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# Use Of Complementary And Alternative Medicine Among Patients With Diabetes In Turkey: Systematic Review

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**Abstract**

**Objectives:** The aim of this systematic review study was to investigate the use of Complementary and Alternative Medicines (CAM) by patients with diabetes in Turkey.

**Method:** In order to get access to the studies on CAM that adult patients with diabetes in Turkey use, key words "conventional medicine", "patients with diabetes", "complementary and alternative medicines", "Turkey" were used in search engines such as Pubmed, Ovid, Proquest, Medline, Academic Search Complete, Health Source-Nursing, Google Academi. In addition to these; online published Turkish journals, and congress books were reviewed.

**Results:** Eight articles published on this subject were achieved from congress books, Turkish and English journals. In these studies: It was determined that the frequency of the use of CAM by patients with diabetes in Turkey ranges from %11.5 to %70.7. It was identified that patients with diabetes use most frequently herbs (%70.7) as a CAM method. In these studies, it was found that a great majority of patients had not informed healthcare personnel about the CAM usage.

**Conclusion:** Use of herbs in addition to medical treatment is prevalent in patients with diabetes. This is outside healthcare professionals' knowledge. On account of the fact that the use of CAM can interact with medical treatment, it is suggested that during the diagnosis of patients with diabetes, healthcare professionals should not ignore the use of CAM, and should research about the effects of commonly used herbal medicine on the diabetes process.

**Key Words:** Conventional Medicines, Patients with Diabetes, Complementary and Alternative Medicines, Turkey

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## Introduction

While the complementary approaches are described as approaches, which are used to provide symptom control while undergoing a conventional treatment, also support the care and well-being of the patient; alternative approaches are described as approaches, which are used to control the symptoms which occur due to the disease in patients who refuse the standard treatment, also support the care and well-being of the patient (1). Complementary and alternative therapy types were categorized into five major categories by National Center to constitute a standard classification system for Complementary and Alternative Medicine. These are; alternative medical system (For example: homeopathy or conventional Chinese medicine), intellectual- physical practices (For example: meditation, prayer, creative activities like dance, art, music), biologically based therapies (For example: herbs, diet supplements), manupulative and body based therapies (For example: chiropractic, massage) and energy therapies (For example: gi gong, tactile therapies) (1).

Diabetes is a chronic and metabolic disease in which as a result of whole or partially insufficient insulin secretion or insulin resistance at certain levels, and macrovascular- microvascular complications, carbohydrate, protein and fat metabolism disorder occur (2). Incidence of Type 2 diabetes increases due to the sedentary lifestyle and changes in diet with technological developments (3). In the world, the number of patients with diabetes was 171 million in 2000. However; it increased to 347 million in 2013 (3). In Turkey according to the study performed by Satman et al., in adults aged 20 and older, the incidence of diabetes was 7.2% in 2002 (4). However; this rate increased to 13.7% in 2010 (5). Diabetes can cause prostration, helplessness, and hopelessness in patients by affecting their quality of life, lifestyle change, and social support mechanisms (6). Patients with diabetes going through with these, turn towards complementary and alternative therapy usage in time (6). When the literature was reviewed, it was determined that the use of CAM by patients with diabetes ranges from 41% to 93% (7-9); and in Turkey, this rate ranges from 11.5% to 70.7% according to the studies conducted (10-17). In the studies performed in Turkey, it was determined that patients with diabetes use most frequently herbal products as a CAM (10-16). In addition to this, it is emphasised that there is not any adequate proof for the safe use of herbs (18). In many studies, it was indicated that healthcare professionals do not inform the individuals about the CAM, which is being used. Depending upon the CAM, hyperglycemia and other complications could occur in patients with diabetes at high risk (18-20, 15).

Each society has different cultural features, and health behaviors can change from culture to culture. In the literature, although there are some systematic review studies on patients with diabetes, there couldn't be found a systematic review study on this subject in Turkish literature. This literature review aims to investigate the use of complementary and alternative medicine by patients with diabetes in Turkey.

