Iran Red Crescent Med J. 2017 May; 19(5):e46166. doi: 10.5812/ircmj.46166.

Published online 2017 May 7. **Research Article**

The Relationship Between Knowledge and Attitude of Patients with Chronic Diseases Regarding Complementary Medicine

Alehe Seyyedrassoli,[1] Akram Ghahramanian,[2] and Zhila Rahimlou[3,*]

[1]Department of Medical-Surgical Nursing, Faculty of Nursing and Midwifery, Tabriz University of Medical Sciences, Tabriz, Iran
[2]Hematology and Oncology Research Center, Medical Surgical Department, Nursing and Midwifery Faculty, Tabriz University of Medical Sciences, Tabriz, Iran
[3]Student Research Committee, Department of Medical Surgical Nursing, Faculty of Nursing and Midwifery, Tabriz University of Medical Sciences, Tabriz, Iran

[*]*Corresponding author*: Zhila Rahimlou, Student Research Committee, Department of Medical Surgical Nursing, Faculty of Nursing and Midwifery, Tabriz University of Medical Sciences, Tabriz, Iran. Tel: +98-4134799946, Fax: +98-9143614473, E-mail: zhilarahimlou@gmail.com

Received 2017 February 05; **Revised** 2017 March 26; **Accepted** 2017 April 06.

Abstract

Background: Evidence shows the effectiveness of complementary medicine and its use in the treatment of chronic diseases are increasing.
Objectives: This study aimed to determine the relationship between knowledge and attitude toward complementary medicine in patients with chronic disease and referred to a hospital in an urban area of Iran.
Methods: This cross-sectional correlation study was conducted with 400 patients with chronic diseases referred to a hospital in an urban area of Iran. The samples were chosen using convenience sampling. The patients' knowledge and attitudes were assessed using a researcher-made questionnaire and the holistic complementary and complementary medicine questionnaire, respectively.
Results: The patients' knowledge was the highest and lowest in the subscales of herbal medicine and energy therapy, respectively. Also, their attitudes mean regarding holistic health was better than attitude regarding scientific validity of complementary medicine (21.37 versus 15.88). There were statistically significant relationships between knowledge and attitude ($r = 0.28$, $P < 0.001$). While the relationship between knowledge regarding complementary medicine and attitude toward holistic health ($r = 0.52$, $P < 0.001$), its relationship with attitude toward the scientific validity of complementary medicine was reverse and negative ($r = -.23$, $P < 0.001$). Moreover, demographic variables such as the level of education, marital status, disease type, exercise habits, and information about the methods of complementary medicine had statistically significant relationships with the patients' knowledge about complementary medicine. The frequency of consumption of vegetables per week ($r = -0.18$, $P < 0.001$) and the duration of disease ($r = -0.16$, $P = 0.002$) had a statistically significant reverse relationship with knowledge regarding complementary medicine.
Conclusions: Knowledge regarding herbal medicine was high in patients with chronic diseases. Given a lack of sufficient knowledge and poor attitudes about other aspects of complementary medicine, patients need more education about the significance of complementary medicine and its positive effects on their health.

Keywords: Knowledge, Attitude, Chronic Diseases, Complementary Medicine

1. Background

Complementary medicine, as an alternative to conventional medicine, assists the diagnosis, treatment and prevention of diseases or medical conditions (1, 2). Given many advances in the field of medical sciences and ease of access and effectiveness of the synthetic drugs. The use of complementary medicine has increased. However, a large portion of the human population, due to the unavailability and high costs, are not interested in the use of chemical drugs. More than 80% of people in developing countries hardly have access to most basic medical procedures, drugs, and vaccines (3). On the other hand, drugs' side effects may have serious life threatening consequences (4, 5). The use of complementary medicine has dramatically increased in developed and developing countries for reasons such as ease of access, lower costs, and efficacy. Complementary therapies and traditional medicine are highlighted for improving the healthcare delivered to the patients (6). According to studies in the USA, 29% - 42% of Americans use complementary medicine in the forms of self-care or prescription by the physician (7). In Italy, Germany, Canada, and France, 70% - 90% of the complementary medicine is in the form of herbal medicine (8, 9). In Africa, 70% - 95% (8), Nigeria 84% (10), Japan and Singapore 76% (11), South Korea 8.74% (12, 13), China 60% (14), and 62.5% of people in Iran use complementary and alternative therapies (1).

