Complementary Therapies in Medicine 44 (2019) 151–156

Contents lists available at ScienceDirect

Complementary Therapies in Medicine

journal homepage: www.elsevier.com/locate/ctim

Usage and attitudes related to complementary and alternative medicine among Turkish academicians on the basis of the five-factor model of personality: A multi-centered study

Zehra Gok Metin PhD RN Assist. Prof., Canan Karadas RN MSc, Leyla Ozdemir PhD RN Prof.

Hacettepe University Faculty of Nursing, Internal Medicine Nursing Department, 06100, Ankara, Turkey

ARTICLE INFO

Keywords:
Academicians
Attitude
Complementary medicine
Personality

ABSTRACT

Objectives: As the popularity of complementary and alternative medicines (CAM) is increasing, it is important to understand the characteristics of people that make them to be attracted toward CAM and influence their attitudes. The purpose of the present study was to examine the associations between the socio-demographic characteristics of people as assessed by the a five-factor model and the attitudes toward CAM modalities among Turkish academicians.

Design: An online survey was completed by 227 academicians who were working in three leading universities of Turkey.

Main outcome measures: The academicians were queried anonymously on socio-demographics and which CAM modalities they utilized, by filling out the Ten-Item Personality Inventory (TIPI) and the Holistic Complementary and Alternative Health Questionnaire (HCAMQ).

Results: In regard to the intention of using a CAM modality in the academicians, 75.3% of the academicians specified an intention to use at least one form of CAM in their lives. Among all the academicians surveyed, 38.8% reported using at least one form of CAM in the previous year. The most widely used forms of CAM observed were herbal therapies and mind-body therapies (18.5%), touch-based therapies (15.4%), and multi-vitamin (4.8%). The ratio of CAM usage in the previous year was observed to be lower in the academicians working in the health-related professions. The present study also identified that the academicians with openness personality-type exhibited greater positive attitudes toward CAM ($p < 0.05$).

Conclusions: The findings of the present study indicated that the academicians who are open to experience, as assessed by the five-factor model of personality, exhibited greater positive attitudes toward CAM. More than 60% of academicians agreed that CAM should be integrated into the curriculum, the remaining participants were unsure and disagreed. Therefore, the required feasibility studies to integrate CAM courses into the curriculum of Turkish medical and nursing schools are recommended as a priority.

1. Introduction

The World Health Organization has reported that three-quarters of the people around the world, and 70%–80% of the people living in developed nations use CAM.[1,2] Similarly, CAM modalities are being increasingly used in Turkey, and the percentage of CAM usage in Turkey varies between 22.0% and 98.3%.[1,3,4] Since the use of CAM as a supportive approach is being increasingly accepted by people and has become prevalent in recent years, several studies have been conducted to examine the factors associated with CAM usage in order to better understand this phenomenon, which has led to the identification of a variety of socio-demographic and psycho-social variables which may influence people's decision to use CAM. [5–11] CAM modalities are often used for the prevention of physical and mental disorders, relieving disease and its symptoms, maintaining well-being and improving the quality of life. [2,12–14] As reported in previous studies, multiple reasons have been specified by people for CAM usage, including reasons such as side effects caused by conventional treatments, difficulties with the management of chronic disease, lack of availability of complete cure, and beliefs associated with the naturality of CAM modalities and their beneficial effects. [9,15–18] Other than the aforementioned reasons, socio-demographic characteristics such as age, gender, socio-economic status, ethnicity, spiritual and religious practices, and healthy lifestyles have been reported as the underlying causes that could be influencing the use of CAM as well as the attitudes of people toward CAM modalities.[1,6,10,16,19–21]

E-mail address: zehra.gok@hacettepe.edu.tr.

https://doi.org/10.1016/j.ctim.2019.04.012
Received 15 March 2019; Received in revised form 8 April 2019; Accepted 18 April 2019
Available online 19 April 2019
0965-2299/

