

Complementary and alternative medicine in pediatrics in Turkey

Candan Ozturk, Hulya Karatas, Alfred Längler, Tim Schütze, Rebekka Bailey, Tycho Jan Zuzak
Herdecke, Germany

Background: Complementary and alternative medicine (CAM) is applied both to children and adults widely throughout the world. A previous pan-European survey showed a surprisingly high CAM-use in Turkish children. This review aimed to survey information on the use of CAM in pediatrics in Turkey.

Data sources: A narrative, non-systematic review was conducted by melding expert opinions with a thorough and balanced review of available evidence. An unrestricted literature search using the key words, "alternative", "complementary", "integrative", "prevalence" and "pediatric" or "children" and "Turkey" was performed by internet search in March, 2012 using PubMed and Google Scholar.

Results: CAM use was examined in general pediatrics, pediatric oncology, patients with asthma, and patients with diabetes. A frequency of CAM use was 87% in Turkish pediatric patients, with a mean of 60%. The primary sources of information about CAM are family and friends. Communication with patients/parents and health care professionals showed that most parents do not speak about CAM use with their physicians or nurses.

Conclusions: CAM is extensively used in Turkish pediatric patients. This might be due to Turkey's status

as a developing country in which a traditional medical system still dominates in comparison to developed countries. Thus, larger studies are required to prove an extensive use of CAM in Turkey, as this review article does not have the capacity for in-depth analysis. Knowledge about CAM and its related topics is essential for physicians and nurses in order to meet the patients' wish for a competent consultation concerning all aspects of a possible therapy.

World J Pediatr 2014;10(4):299-305

Key words: acupuncture;
alternative medicine;
herbal medicine;
homeopathy;
mind-body

Introduction

Complementary and alternative medicine (CAM) is popularized in patients worldwide.^[1-5] In Europe, CAM is frequently used,^[5,6] and diverse cultural, ethnic, and historical preconditions in European countries result in broad differences in the types of CAM and the extent of CAM use in different European populations. Thus, formulating one general definition for CAM proves to be difficult. The US National Institutes of Health offer the following definition: CAM includes practices that are not an integral part of the conventional healthcare system, but are used by many patients to supplement their care.^[7]

Currently, CAM is provided primarily by general practitioners and various non-medical therapists in Europe, such as naturopaths, homeopaths, and acupuncturists, to list only a few of the most well-known types of CAM. Some efforts have been made in the last decade to explore the side-effects and potential benefits of CAM use and to improve the quality by augmenting education in CAM; however, these have primarily targeted at the use by adults.^[8-10] The increasing integration of CAM into hospitals and medical or nursing faculties has created a demand for unification and quality assurance at the European level.^[11] Despite the increasing

Author Affiliations: Istanbul Sabahattin Zaim University, Faculty of Health Sciences, Head of Nursing Department, Istanbul, Turkey (Ozturk C); Harran University, School of Health, Pediatric Nursing Department, Sanliurfa Turkiye (Karatas H); Gemeinschaftskrankenhaus, Department for Integrative Pediatric and Adolescent Medicine, Herdecke, Germany (Längler A, Zuzak TJ); University of Witten/Herdecke, Faculty of Health, Centre for Integrative Medicine, Witten, Germany (Längler A, Schütze T, Bailey R); University Children's Hospital, Department of Pediatric Oncology and Hematology, Essen, Germany (Zuzak TJ)

Corresponding Author: Tycho Jan Zuzak, Department for Integrative Pediatric and Adolescent Medicine, Gemeinschaftskrankenhaus Herdecke, Gerhard Kienle Weg 4, 58313 Herdecke, Germany (Tel: +49 2330 62 0; Fax: +49 2330 62 4744; Email: t.zuzak@gemeinschaftskrankenhaus.de)

doi: 10.1007/s12519-014-0507-8

©Children's Hospital, Zhejiang University School of Medicine, China and Springer-Verlag Berlin Heidelberg 2014. All rights reserved.

harmonization and unification of the European legislation within the European union framework, there are still different general conditions in the health policies in every EU-country.^[12,13]

Turkey, a developing country between Asia and Europe, has a main-stream medical educational system that teaches western medicine for doctors and nurses. Although CAM methods have not yet been included into the majority of the medical or nursing schools' curricula, some universities do offer education in this field. University-level curricula include courses such as "alternative medicine and treatment methods" or "definitive and alternative treatment applications", which are taught as electives. Traditional methods in the treatment of diseases are part of the content of various courses as well. For instance, an introduction to traditional applications in the culture-health relation in the course of transcultural nursing is possible. As in many developed countries, only a small number of CAM practitioners exist in Turkey for pediatric patients.^[14] There are no pediatric CAM specialists in hospitals; patients often obtain knowledge of CAM with the help of other patients or relatives. The medical staffs generally avoid directing the patient towards CAM.

