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Do sociodemographic characteristics associated with the use of CAM differ by chronic disease?

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Background: Complementary and alternative medicine (CAM) is oftenused to alleviate the discomfort, disability and pain involved in many chronic diseases. Besides this, females, middle-aged and higher educated people are also known to use CAM the most. This study explores whether the sociodemographic characteristics associated with CAM use differ by type of disease. **Methods:** The following data were taken from the Belgian Health Interview Survey 2013 for the individuals aged 15+ years ($n = 8942$): sociodemographic characteristics, past 12-month diseases (using a list) and contact with a homeopath, chiropractor, acupuncturist and/or osteopath (CAM-therapists) in the past year. The association between CAM use and disease, controlled for gender, age, education and conventional medicine use, was assessed through logistic regressions. When interactions with the sociodemographic characteristics were found, stratified regressions were conducted. **Results:** People with musculoskeletal diseases [odds ratio (OR) = 2.6], allergy (OR = 1.4) and severe headache (OR = 1.5) had higher odds of using CAM in the past year with statistical significance. For musculoskeletal diseases, the odds of using CAM was higher, with statistical significance, for every sociodemographic subclass. For allergy, CAM use was higher among men, people aged 45+ years and lower educated people, while for severe headache CAM use was higher among women, people aged 45+ years and higher educated people, all with statistical significance. **Conclusions:** Sociodemographic characteristics associated with CAM use differ by diseases. The role of CAM in disease management cannot be ignored. Making physicians aware for which disease CAM is used and by whom, may facilitate disease management.

Introduction

Unlike conventional medicine, complementary and alternative medicine (CAM) is a type of treatment for which scientific evidence of medical effectiveness has never been provided. CAM is called 'complementary' when it is used in conjunction with conventional treatments, i.e. as a supplement or support, and is called 'alternative' when it is used in the place of conventional treatment.[1] CAM has a very broad scope. Depending on the kind and number of practices included in the definition, the prevalence of the use of CAM presents very large differences.[2–6] According to the World Health Organization (WHO), the use of CAM is becoming more and more popular in western countries: in recent years, 70% of the population reported using CAM in Canada, 48% in Australia, 42% in the USA, 49% in France and 31% in Belgium.[7] A survey conducted by the Belgian Knowledge Centre in 2009 provided similar results: one out of three Belgians had ever consulted a CAM therapist.[8] In 1999, Belgium enacted a law (the 'Law Colla') for an official recognition of four CAM therapies as professional organizations in the field of health care: osteopathy, chiropractic, acupuncture and homeopathy.[9] Some of these practices are now partly reimbursed under the supplementary health insurance system.

Chronic diseases are defined by the WHO as conditions of long duration and generally slow progression and are by far the leading cause of death in the world.[10] It has been well documented that having one or more chronic diseases is associated with an increased use of CAM.[3,4,6,11–15] However, all diseases do not equally lead to CAM use.[4,11] The literature indicates that musculoskeletal diseases,[2,3,14,16,17] severe headache and migraine,[2–4,6] mental disorders,[2,14] stomach and intestinal illness,[2] metabolic disorders[14] and asthma[4] are the most common diseases linked to CAM use.

These conditions typically entail discomfort, disability and pain for which alleviation is sought.[16,18,19] A possible reason for turning to CAM may be that patients are not satisfied with conventional treatments for their specific health problem.[4,11,17,18,20] Other studies have shown that patients do not replace conventional medicine by CAM but use CAM in addition to conventional medicine.[3,4,17,19,21]

Beside the proven association with chronic disease, studies have consistently shown that CAM use is related to certain sociodemographic characteristics such as gender, age and educational level: women, middle-aged and highly educated people tend to use CAM most among the general population.[2–4,6,11,14,22,23] Although CAM is mostly used in combination with conventional medicine, there are still communication gaps between physicians and patients about their CAM use.[3,14,24–26] To facilitate communication, it would be helpful for physicians to know the profile of patients with a particular chronic disease using CAM. This ensures the safety of patients (avoiding interaction between CAM use and conventional medicine and making sure that the CAMs are used appropriately) and enhances the health care provided to patients.[3,14,24–28] The ultimate purpose is naturally to help reduce the burden set upon people with chronic diseases.[22]

The objective of this study is to assess to what extent the use of CAM is associated with specific chronic diseases. The additional interest is to explore whether the use of CAM is equally distributed (or differs) by gender, age and education regarding the chronic disease at stake.