Chronic diseases affect all populations across the world, 70% of the cases of patients' death in the USA are related to chronic diseases, which are about 1.7 million deaths every year. Chronic diseases are often monitored, but are not fully treatable. Some of these diseases are life threatening such as a heart attack or stroke, and some oth-

ers can be difficult to be managed (7, 15, 16).

The results of Siddiqui et al. (2003) showed that 83.2% of the population of Tehran had knowledge of the types of complementary medicine, 75% knew about herbal therapy, 43% about acupuncture, 39% about hypnotherapy, 28% about energy therapy 22% about Yoga, and less than 5% about homeopathy (17). The study on healthcare workers in Kashan (2012) shows that most participants had little knowledge of complementary medicine, but showed interest about it. This indicates that medical community should provide education and training about the benefits and side effects of the application of complementary medicine to people (18).

An appropriate understanding of complementary medicine cannot be achieved without having enough knowledge of the current condition, patients' knowledge, and attitudes toward complementary medicine.

2. Objectives

This study was performed with the aim of determining the relationship between knowledge and attitude toward complementary medicine in patients with chronic diseases.

3. Methods

3.1. General Information

This cross-sectional correlation study was conducted from March 2 to May 28, 2016 with 400 chronic patients that were referred to the cardiology, rheumatology, nephrology, and endocrinology wards as well as clinics of traditional medicine at the Sina hospital located in Tabriz, Iran, which happens to be the only referred center for chronical patients. This article has been approved by the ethics committee of Tabriz University of Medical Sciences (TBZMED.REC.1394.605). The samples were recruited from a hospital after obtaining required permissions for authorities including ethical approval for the study and sampling in the research zone. Also, the samples were informed of the studys' aim and their rights regarding the anonymity and confidentiality of data and the possibility of withdrawal from the study at any time without being penalized. Those patients who willingly agreed to participate in this study signed the written informed consent form. The samples were chosen using the convenient method according to the following inclusion criteria: age above 18 years, being diagnosed with the chronic disease at least for 1 year, and the confirmation of the diagnosis from the patient's medical file. The exclusion criteria included a lack of willingness to take part in this study and the history of the use of synthetic opioid drugs based on the patient's word.

3.2. Sample Size

The sample size was determined using a sampling formula considering the frequency of complementary medicine's use = 50%, z = 1.96, and d = 0.05. Also, given the probability of 10% attrition of samples, the number of samples was determined on 400 people. We also performed a power analysis to ensure the sample size estimation, which we based on correlation statistical test, alpha (0.05), power (0.80), and effect size (because of absence of similar study in the target group, effect size small and equal. 1 - 0.2 was considered). The sample size was calculated in the G*power software version 3.1. The third author of the paper selected patients with chronic diseases that referred to the cardiology, rheumatology, nephrology, and endocrinology wards in the evening shifts as well as clinics of traditional medicine in the odd days of week.

3.3. Instrument

The socio-demographic data form was developed after the literature review and contained questions such as age, gender, marital status, occupation, income level, and the source of information about the complementary medicine. The patients' knowledge regarding complementary medicine was a researcher-made instrument developed based on the literature review. Also, 10 faculty members in the fields of nursing and complementary medicine confirmed its validity. For construct validity, this questionnaire (complementary alternative medicine knowledge questionnaire) was filed out by 200 patients with chronic diseases and exploratory factor analysis (EFA) was performed. The reliability of the CAM-knowledge questionnaire, according to the Kuder-Richardson formula (KR-21), was 0.84. This 37-item questionnaire had a 3-choice response from correct = 1, wrong = 0, and I do not know = 0. Additionally, 4 items had reverse scoring with wrong = 1 and other answers = 0. The CAM-knowledge questionnaire consisted of 37 items and 4 subscales: (1) herbal therapy with 18 items, (2) energy therapy with seven items, (3) yoga with seven items, and (4) the guidance of the mind and emotions with 5 items.