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## Method

This is a systematic review study. Studies on the use of CAM by patients with diabetes in Turkey were obtained by reviewing eight databases (Pubmed, Ovid, Proquest, Medline, Academic Search Complete, Health Source-Nursing, Google Academi), online published Turkish journals and congress books. All studies on patients with diabetes were screened without any date limitation. To obtain articles on CAM usage in patients with diabetes, by writing key words on databases such as "Conventional Methods", "Patients with Diabetes", "Complementary and Alternative Medicines", and "Turkey" both in Turkish and in English, the examination was conducted (Figure 1). In eligibility criterias of the studies included, especially in material and method sections of the studies examined by researchers, criterias which are below stated were paid attention, and the studies which do not explain these criterias enough were excluded from the study. Eligibility criterias which should be included in the study;

* Studies should examine the use of CAM by patients with diabetes in Turkey
* Data gathering method should be specified (questionnaire, face-to-face interview, telephone interview...)
* Sample size of the study should be written
* Eligibility criterias of the study should be described
* The use of CAM methods by patients with diabetes should be classified
* The frequency of CAM usage by patients with diabetes should be investigated

Exclusion criterias of the studies which were excluded;

* Studies examining the use of CAM by children with diabetes
* Studies which do not define Material and Method section enough were also excluded (Figure 1).

Each of the studies, which were examined through eligibility criterias and approved, were evaluated in terms of research questions, the results and debate sections of the study were written accordingly (Figure 1).

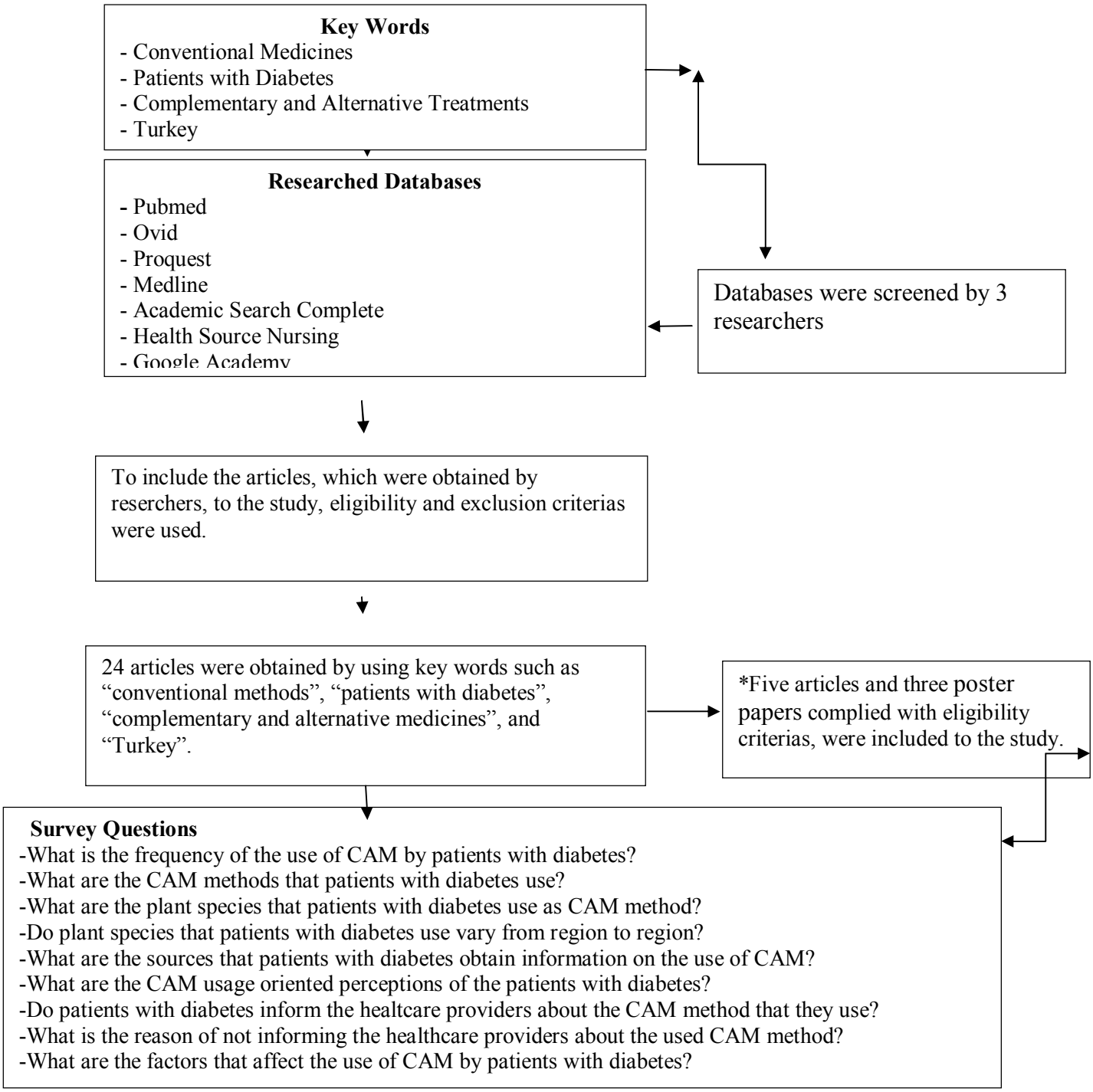


**Figure 1.** Data Collection Graph of the Systematic Review Study Examining the Use of CAM Methods by Adult Type 2 Patients with Diabetes in Turkey