Methods

Survey methodology

The national Health Interview Survey (HIS) has been organized in Belgium every 4–5 years since 1997. The present study is based on cross-sectional data from the fifth HIS conducted in 2013. A representative sample of the population residing in Belgium, based on the National Population Register (quarterly updated), was selected. The sampling and survey methods were carried out according to the Belgian privacy legislation and approved by the ethics committee of Ghent University. The multistage stratified sampling procedure, with the household as selection unit, has been described by Demarest et al.[29]

Study population

In 2013, 10 829 citizens were interviewed with an overall response rate of 57%. The interviews took place at the participants' homes and consisted of two parts: a Computer Assisted Personal Interview (CAPI), supplemented with a self-administered questionnaire (paper version) which covered more sensitive topics. All the topics used for this study were included in the CAPI.

Data on chronic diseases were collected with the following question: 'Have you had one of the following disease or condition in the past 12 months?'. A sequence of 36 diseases were presented one by one with the possible responses 'yes' or 'no'. The use of CAM was based on the question: 'In the past 12 months, did you visit one of the following practitioners: homeopath, acupuncturist, phytotherapist/herbalist, chiropractor, osteopath, other (specify) or no CAM practitioner'. This was a multiple response question where the respondents could indicate the use of more than one type of CAM. Finally, the use of ambulatory conventional medical care was investigated with the following two questions: 'When was the last time you consulted a GP (general practitioner) or family doctor on your own behalf?' and 'When was the last time you consulted a medical or surgical specialist?', with the following answer categories for each: (i) less than 12 months ago, (ii) 12 months ago or longer and (iii) never.

This study is restricted to people aged 15 years and older since the prevalence of chronic diseases is very low before that age limit. Cases with missing data for the variables of interest are excluded from the analysis. The final study sample contains 8942 individuals.

Health indicators and background variables

The diseases and conditions examined in the survey were grouped in broader categories as follows:

- cardiovascular diseases: myocardial infarction, angina pectoris, hypertension, hypercholesterolaemia, stroke and peripheral vascular disease;
- chronic lung conditions: asthma (allergic asthma included), chronic bronchitis, chronic obstructive pulmonary disease and emphysema;
- musculoskeletal diseases: rheumatoid arthritis, osteoarthritis, low back disorder or other chronic back defect and neck disorder or other chronic neck defect;
- endocrine diseases: diabetes and thyroid problems;
- neurologic diseases: Parkinson's disease and epilepsy;
- gastrointestinal diseases: stomach ulcer, cirrhosis of the liver, liver dysfunction, chronic bowel disorder and gall-stones or inflammation of the gall-bladder;
- urogenital diseases: nephrolithiasis, other serious kidney disease, chronic cystitis and urinary incontinence; and
- eye diseases: cataract, glaucoma, diabetic retinopathy and macular degeneration.

The following diseases were analyzed separately: allergy (such as rhinitis, eye inflammation, dermatitis, food allergy or other), cancer, severe headache (such as migraine), chronic fatigue, serious or chronic skin disease and depression. The corresponding indicators refer to the population (aged 15 years and over) suffering from that specific disease in the past 12 months (yes/no).

The use of CAM in the past 12 months was defined as a contact with at least one of the four types of practitioners recognized by the 'Law Colla': a homeopath, acupuncturist, chiropractor or osteopath.

Regarding the sociodemographic characteristics, binary variables were defined for gender (male, female) and age (15–44 years, 45 years and older). Educational level (highest level among the household members) was based on the International Standard Classification of Education (ISCED) and was divided into two groups with low-educated people having at most a higher secondary education and high-educated people at least a post-secondary or tertiary education.

Data analysis

Preliminary analyses present an overview of the distribution (crude numbers and weighted proportions) of the characteristics (background variables and health indicators) of the study population as a whole and by users versus non-users of CAM in the past 12 months. The overall prevalence of CAM use in the past 12 months among the population aged 15 years and older in Belgium in 2013 was calculated.

First, the association between CAM use (dependent variable) and chronic disease was analysed through logistic regression. A regression model was applied controlling for gender, age and educational level. Besides these three background variables, the models also adjusted for the use of ambulatory conventional medicine (based on whether or not a GP and/or a specialist was consulted in the past 12 months). Odds ratios (ORs) with 95% confidence intervals (CIs) and *P*-values are presented.