In addition to socio-demographic factors, a limited number of studies have suggested that personality type may predispose people to use CAM.[20,22,23] Most of the previous studies which have used the five-factor model of personality as a framework for examining the relationship between the personality type and the attitudes of people toward CAM have reported inconsistent findings, with only a few investigations identifying associations between personality type and CAM usage, while the other identified no such associations.[5,7,8] The five-factor model of personality describes the unique dimensions of human behavior. These five factors are classified on the basis of higher-order traits which represent a variety of personal characteristics and perspectives, [24] including openness [artistic, intellectually curious, and willing to experiment], conscientiousness [persistence, goal-directedness, and self-discipline], extraversion [sociability, assertiveness, and positive effect], agreeableness [trust in others, sincerity, and non-confrontational], and neuroticism [strong negative emotions and stress sensitivity].[24,25] The five-factor model represents a unique group of characteristics that could be present to a greater or lesser degree in any individual. According to the findings of previous studies, most of which were conducted with adults, breast cancer patients, and CAM clients, personality characteristics such as openness may be linked to the use of CAM modalities.[5,10,26,27] Similar to the openness characteristic, both agreeableness and conscientiousness have been reported to be associated with health promotion practices, including healthy eating styles, regular exercise, and less smoking and drinking.[28] Conversely, neuroticism has been reported to be associated with an increase in harmful health-related practices and fewer positive health-related behaviors.[28,29] However, so far, there is limited knowledge regarding the potential influence of personality characteristics and their association with CAM usage from the perspective of academicians. To date, no studies have been reported which examined the association between personality characteristics and attitudes of people toward CAM usage among academicians. As academicians play an important role in society, hold leading positions in science, and utilize critical and evidence-based thinking approaches to solve problems, it is vital to determine the attitudes of academicians toward CAM usage. Previous studies that have attempted to determine the prevalence of CAM usage and attitudes toward CAM modalities have been generally conducted with different populations such as medical doctors, nurses, or medical students as single-centered studies.[30–34] Only one study examining the attitudes of the academician staff and the university students toward CAM modalities has been reported in Nigeria, although its scope was limited to the use of herbal treatments.[2] Therefore, the present study aimed at assessing the associations between personality characteristics and attitudes toward CAM modalities among Turkish academicians working in three leading universities of Turkey. On the basis of this aim, the following research questions were generated: (i) What is the percentage of CAM usage among the academicians, (ii) Are there any associations between the socio-demographic characteristics of the academicians and their CAM usage, (iii) What are the opinions of the academicians regarding the necessity to integrate CAM into the existing curriculum the healthcare professionals, and (iv) Are there any differences between the total scores of HCAMQ depending on the personality types of the academicians. Our study hypothesis was that the academicians who exhibited openness as the dominant personality type would show more positive attitudes toward CAM.

2. Methods

2.1. Study design and settings

The present study was designed as a multi-centered, cross-sectional, descriptive study which was conducted through an online survey in three leading Turkish universities located in Ankara, Antalya, and Izmir. The study was conducted in the period between July 2018 and October 2018.

2.2. Study sample and participants

Within the scope of the present study, 227 academicians volunteered their participation in the study. The sample size for the present study was defined on the basis of the difference between the mean scores obtained in the Holistic Complementary Medicine Questionnaire (HCAMQ) among academicians working in health-related professions (32.86 ± 6.83) and those in non-health-related profession (29.47 ± 5.57), with a power of 97% and an alpha value of 0.05, thus calculated to be 227 academicians. The eligibility criteria for the academicians to be selected in the present study included, (a) working at the selected universities, and (b) volunteering their participation in the study.

2.3. Data collection

Subsequent to obtaining permissions from the institutional authorities to conduct the study, the objectives of the present study were thoroughly explained to the academicians, and a link to an online survey (https://docs.google.com/forms/d/e/1FAIpQLSed9DZaLPvr2cBUbtLoPl5l1pN–00Wc11g06HFJ0FTqVUThjg/viewform?c=0&w=1) was generated by utilizing the Google survey procedures and was sent to the academicians at their email addresses. Each online survey took approximately 5–10 min for completion. The following data collection tools were used:

2.3.1. Socio-demographic and CAM information form

The Socio-demographic and CAM Information form was developed according to the literature and included 14 socio-demographic questions related to age, gender, educational status, marital status, academic degree, profession, co-morbid diseases, and regular medications.[20,35,36] The questions related to CAM comprised the following: use of CAM in the previous year, a continuation of CAM use, the reasons for CAM usage, information sources for CAM, and willingness to integrate CAM into the existing curriculum of the healthcare professionals.[10,16–18] CAM was defined as both practitioner-provided and self-practiced therapies in the questionnaire. In the question that inquired the intention of the academicians to use CAM, two options were available: “I have never used CAM, and do not think to use it”, which was understood as not intended, and “I have used CAM at least once in my life, and think to use it in the future”, which was understood as intended.