The patients' attitudes were assessed using the holistic complementary and complementary medicine questionnaire (HCAMQ), which was developed by Hyland et al. (19). The validity of the HCAMQ was assessed using content and construct validity. Its reliability was evaluated using the test-retest method that was 0.77 and 0.96 for the total scale and its subscales, respectively (19). The HCAMQ consisted of 11 items and 2 subscales: (1) attitudes toward the scientific validity of complementary medicine with 6 items and (2) beliefs about holistic health with 5 items. For attitudes toward the scientific validity of complementary medicine,

a 5-point Likert scale from strongly agree = 1 to strongly disagree = 5 was applied. For beliefs about holistic health, the 5-point Likert scale had a reverse scoring from strongly agree = 5 to strongly disagree = 1.

3.4. Statistical Analysis

Collected data was analyzed using descriptive and inferential statistics via the SPSS software version 16. $P < 0.05$ was considered statistically significant. Considering the normal distribution of scores of knowledge and attitude, Pearson correlation coefficient was used for determining a relationship between knowledge and attitude toward complementary medicine in patients with chronic diseases. For assessing a relationship between knowledge and characteristics of participants, independent t-test and analysis of variance (ANOVA) were used.

4. Results

The samples were consisted of 400 patients with the mean age of 41.85 years. The majority of them (83%) were female, 43% and 73% of the patients had an academic degree education and were married, respectively. More information regarding the patients' socio-demographic characteristics were presented in Table 1.

From patients participating in this study, 41%, 27%, 27.8%, and 4.2% suffered from rheumatoid, nephrology, endocrine, and cardiac disorders, respectively. Also, 9% of the patients were cigarette smokers and 39% were exercising in a routine manner. Moreover, 57% of the patients were performing routine blood tests and 39% were suffering from blood pressure (Table 2).

The mean score of the patients' knowledge regarding complementary medicine was 18.64 ± 7.14. The patients' knowledge was the highest in herbal medicine with the mean of 10.57 ± 5.08 and lowest in the subscales and energy therapy with the mean of 1.31 ± 1.74.

The mean score of the patients' attitudes regarding complementary medicine were 37.25 ± 3.96. Also, their attitudes regarding holistic health with the mean of 21.37 ± 3.47 was better than their attitudes regarding scientific validity of complementary medicine with the mean of 15.88 ± 2.93.

There was a statistically significant relationship between knowledge regarding complementary medicine, attitude regarding complementary medicine, and attitude toward holistic health. The relationship between knowledge regarding complementary medicine and attitude toward the scientific validity of complementary medicine was reverse and negative ($P < 0.001$). Relationships between the attitudes toward complementary medicine and subscales of knowledge containing herbal therapy and guidance of the mind and emotions were statistically significant ($P < 0.001$).

Moreover, demographic variables such as the level of education, marital status, disease type, exercise habits, and information about the methods of complementary medicine had statistically significant relationships with knowledge regarding complementary medicine. The frequency of consumption of vegetables per week and the duration of disease had a statistically significant reverse relationship with knowledge regarding complementary medicine ($P < 0.01$).

Accordingly, illiterate, divorced, and unemployed patients had less knowledge regarding complementary medicine compared with other patients. Furthermore, the patients with rheumatoid diseases, patients who exercised, and received no data about complementary medicine from various sources had significantly less knowledge. With the increase of the consumption of vegetables per week and duration of the disease, knowledge about complementary medicine was decreased (Tables 1, and 2).