## Results

About the use of CAM by patients with diabetes in Turkey, five articles and three congress poster papers published between 2007 and 2013, were found. Examined studies are put in order according to the author name and the study date, and are shown in Table 1. Results gathered from the studies;

1. The total number of samples analysed in studies are 2073 patients with diabetes.
2. The majority of the studies were conducted on patients in a outpatient clinics (n:1911), and in a clinical wards (n:162).
3. In all of the studies, data were gathered through face-to-face interview and questionnaire method.
4. In the studies performed in Central Anatolia, Marmara, Aegean, and Mediterraneen regions, the incidence of CAM ranges from 11.5% to 70.7%.
5. It was determined that the most frequently used CAM method is herbal treatment and the most common herbal treatment is the use of thyme. Other used methods are meditation and acupuncture.
6. It was determined that the CAM usage is most common in Aegean region.
7. Herb types used by patients with diabetes vary from region to region. For example; While Urtica urens is the most frequently used herb in Kayseri, thyme usage is common in Konya, İzmir, Ankara and İstanbul.
8. It was confirmed that the source of information on the CAM usage are frequently friends, other patients, family members, media, doctor/nurse and herbalists.
9. When examining the reasons of CAM usage, it was designated that most of the patients use these to lower their blood glucose, to cure the disease, to prevent the progression of disease, to improve the condition of physical and psychological well- being, to reduce the complaints and to relieve.
10. In studies, it was found that most of the patients and their relatives do not inform doctors and nurses about the use of CAM.
11. The reasons why patients do not share this with their doctors are indicated as the negative reaction of healthcare personnel to patients, the idea that sharing this information is non-mandatory and nonadvantageous, healthcare personnel's shortage in asking questions about CAM.
12. It was found that educational status, age, level of income, family type, birthplace, duration of diabetes, another chronic disease, oral antidiabetic/insulin therapies affect the rate of CAM usage (Table1).

## Discussion

It was reported in studies performed in Turkey that the frequency of CAM usage by patients with diabetes varies between 11.5% and 70.7% (Table 1). When these rates were compared to the rates of other countries, similar results were found. It was reported that in Austria, the frequency of CAM usage ranges from 10% to 70.7% (11), in America the rate is 92.9% (8), in Taiwan it is 61.0% (21), and in India it is 67.7% (9).

It was indicated that the most common used CAM is herbal medicine (Table 1). Other used methods are acupuncture and meditation. Turkey shares similarity with other developing countries (Korea, Bahrain, Oman, and Palestine) on the most frequently used CAM, which is herbal medicine (22-25). As for developed countries, it was determined that in Austria

vitamin and mineral support (7), in America, (8) exercise, vitamin support, and meditation are used the most as CAM methods. The reason why the herb use is the most preferred one in studies conducted in the developing countries is that herbs are cheaper and more accesible. However; methods such as acupuncture and meditation are more expensive. Küçükgüçlü et al. (2010) reported in their study that the reason why patients use herbal medicine method more is that herbs can be found easily in nature.

Herb types used by patients with diabetes vary from region to region (Table 1). It was determined that the highest rate of herb usage is in Aegean region, this situation is most probably due to the traditional plant and fruit based diet in Aegean region, and the plant diversity in the region.

It has not been proved yet that herbs have positive/negative impacts with the exception of cinnamon, olive oil, cranberry oil (26), and jujube (27). Probable side-effects of CAM usage are that used methods can affect the treatment process adversely, and toxic effects or herb-medicine interaction can occur. As a matter of fact it was proved that grapefruit juice interacts with multiple medicines (28).