2.3.2. Ten-Item personality inventory (TIPI)

TIPI is a ten-item measurement tool developed as an improved version of the five-factor model of personality.[24] The scale was developed originally by Gosling et al. in 2003,[37] while Atak et al. [38] performed the Turkish adaptation of validity and reliability study for this scale in 2013. The scale measures five important personality traits: extraversion, agreeableness, conscientiousness, neuroticism, and openness. The internal reliability coefficients of the sub-dimensions of the scale vary between 0.40 and 0.73, as reported in the Turkish adaptation of validity and reliability study.[38] The Cronbach’s alpha [reliability] coefficient was observed to be 0.83 for the sub-scale of openness, 0.81 for the sub-scale of agreeableness, 0.83 for the sub-scale of neuroticism, 0.84 for the sub-scale of conscientiousness, and 0.86 for the sub-scale of extraversion. In this seven-point Likert-type scale, each sub-dimension contained two items: a standard item and a reverse-scored item, which was denoted by R. The sub-dimension items were as follows: extraversion (1, 6R); agreeableness (2R, 7); conscientiousness (3, 8R); emotional stability (4R, 9); and openness (5, 10R). The total score for each sub-dimension was calculated by adding the scores for the standard item and the recoded reverse-scored item. Although, the scale does not include a cut-off value, higher scores obtained for a sub-dimension indicated that the related sub-dimension is a frequently occurring dominant personality trait among people.[37] Cronbach’s alpha

value for TIPI obtained in the present study was 0.65. In the present study, the personality characteristics were classified as dominant (score higher than the mean score) or non-dominant (score lower than the mean score) in order to examine the differences in the HCAMQ scores.

2.3.3. The holistic complementary and alternative health questionnaire (HCAMQ)

The HCAMQ was originally designed by Hyland et al. in 2003 [39] to assist the researchers in measuring two related psychological variables: attitudes toward CAM and holistic health (HH) beliefs. The Turkish adaptation of this scale was performed by Erci et al. in 2007, who reported a Cronbach's alpha value of 0.72.[40] In the present study, the alpha coefficient value for the total HCAMQ was observed to be 0.72, while the alpha coefficient values for the CAM sub-scale and the HH sub-scale were 0.62 and 0.60, respectively. The scale contained 11 items and was a self-completion questionnaire that utilized six-point Likert questions. The items 2, 4, 6, and 9 were reverse-scored. The total score obtained for the scale varied between at least 11 and at most 66. The lower score obtained for the scale indicated a positive attitude toward CAM usage. Cronbach's alpha value for the scale obtained in the present study was 0.66.

2.4. Ethical considerations

The present study was reviewed and approved by the Non-Interventional Clinical Trials Ethics Committee of Hacettepe University, Turkey (Decision Number: GO 18/438). All information was obtained anonymously, and each respondent was adequately informed regarding the aims, methods, and expected benefits of the study. The academicians were clearly explained that they could withdraw from the study at any point of time without stating a reason. They were told that there was no cost to participate in this study.

2.5. Statistical analysis

All data were analyzed using the SPSS version 23.0 software (IBM Corp., Chicago, IL, USA). Descriptive statistics, which included percentages, frequencies, means, and standard deviations, were used to define the sample characteristics. The compliance of all the numeric data with normal distribution was evaluated using the Shapiro–Wilk test. Chi-Squared analysis was performed to assess the intergroup socio-demographic and categorization data. Independent sample *t*-test was utilized for comparing the HCAMQ scores, and also to examine the differences between TIPI domains and HCAMQ scores. The threshold levels for statistical significance in the two-tailed test and in the analyses were set at $p < 0.05$ and at $p < 0.001$, respectively.

3. Results

3.1. Demographics of participants

A total of 227 academicians participated in the present study. The mean age of the participants was observed to be 38.89 ± 10.40 years. Among all the participants, 65.6% were female and 62.6% were married. A great majority of the participants exhibited no co-morbid disease (70.5%) and no history of usage of regular medication (70.5%). Nearly half of the participants (52.0%) were working in a health-related profession. Over half of the academicians (56.8%) were employed as a research assistant or had a pH.D. degree (Table 1).

3.2. Participants' CAM usage

In regard to the intention of the academicians to use CAM, 75.3% of the academicians reported an intention to use a CAM modality, while 24.7% of the academicians specified not having an intention to use CAM. When observing the CAM usage in the previous year, it was

Table 1
Descriptive characteristics and scale scores (n = 227).