5. Discussion

This study aimed to determine the relationship between knowledge and attitude toward complementary medicine in patients with chronic diseases. We found out that the patients had more knowledge regarding herbal therapy compared with other aspects of complementary medicine. They also had less knowledge regarding energy therapy compared with other aspects. The study done by Sadighi et al. showed that 83.2% of people had knowledge about at least 1 of the methods of complementary medicine and two thirds of them had knowledge about herbal therapy (18); these results were similar to the current study.

According to a study in Kuwait, herbal therapy was one of the priorities of participants (20). In the study done by Zimmerman, participants were often familiar with herbal medicines such as ginseng, St. John's wort, garlic, Echinacea, and cinnamon (21). Also, these results were similar to the current study.

The patients in this study had a better attitude toward holistic health compared with the scientific validity of complementary medicine. A probable reason to this poor attitude is the experience of side effects or fear of its complications. In the study done by Awad and Al-Shaye, 18% of individuals experienced the side effects of complementary medicine. Also, two thirds of them believed that the Kuwaiti's Ministry of Health supervised the production of complementary medicines indicating a lack of trust to the

scientific validity of complementary medicine (20). In the study done by Gruber et al., two thirds of the parents were informed of the role of complementary medicine and recognized its role in the recovery of their own child (22). In the study done by Zimmerman, the majority of students were informed of complementary medicine, but were not optimistic toward its role in the prevention of diseases. Also, they had little knowledge regarding herbal medicine (21), which was in contradiction with our findings.

According to the findings of this study, relationships between the attitudes toward complementary medicine, knowledge regarding herbal therapy, and the guidance of the mind and emotions were statistically significant. The study done by Adib et al. showed that the majority of participants had little knowledge regarding complementary medicine, but were interested in learning it. It shows the importance of education provided by healthcare professionals regarding the advantages, disadvantages, and side effects of complementary medicine to the public (18).

In this study, demographic variables such as the level of education, marital status, disease type, exercise habits, and information regarding the methods of complementary medicine had statistically significant relationships with knowledge about complementary medicine. The frequency of consumption of vegetables per week and the duration of disease had a statistically significant reverse relationship with knowledge regarding complementary medicine. Our findings were confirmed by those of other studies stating that middle-aged women with higher levels of education were interested in complementary medicine (18, 23).

In a study done in Malaysia in 2009, 64% of patients with chronic diseases used complementary medicine, because patients believed in the effectiveness of complementary medicine (24). In a study done by Callahan et al. patients with rheumatoid diseases were looking for specialist and a few of them used complementary medicine for relieving their symptoms (25). Few studies found that the use of complementary therapies were subject to lower costs and are cheaper. In a study done in the United States of America by Barnes et al., it was found that families who had a good income used complementary therapies more than poor or low-income families. Nowadays, complementary medicine is used more than before due to an increase in the number of healthcare centers and specialists in the field of complementary medicine, the publication of more related articles, as well as an increase of public knowledge (26). A study in Iran (2015) showed that the frequency of physician visits, chronic diseases, and multiple complications increases the use of complementary medicine (27).

5.1. Conclusion

Knowledge regarding herbal medicine was high in patients with chronic diseases. Given a lack of sufficient knowledge and poor attitudes toward other aspects of complementary medicine, patients need more education regarding the significance of complementary medicine and its positive effects on their health.

Acknowledgments

This study was supported financially by Tabriz University of Medical Sciences. The authors would like to thank the participants for taking part in this study. Also, our gratitude should be extended to all authorities for granting us the permission to perform this study.

Footnotes

Authors' Contribution: Akram Ghahramanian and Alehe Seyyedrassoli prepared study concept and design; Akram Ghahramanian analyzed, interpreted data and designed the CAM-knowledge questionnaire established in the project; Zhila Rahimlou drafted the manuscript and had the responsibility of data gathering and participated in manuscript writing; Alehe Seyyedrassoli and Akram Ghahramanian revised the manuscript and the whole process was under supervision of these two authors.

Conflicts of Interest: The authors declare no conflict of interest in this study.

Funding/Support: This study was supported financially by Tabriz University of Medical Sciences.

