove, sage, thyme tea) and cinnamon, this is an expected result. It was observed that most of the patients participating in the study who used CAP stated that they knew the benefits of the CAP method they used. Similarly results found by Raja et al.(32). A great majority of the patients in the research expressed that they found the CAP methods they used beneficial, that they did not experience a health issue, and that they obtained the result they expected. Ali -Shtayeh et al. reported that more than 70% of the patients using CAP expressed positive benefits by stating that the method they used slowed down the progression of DM, alleviated the symptoms, reduced the side of effects of the drugs they used (42). Solaiman et al. also found similar results to our findings (24).

It was found in the research that about half of the DM patients used CAP methods once a week for 1-3 months. In the study conducted by Solaiman et al., it was reported that one fourth of the patients used CAP for less than a year, and that one third used CAP for more than three years (24). In the research conducted by Radwan et al., it was found that almost all the patients used CAP more than a year, and that more than one third used CAP two or more times a week (23).

## Conclusions

It was determined in the research that there was no significant difference between the sociodemographic and DM related characteristics of the patients using CAP and those not using CAP. It was observed that the diabetes patients who participated in the research frequently used CAP methods to decrease/balance their blood sugar level, and that they used herbal tea and cinnamon the most. It was determined that half of the patients received the information about CAP method they used from neighbors/friends, and that only one third of them stated that they benefited from the CAP method they used. In line with these results, it is suggested that the CAP methods that the patients use should be questioned, the effects of the methods they use on patient health should be determined, they should be made to terminate inappropriate methods, and appropriate methods should be followed up, and that a study should be carried out with the participation of larger groups.

### Acknowledgments

None.

### Author Contributions

The study conception and design were contributed by **Seher Cevik Aktura, Bahri Evren, Seyhan Citlik Saritas,** and **Ibrahim Sahin** performed the material preparation, data collection, and analysis. **Seher Cevik Aktura** and **Seyhan Citlik Saritas** wrote the first draft of the manuscript, and all authors commented on previous versions of the manuscript.

### Data Availability Statement

The data that support the findings of this study are available upon request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

### Conflict of Interest

The authors declare that there are no conflicts of interest.

### Financial Support

None.

### Ethical Approve

Prior to the research, written permission from Scientific Research and Publications Ethics Board of Inonu University (Decision No: 2019/327) were obtained. In addition, verbal consent was taken from the patients included in the research.

### Peer Reviewe Process

Extremely and externally per-reviewed and accepted.

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