Characteristics (Mean ± SD)		
Age 38.89 ± 10.40		
Gender	**n**	**%**
Female	149	65.6
Male	78	34.4
Marital status		
Married	142	62.6
Single	85	37.4
Comorbid disease		
Present	67	29.5
Absent	160	70.5
Regular medications		
Present	67	29.5
Absent	160	70.5
Professional area		
Health related	118	52.0
Non-health related	109	48.0
Academic degree		
Research Assistant/PhD	129	56.8
Professor/Associate Prof/Assistant Prof	98	43.2
Intention for use of CAM		
Intended	171	75.3
Not-intended	56	24.7
CAM usage in previous year		
No	139	61.2
Yes	88	38.8
Frequency of CAM usage		
Irregular	44	50.0
Every day	10	11.4
Once every two days	5	5.7
Once a week	15	17.0
Once every two weeks	5	5.7
Once a month	9	10.2
Use of CAM modalities*		
Herbal therapies and mind-body therapies	42	18.5
Touch-based therapies	35	15.4
Multi-vitamin	11	4.8
Sources of information on CAM modalities*		
Articles and scientific meetings	85	37.4
Family, relatives, friends	59	26.0
Newspapers/social media	47	20.7
Participate to a course related CAM		
Yes	16	7.0
No	211	93.7
Reasons for CAM usage*		
CAM modalities are natural	44	19.4
Adjunct to conventional therapies	36	15.9
CAM modalities are more holistic	26	11.5
Fewer side effects of CAM modalities	26	11.5
Do not prefer to use medications	24	10.6
Not satisfied with conventional therapies	22	9.7
Believing superior effects of CAM	18	7.9
Easy availability of CAM modalities	16	7.0
Integration of CAM to the curriculum		
Agree	137	60.4
Unsure	46	20.3
Disagree	44	19.3
(Mean ± SD)		
TIPI		
Extraversion	10.20 ± 3.01	
Agreeableness	10.16 ± 2.59	
Conscientiousness	12.28 ± 2.17	
Neuroticism	9.71 ± 2.79	
Openness	10.04 ± 2.71	
HCAMQ	31.32 ± 6.56	
CAM	23.20 ± 5.44	
HH	8.10 ± 3.57	

CAM: Complementary and Alternative Medicine.
TIPI: Ten-Item Personality Inventory.
HCAMQ: Holistic Complementary and Alternative Medicine Questionnaire.
HH: Holistic Health.
* Multiple selected.

revealed that among the total of 227 academicians, 38.8% had used at least one form of CAM in the previous year. Among the academicians who reported using at least one form of CAM in the previous year, half of the participants revealed not using CAM regularly, while 11.4% of them reported using CAM every day. Herbal therapies and mind-body therapies (18.5%), touch-based therapies including massages, aromatherapy, and acupuncture (15.4%), and multi-vitamin (4.8%) were observed to be the most-reported CAM approaches. In regard to the information sources related to CAM for the academicians, 37.4% of the academicians reported using articles and scientific meetings, and 26.0% reported to obtain the information regarding CAM from their family members, relatives, and friends. Only 7.0% of the total number of academicians reported obtaining the information by participating in a specific course related to CAM. Reported reasons for CAM usage included the following: CAM modalities are natural (19.4%), CAM may serve as a supportive approach for conventional therapies (15.9%), CAM modalities are holistic in nature, CAM modalities result in fewer side effects (11.5%), and not preferring the use of conventional medications (10.6%).

3.3. Opinions of the academicians regarding the necessity to integrate CAM into the existing curriculum

In the present study, most of the academicians (60.4%) expressed that "CAM should be integrated into the curriculum of medical/nursing schools", 20.3% of them were unsure and a small proportion (19.3%) stated that "CAM should not be integrated into the curriculum" (Table 1).

3.4. Mean scores for TIPI and HCAMQ

The mean score obtained for the sub-dimensions of TIPI were as follows: 10.20 ± 3.01 for extraversion, 10.16 ± 2.59 for agreeableness, 12.28 ± 2.17 for conscientiousness, 9.71 ± 2.79 for neuroticism, and 10.04 ± 2.71 for openness. The mean score obtained for HCAMQ was 31.32 ± 6.56, while the scores for the CAM sub-dimension and the HH sub-dimension were 23.20 ± 5.44 and 8.10 ± 3.57, respectively (Table 1).

3.5. Factors influencing HCAMQ scores

While identifying the socio-demographic variables that could be influencing the HCAMQ scores, significant associations were observed among the academicians' age, gender, co-morbid disease, use of regular medications, professional area, and academic degree ($p < 0.05$). Participants who were younger, female, not using the prescribed medications and those who had exhibited no co-morbid disease obtained significantly lower scores in the HCAMQ ($p < 0.05$). Moreover, the participants who specified using any form of CAM modality in the previous year obtained significantly lower scores in the HCAMQ (28.44 ± 5.22) in comparison to the academicians who reported not using (33.16 ± 6.68) CAM in any form in the previous year ($p < 0.05$). Similarly, the academicians who provided an opinion in regard to integrating CAM into the curriculum exhibited significantly ($p < 0.05$) lower scores (28.76 ± 5.50) in the HCAMQ (Table 2). While the academicians working in health-related professions (n = 37) specified using a CAM modality, academicians working in the non-health-related professions (n = 51) reported the use of CAM in the previous year.

3.6. Personality characteristics and HCAMQ scores

While determining whether there existed any difference between the TIPI sub-dimension scores and the HCAMQ scores, it was observed that there was a significant difference between the mean scores of openness and the HCAMQ scores ($p < 0.05$). In other words, the academicians who exhibited openness as the dominant personality type obtained significantly lower scores in the HCAMQ. Furthermore, the academicians who exhibited agreeableness as the dominant personality type also showed more positive attitude toward CAM ($p > 0.05$, Table 3).