Implication for Health Policy Makers/Practice/Research/Medical Education: Complementary medicine showed to be efficient in treatment of chronic diseases, therefore we performed this study to determine the relationship between the level of knowledge of these patients and their attitude to this therapy. With respect to the lack of an appropriate tool for knowledge measurement, authors developed a reliable and valid measurement in this regard. Hence, more attention should be paid to the part that patients have none or less knowledge about it.

Role of the Sponsor: The funding organization, Tabriz University of medical science, is a public institution and had no role in the design and conduct of the study, collection, management, as well as analysis of the data, or preparation, review, and approval of the manuscript.

Table 1. Characteristics of the Patients and Their Relationships with Knowledge About Complementary Medicine

Characteristics	N (%)	Mean (SD) for Knowledge	P Value
Gender			0.201
Male	68 (17)	19.64 (6.94)	
Female	332 (83)	18.43 (7.18)	
Educational level			0.001
Illiterate	20 (5)	10.20 (6.16)	
Elementary	64 (16)	17.18 (5.34)	
Guidance school	64 (16)	10.86 (7.54)	
High school	80 (30)	19.70 (6.41)	
Academic	173 (43)	19.88 (7.29)	
Marital status			0.012
Single	88 (22)	17.59 (7.82)	
Married	292 (73)	19.20 (7.03)	
Widow	12 (3)	17.00 (2.95)	
Divorced	8 (2)	12.00 (.00)	
Occupation			0.001
Unemployed	28 (7)	15.28 (7.19)	
Worker	12 (3)	12.33 (4.20)	
Employed	124 (31)	21.54 (7.16)	
House wife	196 (49)	18.00 (6.49)	
Self-employed	40 (10)	17.00 (7.53)	
Income			0.294
Income equal to expenditure	240 (60)	19.05 (6.98)	
Income more than expenditure	48 (12)	17.66 (7.78)	
Income less than expenditure	76 (18)	19.63 (5.79)	
	Mean (SD)	**Mean (SD) for Knowledge**	**r (P Value)**
Age (year)	41.85 (15.33)	18.67 (7.14)	0.05 (0.298)
The frequency of the consumption of vegetables in the week	3.94 (2.14)	18.64 (7.14)	-0.18 (0.001)
The frequency of the consumption of vegetables in the day	1.49 (0.95)	18.64 (7.14)	0.001 (0.982)

Table 2. The Characteristics Related to Chronic Diseases and Their Relationships with Knowledge About Complementary Medicine

Characteristics	N (%)	Mean Score of Knowledge	P Value
Type of the disease			0.001
Cardiac	17 (4.2)	20.53 (3.12)	
Endocrine	111 (27.8)	19.66 (7.62)	
Rheumatoid	164 (41)	16.57 (7.08)	
Nephrology	108 (27)	20.44 (6.42)	
Cigarette smoking			0.942
Yes	36 (9)	18.55 (8.47)	
No	356 (89)	18.64 (7.07)	
Exercise			0.005
Yes	156 (39)	16.90 (8.04)	
No	232 (58)	19.28 (6.67)	
Performing blood tests in the routine manner			0.283
Yes	228 (57)	18.80 (6.91)	
No	152 (35)	19.57 (6.89)	
Monitoring blood pressure			0.071
Yes	156 (39)	19.51 (6.60)	
No	232 (58)	18.18 (7.60)	
Information about the types of complementary medicine			0.001
Yes	172 (43)	20.74 (5.87)	
No	224 (56)	17.30 (7.44)	
	Mean (SD)	**Mean (SD) for Knowledge**	**r (P Value)**
The duration of the disease (Year)	4.01 (3.46)	18.64 (7.14)	-0.16 (0.002)
Night sleep (hour)	7.35 (1.47)	18.64 (7.14)	-0.43 (0.382)
Daily sleep (hour)	1.60 (1.69)	18.64 (7.14)	-0.97 (0.079)