CAM methods are not funded by the government, except for acupuncture. Acupuncture is applied by doctors with an "Application Certificate of Acupuncture Treatment". It is applied at private institutions and financed by the patient independently on a private basis. An "acupuncture science commission" appointed by the Ministry of Health decides which doctors are to apply acupuncture for which diseases. The academic members who conduct scientific studies on acupuncture at universities and doctors who apply it are appointed to this commission for three years. Treatments (herbal/phytotherapy treatments) other than acupuncture are often suggested by individuals who are neither doctors nor medical staffs. CAM practitioners, primarily educated outside of Turkey, are usually herbalists offering alternative treatments involving plant products. Although several studies have been carried out in developed countries, unfortunately in Turkey there is only limited information about the general approach among health care professionals regarding CAM. Nevertheless, data from our pan-European survey allows the assumption that various CAM treatments were used for up to 90% in Turkish children, whereas the mean use in Europe was 52%.

The role of CAM in the Turkish health system is unclear. An exclusive literature collection where these descriptive and experimental studies regarding the pediatric use of CAM are assessed collectively is not available. Its use in children and its stakeholders

in CAM have never been described previously in a comprehensive review. Therefore, the present study aimed to examine the frequency of CAM use, indications for CAM use, use of different therapies, and factors influencing CAM use in children in Turkey. Local experts in this field of medicine were asked to give a narrative overview of CAM use and its facilities and to describe the every-day CAM practice in pediatrics.

Methods

A narrative, non-systematic review was assembled by combining expert opinions with a thorough and balanced review of available evidence from the literature. An unrestricted literature search using the key words, "alternative", "complementary", "integrative", "prevalence" and "pediatric" or "children" and "Turkey" was performed by internet search in March, 2012 using PubMed and Google Scholar. Articles were examined in terms of frequency of CAM use, indications for CAM use, use of different therapies and factors influencing CAM use in children. Furthermore, known local pediatric CAM experts were selected, based on their previous CAM related publications in Turkey. The experts were asked to provide articles and information in their native language about pediatric CAM use in their country, making it possible to include their experience with the healthcare system and healthcare policy in Turkey. Additionally, integration of CAM within different levels of healthcare and its legal aspects were described. In addition to information from Turkish peer-reviewed and local journals, first-hand experience reports from Turkish pediatric CAM experts were considered. These delivered valuable information which had been published neither in English nor in indexed journals.

Results

In this review, 11 studies on CAM in children that had been published in the past ten years (Table) were analyzed. The examined studies referred to different fields of pediatrics. The studies of Ozturk et al,^[15] Araz et al,^[16] Bülbul et al,^[17] Taşar et al^[25] and Bozkaya et al^[19] referred to general pediatric patients whereas Kaya et al^[20] and Orhan et al^[18] examined CAM use in pediatric patients with asthma. One study^[21] referred to children with type 1 diabetes mellitus. Three studies^[22-24] reported pediatric patients with cancer and their use of CAM. The studies of Bülbul et al,^[17] Kaya et al,^[20] Tasar et al^[26] and Bozkaya et al^[19] are available in Turkish only. The other 7 studies are published in English.

Table. Surveys of complementary and alternative medicine (CAM) use in children in Turkey