Table 2
Sociodemographic characteristics and HCAMQ scores (n = 227).

Characteristics	HCAMQ (Mean ± SD)	Test statistic*	p value
Age			
18-40	30.57 ± 6.42	–2.35	**.02**
41 and above	32.75 ± 6.44		
Gender			
Female	30.39 ± 5.88	–2.934	**.01**
Male	33.11 ± 7.42		
Comorbid disease			
Present	32.97 ± 6.81	2.416	**.01**
Absent	30.63 ± 6.35		
Regular medications			
Presence	32.97 ± 6.81	2.416	**.01**
Absent	30.63 ± 6.35		
Professional area			
Health related	32.86 ± 6.83	3.907	**.01**
Non-health related	29.47 ± 5.57		
Academic degree			
Professor/Assoc. Prof/Assist. Prof	32.66 ± 5.93	–2.628	**.01**
Research Assist/PhD	30.32 ± 6.82		
CAM usage in the previous year			
Yes	28.44 ± 5.22	5.487	**.01**
No	33.16 ± 6.68		
Integration of CAM to the curriculum			
Agree	28.76 ± 5.50	–7.565	**.01**
Disagree	36.76 ± 7.10		

Test statistic: * Student's *t*-test.

Table 3
Personality characteristic scores and HCAMQ (n = 227).

TIPI	HCAMQ	Test statistic	p-value
Extraversion			
Dominant[a]	30.79 ± 6.99	3.060	.21
Nondominant[b]	31.90 ± 6.04		
Agreeableness			
Dominant[a]	30.97 ± 6.15	1.470	.44
Nondominant[b]	31.66 ± 6.94		
Conscientiousness			
Dominant[a]	31.48 ± 6.75	1.233	.65
Nondominant[b]	31.06 ± 6.26		
Neuroticism			
Dominant[a]	31.30 ± 7.13	3.648	.94
Nondominant[b]	31.36 ± 5.84		
Openness			
Dominant[a]	30.29 ± 6.33	.633	**.02**
Nondominant[b]	32.33 ± 6.67		

Test statistic: Student's *t*-test.
[a] Higher than the mean score of related sub-dimension.
[b] Lower than the mean score of related sub-dimension.

4. Discussion

Complementary and alternative medicine is being increasingly used throughout the world. Although debates related to evidence in favor of CAM continue in the academic settings, a considerable amount of people, healthy or with co-morbid conditions, have been reported to be inclined to use CAM.[8,34] In this context, defining the attitudes of academicians toward CAM usage becomes necessary. The present study is the pioneer study conducted in three leading universities of Turkey which examined the attitudes of academicians toward CAM usage on the basis of the five-factor model of personality. The present study also

determined the associations between the socio-demographic characteristics and the attitudes toward CAM usage among the academicians.

According to the major findings of the present study, high use and acceptance of CAM was observed, even among the university professors and lecturers. While evaluating the sources from which the academicians obtained information regarding CAM, it was observed that most of the academicians obtained this information from articles and scientific meetings, followed by those who obtained the information from their family members, relatives and friends, and the ones who obtained the information from either printed media or social media. Unlike the findings of the present study, a previous study which was conducted in Nigeria reported that majority of the university staff obtained information related to herbal medicine from TV, radio, and newspaper, followed by those who obtained the information from friends, relatives, doctors, and nurses.[2] This difference between the findings of the aforementioned study and those of the present study may be because of the difference in the study population used, as the present study was conducted with Turkish academicians who exhibit a tendency to read scientific resources and follow their results. Similarly, the present study also demonstrated that healthcare professionals such as doctors, nurses, and pharmacists were not the popular sources of information related to CAM, which may be the result of inadequate training on CAM provided in Turkish medical/nursing schools. Lack of interest of these healthcare professionals in the issues related to CAM may partly explain why it has been difficult to integrate CAM into the healthcare system of the nation. It is noteworthy that according to the findings of the present study, even the segment of the society that could be regarded as “the enlightened” ones accepted CAM, expressed positive opinions regarding integrating CAM into the existing curriculum, and were using at least one form of CAM for health maintenance This may serve as a source of motivation for intensifying the efforts on introducing policies that would ensure rapid integration of CAM practices into the existing healthcare curriculum.