It was determined that information sources on CAM usage are frequently friend, other patients, media, family members, doctor/nurse, and herbalists (Table 1). These data are consistent with the literature. It was reported that in India and Mexico patients with diabetes, who use CAM, obtained the information on the use of CAM from their family members and friends (29, 19), in Austria most of the patients obtained the information from magazines, television/radio, and internet (30). In Turkey due to the cultural importance of family and friend support, patients prefer sharing their experiences with their family members and friends more.

In studies, which investigate the reasons of CAM usage in Turkey, it was reported that individuals mostly use CAM to lower their blood glucose, to cure their diseases, to prevent the duration of disease, to improve the physical and psychological well-being, to lower their complaints, and to relieve (Table 1). These findings are consistent with the results of other studies (21, 30, 37).

In studies performed in Austria, Oman, and America, most of the patients indicated that the method that they used had no effect, and did not provide any benefit (30, 24, 36). It is presumptive for used CAM to affect the treatment process adversely, to cause toxic effect or medicine/ herb interactions (38). Eisenberg et al. (1998) emphasized in their study that used CAM can cause to renal and liver failure in old patients, and interact with other used medicines. Hence it is important for health professionals to interrogate patients with diabetes about CAM that they use, and guide their patients with evidence-based informations.

In studies performed in Turkey, it was determined that a great majority of patients using CAM or/and relatives do not inform doctor and nurse. The reason for this was indicated as the negative reaction of healthcare personnel to patients, the idea that sharing this information is non-mandatory and nonadvantageous, healthcare personnel's shortage in asking questions about CAM (Table 1). These results share similarity with other studies performed in Austria, America, Oman, India, and Bahrain. It was also emphasized that healthcare professionals do not discuss the CAM with their patients (23, 24, 29, 30, 36). It is assumed that the reason why healthcare personnels in our country do not discuss the CAM methods with their patients is that it arises from the lack of

experience and information about the subject due to not receiving necessary education on CAM (20). If a non-judgemental environment was provided by healthcare personnel, it could be easier for patients to share, discuss, and define the reasons of CAM use.

When the factors affecting the use of CAM by patients with diabetes were examined, it was examined with regards to factors such as gender, marital status, social security, working condition, education, age, level of income, family type, the place in which they live, duration of diabetes and the existence of another chronic disease (Table 1).

When conducted studies were examined, a statistical difference could not be found between CAM users and non-users with regards to gender and marital status (Table 1). When other studies were examine, it was reported that the CAM usage rate is higher in females (19, 25, 31). It might be considered that the difference between study results from differences in religion, values and cultures among countries.

A statistical difference could not be found between CAM users and non-users in terms of working conditions and social security (Table 1). CAM methods are not paid by healthcare insurance in Turkey, and as a CAM method mostly herbs, which are cheap, are used. These can be considered as the reasons why there is not a statistical difference.

When CAM users and non-users were examined with regards to the level of income factor, it was determined that patients, who have higher income level, have higher rate of CAM usage (Table 1). When the literature was investigated, it was indicated that patients with higher income level use more CAM than patients with lower income level (9). Study findings are consistent with the literature.

According to the conducted studies, with regards to the educational status of CAM users and non-users, the rate of CAM usage in patients having 9 years or more education is higher than the others (Table 1). In the literature, it was reported that when the level of education increases, the rate of CAM usage also increases (8, 9). It was found that study findings are consistent with the literature.

When CAM users and non-users were examined in terms of the age factor, it was indicated in the performed studies that the rate of CAM usage in patients with diabetes aged over 65 years is higher (Table 1). In Lee, Lee, Lim and Moon's (2004) study, it was similarly found that the rate of CAM usage is higher in individuals aged over 65 years. The results of the study was found similar with the literature. The reason why the greater the age, the higher is the CAM usage rate might be considered that the appeal of CAM increases for these patients who should cope with chronic diseases and used medicines, which increase with the aging.

When the conducted studies were investigated, it was found that the rate of CAM usage is higher in a large family than in a nuclear one (Table 1). This difference is considered as the result of Turkish traditional family structure.

It was found that city dwellers with diabetes have a higher rate of CAM usage than villagers with diabetes (Table 1). When the literature was investigated, a difference could not be found between the place that patients with diabetes live and the CAM usage (Sawalha, 2007). This situation can be interpreted by the popularity of herb usage as a CAM option in city centers, and the availability of the herbalists.