In a next step, the interaction effects (deduced from the *P* values) of the three background characteristics were determined by adding disease∗gender, disease∗age and disease∗education to the models. If a disease was associated with CAM use with statistical significance (<0.05) after inclusion of the interaction in the model, a stratified regression analysis was conducted to calculate the OR and 95% CI for the relationship between CAM use and the diseases by gender (with age, education and consultation of conventional medicine as confounder), by age group (with gender, education and consultation

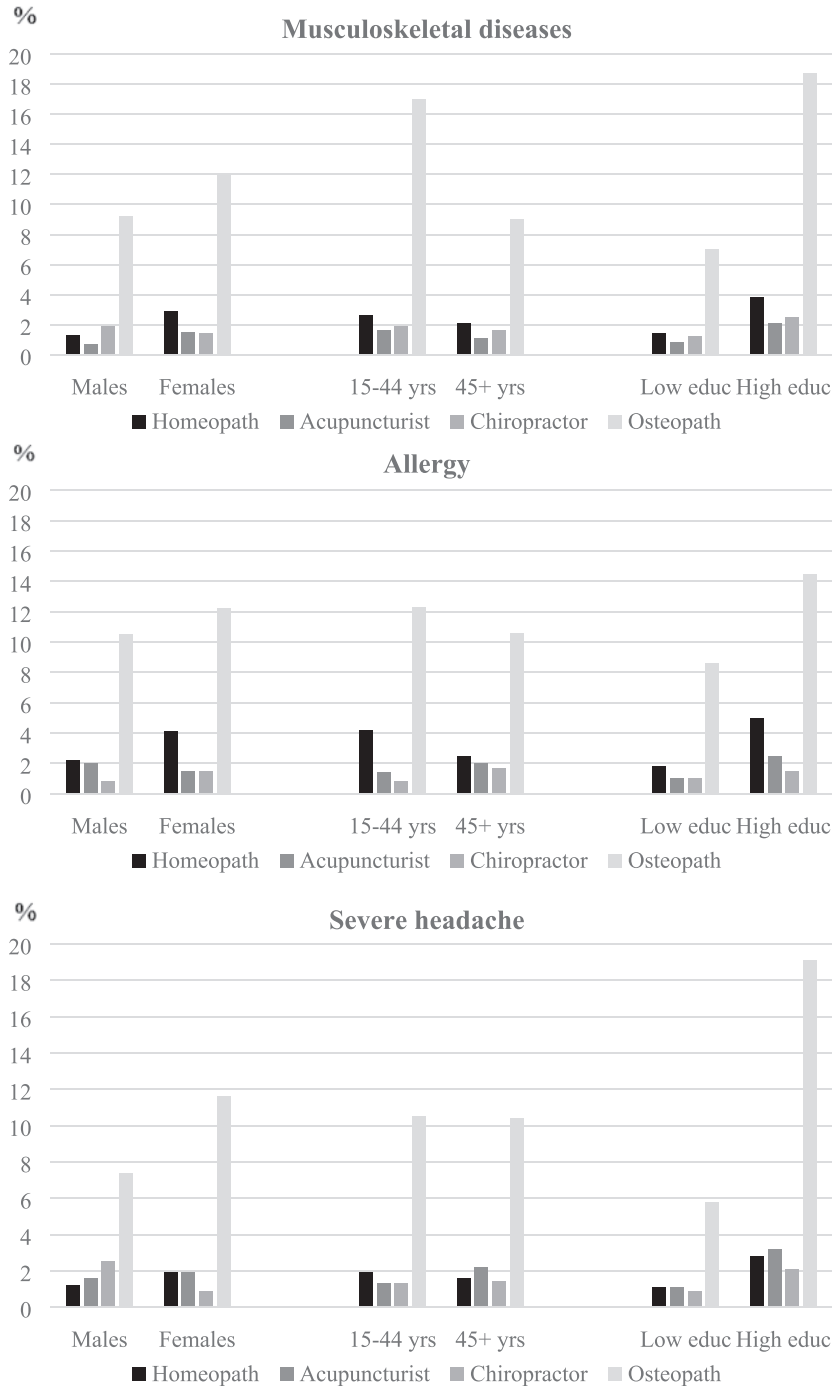

Figure 1 Proportion (%) of the type of CAM by sociodemographic characteristics and chronic disease, HIS, Belgium, 2013

of conventional medicine as confounder) and by educational level (with gender, age group and consultation of conventional medicine as confounder).