Previous reports have indicated that socio-demographic characteristics of people may exert an influence on the usage of CAM.[2,12,14,16] Individuals who were female, well-educated, wealthy, and exhibited co-morbid conditions were reported to be more inclined to use CAM in several previous studies.[10,21,34,36,41] In line with the results of the previous studies, the academicians who were female and middle-aged were observed to be more likely to use CAM according to the results of the present study.[6,22,42] Furthermore, the academicians who exhibited no co-morbid conditions were surprisingly reported to exhibit greater positive attitude toward CAM, which could be attributed to having a study sample comprising middle-aged and younger academicians who did not have co-morbid conditions, did not use prescribed medications, were relatively healthy people, had healthy lifestyle behaviors, and had control over their health.[20] One of the most striking findings of the present study was that the academicians who were working in a health-related profession reported less usage of CAM in comparison to the academicians working in non-health related professions. This outcome could have resulted from a lack of interest and education in CAM in the undergraduate curriculum, resulting in the academicians working in a health-related profession to feel that they do not possess sufficient knowledge to be able to use CAM, or for them to have certain individual prejudgments toward CAM.

In the assessment of personality characteristics using TIPI in the present study, the academicians who exhibited openness as a dominant characteristic were reported to exhibit significantly positive attitudes toward CAM. Openness has been reported as the most-highlighted personality characteristic associated with the usage of CAM in the literature as well. Sirois & Gick [6] observed that openness discriminated CAM clients from the non-CAM ones. Openness was also likely to influence CAM usage through its association with higher education levels, which are in turn implicated to predict CAM usage.[43,44] This could be because of the fact that the individuals who are open to experience are relatively curious and enjoy experimenting, thereby being more likely to undertake different therapies as part of a holistic and proactive approach.[5] In this perspective, it is sensible to consider openness to experience as a predictor of CAM usage, as this personality factor is characterized by intellectual curiosity, variety seeking, and holding of values that are unconventional among the academicians.[45] In addition to openness personality type, the academicians who dominantly have agreeableness characteristic exhibited more positive attitude toward CAM in our study, as not being statistically significant. Previous research also implied that there is a consistent link between agreeableness and health-promoting practices.[28,29] Lemos-Giraldez and Aliste suggested that agreeableness may be predictors of health behaviors, cognitive attitudes and tendencies.[28] This finding within the CAM literature that may also be explained by particular aspects of agreeableness, such as accuracy and confidence.[29] Supporting our findings, Sirois et al. (2008) reported that individuals who are open and agreeable consulted CAM practitioners to a greater extent.[6] Similar to our outcomes, extraversion, and conscientiousness personality types were not found associated with CAM use in previous reports.[6,7,46] Due to limited number of studies related to extraversion and conscientiousness personality types and no direct comparison, any firm conclusion requires future, well-conducted studies on personality types and attitudes toward CAM.

4.1. Strengths and limitations

The present study adds to the sparse literature concerning personality variables and CAM usage among academicians. The main strength of the present study is its multi-centered design and large sample size. Although the outcomes of the present study were insightful, the data in the present study must be interpreted cautiously as the study population is limited to just three leading universities of Turkey. It is, therefore, difficult to generalize the data to the entire population of the country as the participants were not drawn from institutions across the country. This is instructive as the attitudes and usage of CAM among the academicians assessed on the basis of the five-factor model of personality may vary across the country.

5. Conclusion

The findings of the present study revealed that most of the academicians were already aware of CAM, and more than 60% of them agreed that CAM should be integrated into the curriculum. However, the considerable amount of participants was unsure and disagreed in terms of CAM integration into the curriculum. Bearing this outcome in mind, and taking into account the challenges related to integrating any new course into a curriculum such as considerable planning and co-operation, time, space, funding, faculty support, and knowledgeable faculty to teach the course, the required feasibility studies to integrate CAM courses into the curriculum of Turkish medical and nursing schools are recommended as a priority.

The present study also indicated that the academicians who exhibited the personality characteristics of openness as assessed by the five-factor model of personality exhibited greater positive attitudes toward CAM. The current study has identified direct associations between socio-demographic and personality type, and attitudes toward CAM among academicians. So, personality type should be considered by health care providers as part of the individual's holistic assessment and on-going care as well as socio-demographics. Another important point that needs to keep in mind is that the academicians working in health related profession exhibited more negative attitudes toward CAM. Future qualitative studies are warranted to investigate the underlying causes for these negative attitudes toward CAM among academicians working in health related profession. Lastly, even in academicians, healthcare professionals such as doctors, nurses, and pharmacists were not the popular sources of information related to

CAM. Therefore, health care providers should evaluate the information sources related CAM for per individual.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Conflict of interest

The authors declare they have no conflict of interest.

Acknowledgement

The authors would like to thank all the participants. Without their voluntary participation, this study would not have been possible. The authors sincerely express their heartiest thanks for receiving continuous encouragement and wholehearted support provided by Hacettepe University, Education, Practice and Research Center in Nursing.