When the patients are examined in terms of duration of disease factor, it was stated that when the duration of diabetes increases CAM usage rate also increases

(Table 1). When other researches are considered, it was determined that similarly when the duration of disease increases, CAM usage rate also increases (6, 19, 23, 32-35). It was reported that the existence of another chronic disease causes more excessive usage of CAM in patients with diabetes (Table 1). Similarly, in the studies of Eisenberg et al. (1998) it is stated that the existence of another chronic disease increases CAM usage rate. Diabetes is a chronic disease and has many acute/chronic complications. Another chronic disease co-existing with these complications can affect individuals' coping skills and their control on the disease. It can be considered that patients with diabetes use CAM to cope with and control the complications and other chronic diseases.

## Conclusion

As a conclusion, it was determined that the rate of CAM usage is high in patients with diabetes in Turkey, and herbal therapies are commonly used as a CAM method. It was designated that common sources of information on CAM usage are friends, other patients, family members, media, doctor/nurse, and herbalists.

The great majority of patients using CAM do not share this information with the healthcare personnel. Hence it is important for the healthcare professional, who is responsible of the diabetes education, not to ignore the CAM usage while diagnosing, and to develop an education and a treatment plan accordingly.

To decrease these reasons seen as system oriented deficiencies, strategies should be planned. In addition to these, it is recommended that the interactions of CAM usage with medical treatment, and its effects on blood glucose level should definitely be considered, and researches should be made accordingly.

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**Table 1. Summary of Researchs on the Use of Complementary and Alternative Medicine (CAM) Among Patients with Diabetes in Turkey**

| Author name, Issue date | Method | Sample | Used CAM Type and Usage Rate | Sorces that the Use of CAM Obtained | Reason of CAM Use and Perceived Benefits | Sharing/ Reason of not Sharing the Use of CAM Method with Healthcare Professionals | Factors that affect CAM Usage |
|---|---|---|---|---|---|---|---|
| İnanç, Çiçek Şahin, Bayat, and Taşçı, 2007 | Cross-Sectional Research Application of a Questionnaire with Face-to-Face Interview Method | n: 400 Patients with Diabetes monitored in a outpatient clinics Kayseri | Herb use as a CAM method 25.0%<br>Urtica Urens 28.0%<br>Thyme 27.0%<br>Parsley 12.0%<br>Jujube 12.0%<br>Pomegranate Syrup 10.0%<br>Lettuce 6.0%<br>Jerusalem artichoke 5.0% | - | - | - | Statistically significant difference in age, gender, and education between CAM users and non-users wasn't found ($p>0.05$). |
| Arslan and Güleser, 2008 | Descriptive Research Application of a Questionnaire with Face-to-Face Interview Method | n: 82 Impatients with diabetes in a outpatient clinics<br><br>Konya | CAM usage rate 56.9%<br>Herb usage rate 48.8%<br>Thyme 34.1%<br>Mint 17.1%<br>Urtica Urens 15.9%<br>Reddish Orange 13.4%<br>Chamomile 7.3%<br>Linseed 8.5%<br>Others 3.7% | Friends 66.7%<br>Family members 17.8%<br>Healthcare Personnel 15.6% | To cure the disease 60%<br><br>To feel physically better 20%<br>To feel psychologically beter 20% | Not shared 79.3%<br>Shared 20.7% | Statistically significant difference in age, gender, education, city, and duration of disease between CAM users and non-users wasn't found ($p>0.05$). |
| Ceylan et al. 2008 | Descriptive Research<br><br>Application of a Questionnaire with Face-to-Face Interview | n: 371 Patients monitored in a outpatient clinics Ankara | CAM usage rate 41.0%<br>Herb usage rate 36.0%<br>Acupuncture and meditation practices 5.3%<br>Herbal preparations and folk medicine practices 3.3%<br><br>Herbal preparations, acupuncture and meditation 3.3% | - | To prevent the disease progression 58.6%<br><br>To cure the disease 23.0%<br><br>To improve their | - | It was determined that in patients, who live in a large family, in a city, has education 9 years or more, and has a longer duration of disease, the rate of CAM usage is higher ($p<0.05$). |