Lastly, for the chronic diseases with significant odds of CAM use, the proportion of each type of CAM by sociodemographic characteristics was shown in figure 1. All these analyses were performed with SAS 9.3[30] using PROC SURVEY in order to take into account the complex survey design (clustering and stratification) and the survey weights for estimating national results.

Results

Overall, 9% of the population aged 15 years and older in Belgium in 2013 made use of CAM in the 12 months preceding the interview. Table 1 presents the distribution of the characteristics of the study population. There are higher proportions among users of CAM, compared to non-users, of women (60.9%), high-educated people (64.0%), people with musculoskeletal diseases (47.9%), allergy (22.5%) and severe headache (13.8%) and users of conventional medicine (90.2%).

Table 2 shows the association between the use of CAM and chronic diseases. Higher odds of using CAM in the past 12 months were found with statistical significance for people with musculoskeletal diseases (OR = 2.62, $P < 0.0001$), allergy (OR = 1.42, $P = 0.008$) and severe headache (OR = 1.51, $P = 0.010$), whereas lower odds with statistical significance were observed among people with endocrine diseases (OR = 0.66, $P = 0.027$). After adding the interactions age∗disease, gender∗disease and education∗disease to the

Table 1 Distribution (proportion) of the characteristics of the study population ($n = 8942$), HIS, Belgium, 2013

Characteristics	Total ($n = 8942$)	*n* (%)	Users of CAM ($n = 831$)	*n* (%)	Non-users of CAM ($n = 8111$)	*n* (%)
Gender						
Male	4269	47.7	325	39.1	3944	48.6
Female	4673	52.3	506	60.9	4167	51.4
Age group						
15–44 years	4011	44.9	392	47.2	3619	44.6
45+ years	4931	55.1	439	52.8	4492	55.4
Education						
Low level	5159	57.7	299	36.0	4860	59.9
High level	3783	42.3	532	64.0	3251	40.1
Use of conventional medicine	7389	82.6	750	90.2	6639	81.5
Chronic diseases						
Cardiovascular diseases	2497	27.9	223	26.8	2274	28.0
Chronic lung conditions	664	7.4	56	6.7	608	7.5
Musculoskeletal diseases	2776	31.0	398	47.9	2378	29.3
Endocrine diseases	1045	11.7	90	10.8	955	11.8
Neurological diseases	104	1.2	2	0.2	102	1.3
Gastrointestinal diseases	571	6.4	71	8.5	500	6.2
Urogenital diseases	574	6.4	47	5.7	527	6.5
Eye diseases	405	4.5	37	4.4	368	4.5
Allergy	1227	13.7	187	22.5	1040	12.8
Cancer	183	2.0	15	1.8	168	2.1
Severe headache (e.g. Migraine)	817	9.1	115	13.8	702	8.6
Chronic fatigue (minimum 3 months)	514	5.8	65	7.8	449	5.5
Serious or chronic skin disease	64	0.7	6	0.7	58	0.7
Depression	615	6.9	52	6.3	563	6.9

Table 2 Association between the use of CAM and chronic disease by means of OR (95% CI) and *P* values, before and after interaction, HIS, Belgium, 2013