References

1. Health NIo. *What is complementary and alternative medicine (CAM)*. Publication No D156; 2002.
2. Nworu CS, Udeogaranya PO, Okafor CK, Adikwu AO, Akah PA. Perception, usage and knowledge of herbal medicines by students and academic staff of University of Nigeria: a survey. *Eur J Integr Med.* 2015;7(3):218–227.
3. Sultan K, Hanoglu Z, Algier L. Use of complementary and alternative medicine by Cancer patients in Turkey: a literature review. *Int J Hematol Oncol.* 2008;27(4):032–038.
4. Sağkal T, Demiral S, Odabaş H, Altunok E. Kırsal kesimde yaşayan yaşlı bireylerin tamamlayıcı ve alternatif tedavi yöntemlerini kullanma durumları. *Fırat Üniversitesi Sağlık Bilimleri Tıp Dergisi.* 2013;27(1):19–26.
5. Sirois FM, Purc-Stephenson RJ. Personality and consultations with complementary and alternative medicine practitioners: a five-factor model investigation of the degree of use and motives. *J Altern Complement Med.* 2008;14(9):1151–1158.
6. Sirois FM, Gick ML. An investigation of the health beliefs and motivations of complementary medicine clients. *Soc Sci Med.* 2002;55(6):1025–1037.
7. Honda K, Jacobson JS. Use of complementary and alternative medicine among United States adults: the influences of personality, coping strategies, and social support. *Prev Med.* 2005;40(1):46–53.
8. Toivonen KI, Tamagawa R, Speca M, Stephen J, Carlson LE. Open to exploration? Association of personality factors with complementary therapy use after breast Cancer treatment. *Integr Cancer Ther.* 2018;17(3):785–792.
9. Bishop FL, Yardley L, Lewith GT. Why do people use different forms of complementary medicine? Multivariate associations between treatment and illness beliefs and complementary medicine use. *Psychol Health.* 2006;21(5):683–698.
10. Hirai K, Komura K, Tokoro A, et al. Psychological and behavioral mechanisms influencing the use of complementary and alternative medicine (CAM) in cancer patients. *Ann Oncol.* 2007;19(1):49–55.
11. Robinson A, Chesters J, Cooper S. People's choice: Complementary and alternative medicine modalities. *Complement Health Pract Rev.* 2007;12(2):99–119.
12. Hori S, Mihaylov I, Vasconcelos JC, McCoubrie M. Patterns of complementary and alternative medicine use among outpatients in Tokyo, Japan. *BMC Complement Altern Med.* 2008;8(1):14.
13. Turan N, Öztürk A, Kaya N. Hemşirelikte yeni bir sorumluluk alanı: Tamamlayıcı terapi. *Maltepe Üniversitesi Hemşirelik Bilim ve Sanatı Dergisi.* 2010;3(1):93–98.
14. Cuellar N, Aycock T, Cahill B, Ford J. Complementary and alternative medicine (CAM) use by African American (AA) and Caucasian American (CA) older adults in a rural setting: a descriptive, comparative study. *BMC Complement Altern Med.* 2003;3(1):8.
15. Şarışen Ö, Çalışkan D. Fitoterapi: Bitkilerle Tedaviye Dikkat (!). *Sted.* 2005;14(8):182–187.
16. McFadden KL, Hernández TD, Ito TA. Attitudes toward complementary and alternative medicine influence its use. *Explor J Sci Heal.* 2010;6(6):380–388.
17. Aslan R. Hekimlikte Alternatif ve Tamamlayıcı tıbbi yaklaşımlar. *Kocatepe Veteriner Dergisi.* 2016;9(4):363–371.
18. Ari E, Yilmaz V. Tamamlayıcı ve Alternatif Tıp Kullanımına Yönelik Tutum Ve Davranışların Önerilen Bir Yapısal Model ile araştırılması. *Uluslararası Alanya İşletme Fakültesi Dergisi.* 2016;8(1):1.
19. Ellison CG, Bradshaw M, Roberts CA. Spiritual and religious identities predict the use of complementary and alternative medicine among US adults. *Prev Med.* 2012;54(1):9–12.
20. Thomson P, Jones J, Browne M, Leslie SJ. Psychosocial factors that predict why people use complementary and alternative medicine and continue with its use: a population based study. *Complement Ther Clin Pract.* 2014;20(4):302–310.
21. Mehta DH, Phillips RS, Davis RB, McCarthy EP. Use of complementary and alternative therapies by asian americans. Results from the national health interview survey. *J Gen Intern Med.* 2007;22(6):762–767.
22. Sirois FM, Purc-Stephenson RJ. Consumer decision factors for initial and long-term use of complementary and alternative medicine. *Complement Health Pract Rev.* 2008;13(1):3–19.
23. McElroy T, Dowd K. Susceptibility to anchoring effects: How openness-to-experience influences responses to anchoring cues. *Judgm Decis Mak.* 2007;2(1):48.