Place and Reference	Sample	Clinic -polyclinic -healthcare center	Data collection methods	CAM use	CAM therapies	Information resource of CAM	Use of CAM with socio-demographic attributes	Information status of the medical staff
Izmir ^[15]	600 children	Outpatients	Questionnaire, face to face interview	57%	76.7% herbal therapy, 7.4% prayer, 5.9% megavitamins, 2.9% hot/cold applications, 2.7% massage, 2.7% aromatherapy, 1.7% others	55.2% family members, 16.2% friends, 17.4% pediatrician, 2.7% nurses, 8.5% others (pharmacist, media, internet)	Significant difference based on the level of education, place of residence, the number of children in the house and CAM use by parents	51% parents informed the doctor 32% parents informed the nurse
Gaziantep ^[16]	268 children	Outpatients	Questionnaire	59%	82.7% herbal preparations,	52.5% mother, 20% neighbors, 14.7% friends, 12.8% doctors	Significant difference based on the level of education; other factors not significant	
Kırıkkale and Ankara ^[17]	477 children	-	Questionnaire, face to face interview	26.1%	82.6% spa/thermal spring, 21.2% herbal tea, 14.9% acupuncture, 5.7% massage, 2.1% bio-energy	31.1% mothers, 21.9% friends, 6.5% doctors, 8.7% TV/newspaper/magazine	Significant difference based on employment status and the age of the child	21.2% parents informed the doctor
Ankara ^[18]	500 children	Outpatients	Questionnaire, face to face interview	87%	Most common alternative treatment methods 31% herbal tea, 28% olive/almond oil	60% relatives, 37% others, 2% health personnel	Significant difference based on the level of education of parents and CAM use	
Izmir ^[19]	186 children	Outpatients		76%	39% herbal tea		No difference	
Istanbul ^[20]	253 children with bronchial asthma	Outpatients	Questionnaire	67%	44.3% quail eggs, 39.1% herbal therapy, 28.4% animal assisted therapy, 32.5% both therapies	26% friends 18.9% family, 6.5% health & food shops, 1.2% written and visual media, 47.3% others	Factors other than age, income status, the use of CAM by the parent are ineffective	
Ankara ^[18]	304 children with asthma	-	Questionnaire	49%	79% quail eggs, 31% herbal medicine, 26% Turkish wild honey, 5% speleotherapy and 5% royal jelly	61% friends, 25% relatives, 9% media 6% doctors	No difference	
Erzurum ^[21]	100 children with type 1 diabetes	Outpatients	Questionnaire, face to face interview	52%	59.6% herbal preparations -		No difference	69.2% parents did not inform the medical staff
Erzurum ^[22]	88 children with cancer	Outpatients and inpatients	Questionnaire, face to face interview	48.9%	90.7% herbal medicine, 18.6% spiritual healing, 7.7% diet, 4.7% massage	members, 79.1% friends or family 14% parents	No difference	27.9% parents informed the doctor or the nurse
Ankara ^[23]	95 children with cancer	Inpatients	Questionnaire, face to face interview	51.6%	71.4% herbal medicine and biologic intake (stinging nettle, plant essence, Anzer honey), 40.8% religious therapy, 2% water therapy, 2% vitamins, 2% spider's web, 2% frog blood	40.8% relatives, 22.4% friends, 12.3 other patients, 10.2% TV, radio, 14.3% others	No difference	92% parents neither informed the doctor nor the nurse
Izmir ^[24]	112 children with cancer	Outpatients and inpatients	Questionnaire, face to face interview	77%	92% herbal therapy (63% nettle, 29% salvia officinalis), 28% vitamin or supplements, 12% others (bee pollen, bee milk, lime, Anzer honey), 8% turtle or frog blood, 55% prayer	49% close friends, 43% relatives, 22% the media	No difference	26% parents informed the doctor

"-": not specified.

Frequency of CAM-use

The mean value of CAM use in all reviewed studies was 60% (standard deviation±17%, range: 26%-87%). Three large-scale cross-sectional surveys were performed at pediatric outpatient clinics of three hospitals in the city of Izmir and at several health

centers and clinics in the central Ankara region. Ozturk et al^[15] evaluated 600 face-to-face interviews with parents and found that 57% of the parents ($n=339$) had given their children one or more CAM treatment during their lifetime. Most often the parents selected CAM for the treatment of respiratory (49%) or digestive