Chronic disease	Use of CAM in the past 12 months					
	OR (95% CI)	*P*-value				
	No interaction	No interaction	After interaction	Interaction disease∗gender	Interaction disease∗age	Interaction disease∗education
Cardiovascular diseases	0.84 (0.64–1.10)	0.196	0.382	0.481	0.098	0.427
Chronic lung conditions	0.90 (0.56–1.44)	0.657	0.466	0.717	0.431	0.349
Musculoskeletal diseases	2.62 (2.07–3.30)	<0.0001	0.002	0.492	0.060	0.200
Endocrine diseases	0.66 (0.46–0.96)	0.027	0.028	0.002	0.690	0.202
Neurological diseases	0.48 (0.09–2.30)	0.336	<0.0001	<0.0001	0.121	<0.0001
Gastrointestinal diseases	1.36 (0.96–1.94)	0.087	0.762	0.651	0.670	0.219
Urogenital diseases	0.87 (0.55–1.36)	0.532	0.155	0.018	0.752	0.714
Eye diseases	0.94 (0.55–1.61)	0.827	0.354	0.293	0.390	0.097
Allergy	1.42 (1.10–1.85)	0.008	0.093	0.446	0.715	0.073
Cancer	0.58 (0.29–1.18)	0.133	0.104	0.210	0.069	0.420
Severe headache	1.51 (1.10–2.07)	0.010	0.666	0.633	0.159	0.375
Chronic fatigue	1.34 (0.89–2.01)	0.166	0.375	0.670	0.173	0.752
Serious or chronic skin disease	0.74 (0.29–1.89)	0.527	<0.0001	<0.0001	0.401	0.419
Depression	0.77 (0.49–1.22)	0.264	0.700	0.554	0.207	0.340

regression model, the association with CAM use remained significant for musculoskeletal diseases ($P = 0.002$) and endocrine diseases ($P = 0.028$), but no longer for allergy ($P = 0.093$) and severe headache ($P = 0.666$). Meanwhile, the association with neurological diseases and serious or chronic skin disease became statistically significant ($P < 0.0001$) after inclusion of interactions in the model. In the case of neurological diseases, the interactions with gender and education were also significant ($P < 0.0001$), while for endocrine diseases ($P = 0.002$), urogenital diseases ($P = 0.018$) and serious or chronic skin disease ($P < 0.0001$) only the interaction with gender was significant.

Stratified analyses (table 3) show that people with musculoskeletal diseases have higher odds, with statistical significance, for using CAM, for every subclass of the background variables. For people suffering from allergy, the odds are higher for men, the age group 45+ years and the low educated. For people with severe headache, this is the case for women, the age group 45+ years and higher educated. On the other hand, for endocrine diseases the odds of using CAM are lower for men, the age group 45+ years and the low educated, for urogenital diseases as well as for serious or chronic skin disease the odds are lower for men, all with statistical significance.

From figure 1, we deduce that osteopathy is the most consulted practice, regardless of the sociodemographic classes for musculoskeletal diseases, allergy and severe headache.

Discussion

According to the European Social Survey (ESS) conducted in 2014, 24.6% of the Belgian study population had used CAM in the past

Table 3 Association between the use of CAM and chronic disease by means of OR (95% CI), stratified by gender, age group and educational level, HIS, Belgium, 2013

Chronic disease	Gender		Age group		Education	
	Males	Females	15–44 years	45+ years	Low level	High level
Musculoskeletal diseases	2.87 (1.98–4.17)	2.42 (1.81–3.23)	3.14 (2.25–4.39)	2.32 (1.73–3.10)	3.52 (2.44–5.07)	2.23 (1.65–3.01)
Endocrine diseases	0.22 (0.10–0.47)	0.86 (0.57–1.30)	0.92 (0.51–1.64)	0.62 (0.40–0.96)	0.56 (0.34–0.92)	0.78 (0.47–1.29)
Neurological diseases	1.19 (0.24–6.04)	<0.001 (<0.001–<0.001)	1.29 (0.16–10.28)	0.14 (0.02–1.08)	0.65 (0.13–3.18)	<0.001 (<0.001–<0.001)
Urogenital diseases	0.34 (0.14–0.78)	1.23 (0.72–2.10)	0.93 (0.42–2.08)	0.87 (0.51–1.49)	0.92 (0.50–1.69)	0.88 (0.45–1.72)
Allergy	1.64 (1.09–2.47)	1.28 (0.90–1.81)	1.30 (0.91–1.84)	1.57 (1.06–2.31)	1.97 (1.28–3.04)	1.17 (0.85–1.61)
Severe headache	1.67 (0.97–2.86)	1.46 (1.01–2.13)	1.23 (0.79–1.90)	1.81 (1.18–2.80)	1.45 (0.89–2.36)	1.55 (1.02–2.37)
Serious or chronic skin disease	<0.001 (<0.001–<0.001)	1.05 (0.40–2.81)	1.79 (0.38–8.48)	0.50 (0.15–1.59)	0.49 (0.13–1.86)	1.42 (0.32–6.25)