24. Goldberg LR. An alternative" description of personality": The big-five factor structure. *J Pers Soc Psychol.* 1990;59(6):1216.
25. Barrick MR, Mount MK. The big five personality dimensions and job performance: a meta-analysis. *Pers Psychol.* 1991;44(1):1–26.
26. Prochaska JO, DiClemente CC. *Toward a comprehensive model of change.* Treating addictive behaviors: Springer; 1986:3–27.
27. Hirai K, Suzuki Y, Tsuneto S, Ikenaga M, Hosaka T, Kashiwagi T. A structural model of the relationships among self-efficacy, psychological adjustment, and physical condition in Japanese advanced cancer patients. *Psycho Oncol J Psychol Soc Behav Dimens Cancer.* 2002;11(3):221–229.
28. Lemos-Giráldez S, Fidalgo-Aliste AM. Personality dispositions and health-related habits and attitudes: a cross-sectional study. *Eur J Pers.* 1997;11(3):197–209.
29. Booth-Kewley S, Vickers Jr RR. Associations between major domains of personality and health behavior. *J Pers.* 1994;62(3):281–298.
30. Wahner-Roedler DL, Lee MC, Chon TY, Cha SS, Loehrer LL, Bauer BA. Physicians' attitudes toward complementary and alternative medicine and their knowledge of specific therapies: 8-year follow-up at an academic medical center. *Complement Ther Clin Pract.* 2014;20(1):54–60.
31. Soner BC, Sahin AS, Sahin TK. A survey of Turkish hospital patients' use of herbal medicine. *Eur J Integr Med.* 2013;5(6):547–552.
32. Adib-Hajbaghery M, Hoseinian M. Knowledge, attitude and practice toward complementary and traditional medicine among Kashan health care staff, 2012. *Complement Ther Med.* 2014;22(1):126–132.
33. Bauml JM, Chokshi S, Schapira MM, et al. Do attitudes and beliefs regarding complementary and alternative medicine impact its use among patients with cancer? A cross-sectional survey. *Cancer.* 2015;121(14):2431–2438.
34. Frass M, Strassl RP, Friehs H, Müllner M, Kundi M, Kaye AD. Use and acceptance of complementary and alternative medicine among the general population and medical personnel: a systematic review. *Ochsner J.* 2012;12(1):45–56.
35. Quandt SA, Verhoef MJ, Arcury TA, et al. Development of an international questionnaire to measure use of complementary and alternative medicine (I-CAM-Q). *J Altern Complement Med.* 2009;15(4):331–339.
36. MacLennan AH, Myers SP, Taylor AW. The continuing use of complementary and alternative medicine in South Australia: costs and beliefs in 2004. *Med J Aust.* 2006;184(1):27–31.
37. Gosling SD, Rentfrow PJ, Swann Jr WB. A very brief measure of the Big-Five personality domains. *J Res Pers.* 2003;37(6):504–528.
38. Hasan A. The Turkish adaptation of the ten-item personality inventory. *Nöro Psikiyatri Arşivi.* 2013;50(4):312.
39. Hyland M, Lewith G, Westoby C. Developing a measure of attitudes: the holistic complementary and alternative medicine questionnaire. *Complement Ther Med.* 2003;11(1):33–38.
40. Erci B. Attitudes toward holistic complementary and alternative medicine: a sample of healthy people in Turkey. *J Clin Nurs.* 2007;16(4):761–768.
41. Matsuyama RK, Wilson-Genderson M, Kuhn L, Moghanaki D, Vachhani H, Paasche-Orlow M. Education level, not health literacy, associated with information needs for patients with cancer. *Pat Educ Couns.* 2011;85(3):e229–e236.
42. Tindle HA, Wolsko P, Davis RB, Eisenberg DM, Phillips RS, McCarthy EP. Factors associated with the use of mind body therapies among United States adults with musculoskeletal pain. *Complement Ther Med.* 2005;13(3):155–164.
43. Park J. Use of alternative health care. *Health Rep.* 2005;16(2):39.
44. Foltz V, St Pierre Y, Rozenberg S, et al. Use of complementary and alternative therapies by patients with self-reported chronic back pain: A nationwide survey in Canada. *Joint Bone Spine.* 2005;72(6):571–577.
45. Connelly BS, Ones DS, Chernyshenko OS. Introducing the special section on openness to experience: Review of openness taxonomies, measurement, and nomological net. *J Pers Assess.* 2014;96(1):1–16.
46. Furnham A. Are modern health worries, personality and attitudes to science associated with the use of complementary and alternative medicine? *Br J Health Psychol.* 2007;12(2):229–243.