(25%) diseases of their children. Tasar et al^[26] evaluated 500 face-to-face interviews with low-income parents (children age between 0-15 years) and found that 87% of the parents ($n=435$) stated that they used CAM and 52% of parents used it in the neonatal period of their children.^[25] The most frequent indication for CAM treatment was constipation (56.4%; $n=282$). The authors stated that 31% of parents used herbal tea and 28% used olive/almond oil without a doctor's recommendation. Bülbül et al^[17] stated that among 477 parents, 27% used herbal products without a doctor's recommendation for their children during the year.^[17] Most of the products were used in children with cough (23%) and colic (15%) besides constipation (31%). Bozkaya et al^[19] evaluated 186 parents (children aged between 2 months-17 years) and found that 75.8% ($n=141$) of the parents stated that they used CAM methods.^[19] Herbal teas were most frequently preferred (39%). Kaya et al^[20] and Orhan et al^[18] examined the use of CAM among children with asthma.^[18,20] Kaya et al^[20] found that among 253 investigated pediatric patients with asthma, 67% used CAM treatments, whereas Orhan et al^[18] reported a CAM use rate of 49% ($n=150$) among 304 asthmatic children. One study looked at pediatric patients with type 1 diabetes mellitus treated at the endocrine outpatient clinic of Yakutiye Research Hospital in Erzurum, Eastern Turkey.^[21] Arýkan et al^[21] revealed that within a study group of 100 children, 52% reported the use of one or more CAM treatments.

Gözüm et al^[22] reported 88 pediatric cancer patients in a descriptive cross-sectional study performed at an outpatient clinic at the Yakutiye Hospital at Erzurum, Eastern Turkey. Most frequently reported cancer diagnoses in the pediatric patients were acute leukemia (53%) and lymphomas (17%). The authors stated that 49% of the children used CAM. Karadeniz et al^[23] carried out a survey on 95 children with cancer treated at the Department of Pediatric Oncology of a hospital in Ankara. Similar to the findings of Gözüm et al,^[22] this study revealed a frequency of 52% for CAM use among the pediatric cancer patients. The use of more than one type of CAM was stated by 20% of the patients. Genc et al^[24] conducted a descriptive cross-sectional study on 112 pediatric cancer patients. Oncology diagnoses showed mostly leukemia (44%), other solid tumors (29%) and lymphoma (27%). Of the 112 pediatric patients with cancer, 77% ($n=86$) reported the use of at least one CAM.

Specific CAM treatments

All three studies dealing with pediatric cancer patients revealed that herbal preparations and medicine are the most commonly used CAM therapies. Gözüm et al^[22] reported that 91% (39 of 43) of the CAM users applied

herbal medicine. Stinging nettle was the herb that was taken most frequently in this study group. Genc et al^[24] revealed similar results, i.e., 92% of the pediatric cancer patients applied herbs. Primarily, 63% (54 of 86) of the CAM users applied stinging nettle, followed by the use of *Salvia officinalis* in 29% (25 of 86) of the cases and vitamins or supplements in 28% (24 of 86) of the CAM users. Prayer was used by more than half (55%; 47 of 86) of the patients using CAM. Karadeniz et al^[23] supported these findings: 71% (35 of 49) of the pediatric cancer patients using CAM applied herbal medicine, primarily stinging nettle (29%). Secondly, 41% (20 of 49) of the children used religious therapies. These included religious-man prayer, votive offering and tomb visit.

In general pediatrics, Ozturk et al^[15] revealed that similar to the findings mentioned above, most of the children, i.e. 77% (260 of 339), used herbal therapies in the field of CAM. Bülbül et al^[17] showed that the use of thermal water was the most commonly used CAM therapy in their patients, and 83% of the children used it. Tasar et al^[26] and Bozkaya et al^[19] showed that the use of herbal therapies was 31% and 39% in the field of CAM. In the specific treatment of childhood asthma, the authors found that 44% and 79% of the children with asthma used quail eggs as the most frequent CAM method.^[18,20] Carob, chestnuts and honey were also used by some of the sick children. Equivalent to findings mentioned before, 60% (31 of 52) of the patients in the children with type 1 diabetes mellitus used herbal medicine.^[21] Again stinging nettle was one of the most frequently used herbs in addition to *Aloe vera* and *Marus alba* leaves.