References

1. Roush RA. Complementary and alternative medicine. Routledge; 2016.
2. Jonas WB, Reese ES, Beutler AI. 38 complementary and alternative. Musculoskeletal and sports medicine for the primary care practitioner. ; 2016. p. 371.
3. Laxminarayan R, Matsoso P, Pant S, Brower C, Rottingen JA, Klugman K. Access to effective antimicrobials: a worldwide challenge. *Lancet.* 2016;**387**(10014):168–75.
4. Whitebread S, Maciejewski M, Fekete A, Lounkine E, Urban L. Side effects of marketed drugs: The utility and pitfalls of pharmacovigilance. *Antitargets Drug Safe.* 2015;**66**(3).

Table 3. Knowledge About Complementary Medicine

Subscales	Minimum	Maximum	Mean	Standard Deviation
Herbal therapy	0.00	17.00	10.57	5.08
Energy therapy	0.00	7.00	1.31	1.74
Yoga	0.00	7.00	1.81	2.40
The guidance of the mind and emotions	0.00	5.00	4.17	1.33
Total knowledge	3.00	33.00	18.64	7.14

Table 4. The Correlation Matrix Between Knowledge and Attitudes About Complementary Medicine

Variables	2	3	4	5	6	7	8
Herbal therapy	0.12[a] (0.011)	0.10[a] (0.043)	0.31[b] (P < 0.001)	0.85[b] (P < 0.001)	-0.22[b] (P < 0.001)	0.49[b] (P < 0.001)	0.26[b] (P < 0.001)
Energy therapy		0.28[b] (P < 0.001)	-0.10[a] (0.045)	0.41[b] (P < 0.001)	-0.10[a] (0.032)	-0.02 (0.682)	-0.09 (0.052)
Yoga			0.21[b] (P < 0.001)	0.52[b] (P < 0.001)	-0.06 (0.235)	0.16[b] (P < 0.001)	0.10[a] (0.046)
The guidance of the mind and emotions				0.49[b] (P < 0.001)	-0.08 (0.085)	0.53[b] (P < 0.001)	0.40[b] (P < 0.001)
Total knowledge					-0.23[b] (P < 0.001)	0.52[b] (P < 0.001)	0.28[b] (P < 0.001)
The scientific validity of complementary medicine						-0.24[b] (P < 0.001)	0.52[b] (P < 0.001)
Holistic health							0.69[b] (P < 0.001)
Total attitude							

[a] Significant level of Pearson correlation coefficientis was less than 0.05.
[b] Significant level of Pearson correlation coefficientis was less than 0.01.