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|---|---|---|---|---|---|---|---|
| | Method | | Thyme 31.1%<br>Pomegranate Syrup 14.3%<br>Urtica Urens 6.3%<br>Dog rose 5.1%<br>Chervil 2.9% | | conditions 12.5%<br>No expectations 5.9% | | |
| Oksel and Şişman, 2009 | Descriptive Research Application of a Questionnaire with Face-to-Face Interview Method | n:82 Patients with diabetes monitored in a outpatient clinics İzmir | Herb usage 70.70%<br>Thyme water 25.86%<br>Cinnamon 17.24%<br>Urtica urens 15.51%<br>Others 41.3%<br>(cydonia vulgaris, grapefruit, chamomile,pomegranate syrup etc | Friends 24.4%<br>Patients 20.7%<br>Media 19.5%<br>Others 35.4% | To lower the blood glucose 89.6%<br>To prevent the diabetic foot ulcer 8.7%<br>To lose weight 1.7% | Not shared 79.4%<br>Shared 20.6% | According to the study results, there was not found a significant relationship between using alternative methods and gender, educational status, level of income, the place they live in, having a social security or not ($p>0.05$). |
| Küçükgüçlü, Kizilci, Mert, Ugur, Besen and Ünsal, 2010 | Cross-Sectional Research<br><br>Application of a Questionnaire with Face-to-Face Interview Method | n:396 | CAM usage 34.6%<br>Herb usage 27.1%<br>Acupuncture usage 7.5% | Friends 54.0%<br>Family members 19.0%<br>Media 17.0%<br>Other patients 4.0%<br>Doctors 3.0%<br>Herbalists 3.0% | To lower the blood glucose 71.5%<br><br>To relieve 26.3%<br><br>To cure other diseases 2.2% | Not shared 73.0%<br><br>Shared 27.0%<br><br>**Reason of not sharing:**<br><br>Finding this unnecessary 44.0%<br><br>Hesitation 37.4%<br><br>Not receiving questions from health personnel 19.0% | Statistically significant difference in gender, educational and marital status, type of diabetes between CAM users and non-users wasn't found ($p>0.05$).<br><br>It was determined that the rate of CAM usage of patients with diabetes, who use OAD or insulin as a treatment method, have high level of income, have another chronic disease, is higher. Difference between these rates was |

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|---|---|---|---|---|---|---|---|
| | | | | | | | found statistically significant ($p<0.05$). |
| Ozyazar, Biçer and Bayındır, 2010 | Descriptive Research<br><br>Application of a Questionnaire with Face-to-Face Interview Method | n:80 Impatients with diabetes in Emergency Service İstanbul | The patients, who use herbs as a CAM method, were accepted. 22.5% of patients with diabetes use herbs as a CAM method.<br>Thyme 38.9%<br>Cinnamon 11.1%<br>Spice mix 11.1%<br>Bitter Almond 5.6%<br>Urtica Urens 5.6%<br>Olive leaf 5.6%<br>Walnut leaf 5.6%<br>Dog rose 5.6%<br>Pomegranate Syrup 5.6%<br>Cemrenin 5.3% | Friend/neighbour 72.2%<br>Family 16.7%<br>Other patients 11.1% | To decrease the complaints 33.3%<br><br>To cure the disease 66.7% | Not shared 83.3%<br>Shared 16.7%<br><br>**Reason of not sharing:**<br>Doctors react in a bad way 54.0%<br><br>Thought that it is useless 18.2%<br><br>Not receiving questions from health personnel 27.3% | - |
| Köksoy, Şermet, Yurtsever and Erdoğan, 2012 | Descriptive Research Application of a Questionnaire with Face-to-Face Interview | n:462 Patients with diabetes monitored in Family Health Center | CAM usage rate 11.5%<br>Herb usage rate 94.3%<br>Unanswered 5.7%<br>As a herbal method, most frequently olive leaf, cinnamon, bitter veronica prostrata and rosemary were used. | Close relative/ neighbour 31.3%<br>Herbalists 12.5% | To feel better psychologically 34.0%<br><br>To lower blood glucose 31.9%<br>To improve their conditions 14.9% | Not shared 66.6%<br><br>Shared 44.4% | It was determined that the rate of CAM usage in patients with diabetes aged more than 65 years, is higher ($p<0.05$). |

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| | Method | Mersin | | | | | |
| Altınay, 2013 | Descriptive Research<br><br>Application of a Questionnaire with Face-to-Face Interview Method | n:200 Patients with diabetes monitored in a outpatient clinics Eskişehir | CAM usage 13.5%<br>Herb usage 74.0%<br>Others 26.0% | - | - | Not shared 75.0%<br><br>Shared 35.0%<br><br>**Reason of not sharing:**<br><br>Doctors react in a bad way 37.0% | Statistically significant difference in gender, educational status, level of income, city, working condition, type of diabetes, and duration of disease between CAM users and non-users wasn't found ($p>0.05$). Statistically significant difference in the existence of another chronic disease between CAM users and non-users was found($p<0.05$). |