12 months [mean prevalence in the EU was 26%, with the lowest prevalence in Hungary (9.5%) and the highest prevalence in Germany (39.5%)].[31] Compared to this European study, the past year prevalence for Belgium, assessed with the HIS 2013, is considerably lower (9.1%). This major difference is mainly due to the fact that 11 CAM practices were included in the ESS study, while the current HIS study restricted them to four (osteopathy, chiropractic, acupuncture and homeopathy, which were also included on the ESS list). Of course, the survey methodology can also play a role, although both studies are population-based and used the same recall period. Other population-based studies, however, less recent, found a past year prevalence of the same order of magnitude as our study: 10.6% in England in 1998,[32] 12.4% in Canada in 2001–05[4] and 15.6% in Italy in 1999–2000.[23] So measuring CAM use is challenging since no universal definition exists. Besides, the use of CAM may differ by country.

In this study, respondents with musculoskeletal diseases, allergy and severe headache (such as migraine) were most likely to use CAM, especially those with musculoskeletal diseases. This was also the case in other studies.[3,11] What distinguishes our study is the finding that the sociodemographic characteristics commonly associated with CAM use vary depending on the type of chronic diseases patients are suffering from. For instance, an association between CAM use and severe headache was only found in women, people aged 45 years and older (including middle-aged patients) and people with a higher education. A different profile is seen for people with allergies: here, those aged 45+ years, men and low educated people are more likely to use CAM. In case of musculoskeletal diseases, no specific profile for the use of CAM is observed, meaning that all the respondents with this condition make a higher use of CAM, including men and women, younger and older people, and both educational levels.

One explanation as to why there is no specific profile of CAM users with musculoskeletal diseases could be the fact that these conditions, especially low back pain, affect almost everyone at some point in time. The major burdens related to these diseases are persistent pain and physical disability, which affect quality of life.[33] Suffering from pain is the most important reason for CAM use.[18,19,27,34–36] The use of CAM does not mean that patients are dissatisfied with conventional medicine.[26] They are just seeking a greater variety of care possibilities that can provide relief for their pain.[28] A study of Haetzman et al.[16] demonstrated that chronic pain patients still consult their GP more frequently than they use CAM. Our study also shows that the proportion of conventional medical care use is higher among CAM users compared with non-users.

The role of CAM use in the management of some chronic diseases, with important public health consequences, must not be ignored. To improve the management of patients with such conditions, physicians should discuss CAM use with their patients, so that their pattern of care can be efficiently monitored.[3,18,22,25,27,28,37] Therefore, it is important for the physician to know for which diseases patients seek CAM more often. Nevertheless it may also be useful for physicians to be aware that not only the commonly described subpopulations use CAM more, but that for some chronic diseases, like musculoskeletal diseases, CAM is used no matter the sociodemographic specificities of the patients.

The strength of this study, based on the Belgian HIS 2013, is 2-fold. On the one hand, it concerns a population-based study including a large sample of the general population at national level. On the other hand, the horizontal approach to data collection makes the HIS a powerful tool: information on health status, the use of CAM and sociodemographic characteristics are collected at the same time for the same person,[38] whereby associations between these variables can be assessed. However, cross-sectional data cannot measure causal relations as it concerns a snapshot. In addition, since our focus was on the interaction between disease and background variables in terms of CAM use, comorbidity was not taken into account because this would make the models very complex and difficult to interpret. Another limitation of this study is the fact that it concerns self-reported data which are subject to recall bias.[3,4,18,25,27] Moreover, since the number of CAM types captured in the HIS is restricted, although these are the most frequently used practices, the prevalence of overall CAM use in Belgium will be underestimated. Since there were no questions about the medical reason for CAM use in the HIS, it is possible that in some cases CAM was used for non-serious medical conditions, health promotion or prevention.[24] Information on the frequency of CAM use is also not included in the HIS questionnaire. Therefore, no distinction can be made between occasional and frequent CAM users. This implies that it is difficult to determine what constitutes CAM use.[22,31] For more in-depth studies on this topic, the CAM module in the HIS needs to be extended.

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Conflicts of interest: None declared.

Key points

- Sociodemographic characteristics of patients associated with CAM use differ by chronic disease.
- The role of CAM use in disease management cannot be ignored.
- Making physicians aware of the diseases for which CAM is used and by whom, may facilitate disease management.

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