5. Chen L, Huang T, Zhang J, Zheng MY, Feng KY, Cai YD. Predicting drugs side effects based on chemical-chemical interactions and protein-chemical interactions. *Biomed Res Inter.* 2013.
6. Chib A. The promise and peril of mHealth in developing countries. *Mobile Media Commun.* 2013;**1**(1):69–75. doi: 10.1177/2050157912459502.
7. Lindquist R, Snyder M, Tracy MF. Complementary & alternative therapies in nursing. Springer; 2013.
8. James PB, Bah AJ. Awareness, use, attitude and perceived need for Complementary and Alternative Medicine (CAM) education among undergraduate pharmacy students in Sierra Leone: a descriptive cross-sectional survey. *BMC Complement Altern Med.* 2014;**14**:438. doi: 10.1186/1472-6882-14-438. [PubMed: 25380656].
9. Robinson MM, Zhang X. The world medicines situation 2011. Traditional medicines: global situation, issues and challenges. Geneva: World Health Organization; 2011.
10. Jane-lovena EO, Okoronkwo IL, Ogbonnaya NP. Complementary and alternative medicine use among adults in Enugu, Nigeria.. *BMC complementary and alternative medicine.* 2011;**11**(1):1.
11. Harris PE, Cooper KL, Relton C, Thomas KJ. Prevalence of complementary and alternative medicine (CAM) use by the general population: a systematic review and update. *Int J Clin Pract.* 2012;**66**(10):924–39. doi: 10.1111/j.1742-1241.2012.02945.x. [PubMed: 22994327].
12. Hwang JH, Han DW, Yoo EK, Kim WY. The utilisation of Complementary and Alternative Medicine (CAM) among ethnic minorities in South Korea. *BMC Complement Altern Med.* 2014;**14**:103. doi: 10.1186/1472-6882-14-103. [PubMed: 24641983].
13. Woo JM, Park EJ, Lee M, Ahn M, Kwon S, Koo KH. Changes in attitudes toward and patterns in traditional Korean medicine among the general population in South Korea: a comparison between 2008 and 2011. *BMC Complement Altern Med.* 2014;**14**:436. doi: 10.1186/1472-6882-14-436. [PubMed: 25380563].
14. Quan H, Lai D, Johnson D, Verhoef M, Musto R. Complementary and alternative medicine use among Chinese and white Canadians. *Can Fam Physician.* 2008;**54**(11):1563–9. [PubMed: 19005129].
15. Bhalerao MS, Bolshete PM, Swar BD, Bangera TA, Kolhe VR, Tambe MJ, et al. Use of and satisfaction with complementary and alternative medicine in four chronic diseases: a cross-sectional study from India. *Natl Med J India.* 2013;**26**(2):75–8. [PubMed: 24093979].
16. Gottschling S, Gronwald B, Schmitt S, Schmitt C, Langler A, Leidig E, et al. Use of complementary and alternative medicine in healthy children and children with chronic medical conditions in Germany. *Complement Ther Med.* 2013;**21 Suppl 1**:S61–9. doi: 10.1016/j.ctim.2011.06.001. [PubMed: 23578919].
17. Sadighi J, Maftoun F, Moshrefi M. Complementary and alternative medicine (CAM): knowledge, attitude and practice in Tehran. ; 2004.
18. 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):126–32. doi: 10.1016/j.ctim.2013.11.009. [PubMed: 24559827].
19. Hyland ME, Lewith GT, Westoby C. Developing a measure of attitudes: the holistic complementary and alternative medicine questionnaire. *Complement Ther Med.* 2003;**11**(1):33–8. [PubMed: 12667973].
20. Awad A, Al-Shaye D. Public awareness, patterns of use and attitudes toward natural health products in Kuwait: a cross-sectional survey. *BMC Complement Altern Med.* 2014;**14**:105. doi: 10.1186/1472-6882-14-105. [PubMed: 24646341].
21. Zimmerman C, Kandiah J. A pilot study to assess students' perceptions, familiarity, and knowledge in the use of complementary and al-

ternative herbal supplements in health promotion. *Altern Ther Health Med.* 2012;**18**(5):28–33. [PubMed: 22894888].
22. Gruber M, Ben-Arye E, Kerem N, Cohen-Kerem R. Use of complementary alternative medicine in pediatric otolaryngology patients: a survey. *Int J Pediatr Otorhinolaryngol.* 2014;**78**(2):248–52. doi: 10.1016/j.ijporl.2013.11.016. [PubMed: 24332665].
23. Frass M, Strassl RP, Friehs H, Mullner 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. [PubMed: 22438782].
24. Hasan SS, Ahmed SI, Bukhari NI, Loon WC. Use of complementary and alternative medicine among patients with chronic diseases at outpatient clinics. *Complement Ther Clin Pract.* 2009;**15**(3):152–7. doi: 10.1016/j.ctcp.2009.02.003. [PubMed: 19595416].
25. Callahan LF, Wiley-Exley EK, Mielenz TJ, Brady TJ, Xiao C, Currey SS, et al. Use of complementary and alternative medicine among patients with arthritis. *Prev Chronic Dis.* 2009;**6**(2):eA44. [PubMed: 19288987].
26. Barnes PM, Bloom B, Nahin RL. Complementary and alternative medicine use among adults and children: United States, 2007. *Natl Health Stat Report.* 2008(12):1–23. [PubMed: 19361005].
27. Mashhad U. First International congress on complementary and alternative medicine. ; 2016.