Factors associated with CAM use

All studies inspected sociodemographic characteristics of the children and their parents as well. The discrepancies they exhibit might reflect a heterogeneous sociodemographic situation, characteristic for many developing countries. Five of these studies showed a statistically significant correlation between the age of parents and their children, parental education, occupation or gender in choosing CAM therapies. Kaya et al^[20] reported the mean age of children with asthma undergoing additional CAM treatment was significantly higher than that of children with no CAM treatment. They found that parents with lower income were more likely to apply CAM. Similarly, Arýkan et al^[22] also found that the use of CAM decreased with the increased educational level of mothers. On the contrary, Ozturk et al^[15] stated that parents who graduated from universities were inclined to use CAM for their children and that those living in cities and having only one child were more likely to use CAM treatments. Gözüm et al^[22] and

Kaya et al^[20] found that CAM use was more frequent in children with cancer for a longer period than in those with cancer for a shorter period. These studies showed that a large number of children used CAM if their parents had previously had been subjected to CAM treatment themselves.^[15,27]

Source of information about CAM treatment

The question where the parents obtained the information about CAM treatment for their children was answered homogeneously in the eleven surveys. In 79% of the cases, friends and relatives were recognized as the most important source of information about CAM. And 2% to 17% of the parents obtained information about CAM from physicians or nurses.^[14-16] Another source of information on CAM treatment was the media, including Internet and TV.

Parental expectations of CAM treatment

The different parental expectations of CAM treatment are focused on the treatment of underlying diseases. Arýkan et al^[21] found that in children with type 1 diabetes mellitus, most of their parents hoped to decrease the blood glucose level, relieve leg aches or give psychological comfort. Some parents even hoped to cure the diabetes. The parents whose child was undergoing cancer treatment expected CAM treatment to boost the immune system, clean the blood and cure the cancer. Their hope was doing everything possible for their child by using CAM methods.

Communication between parents/patients and physicians about CAM

Ozturk et al^[15] asked patients whether it is important to inform their physicians about the additional use of CAM. They found that 71% of the parents considered that it is important to inform the physicians of their children about CAM treatment. The results of the eleven surveys showed that 49% to 92% of the parents did not inform the pediatricians about CAM use in their children. Arýkan et al^[21] asked the parents the reasons for non-disclosure and reported that 42% of the parents were afraid that the healthcare team would not treat their child if they knew of the CAM use. Thirty-three percent of the parents stated to be too embarrassed to report the use of CAM, whereas 25% worried that physicians or a healthcare team would be angry about the use of CAM.

Discussion

The analysis of recently published studies enables us to close a gap in the field of CAM and its world-wide use.

We found that the frequency of CAM use in Turkish pediatric patients is up to 87%^[24] with a mean of 60%. This is in contrast to surveys in other countries. The prevalence of CAM use in Europe, for example, may be 52%. In Israel, a recent study conducted in 2010 supported the European data.^[28] At five conventional primary care clinics, 319 patients were analyzed and 35% of pediatric patients reported the use of CAM. In 2011, another recently published study on 69 Jordanian pediatric patients showed a prevalence of 65% for CAM use in children.^[29] The study results from Canada^[30] and the US^[31,32] showed that the rates of CAM use in pediatric patients were between 25% and 49%. Equally high rates have been found in cancer patients only. A study (2011) on 44 American children with cancer revealed a high frequency of 82% for CAM use in the diseased children.^[33] Hamidah et al^[34] even reported a higher rate of 85% for CAM use in pediatric cancer patients. Thus, the rate of CAM use in Turkey seems to be higher than that in other countries. The reason might be Turkey's status as a developing country in which a traditional medical system still dominates as compared to other developed countries. As previously mentioned, a structured review is not a sufficient proof for this hypothesis.

While defining CAM specifically for Turkey clearly needs to be the subject of future research, a certain trend seems to be apparent already. When inspecting the CAM methods used in Turkey, it is evident that the majority of CAM users applied herbal medicine. Figures for the use of herbal preparations range from 60%^[21] in children with type 1 diabetes to 92%^[24] in pediatric cancer patients. The most frequently used herb is the stinging nettle.^[22-24] The studies all inspected sociodemographic characteristics of the treated children and their parents, which, through the discrepancies exhibited in the results, might reflect a heterogeneous sociodemographic situation characteristic for many developing countries. On one hand, factors associated with CAM use are the age of the pediatric patient, the level of parental education, and income of the parents or prior CAM experience in the family. In the analysis of the surveys from Turkey, a study described that the mean age of children with asthma receiving additional CAM treatment was significantly higher than that of the non-user group.^[20] On the other hand, contrasting results show that the parents' or child's age, parental education or occupation as well as the child's gender do not play a role in CAM use. An American study showed similar results as Kaya et al^[20] reported that there was a higher rate of CAM use in children over the age of five years compared with those aged four years or younger.^[35] Kaya et al^[20] and Ozturk et al^[15] showed that prior parental CAM use is associated

with a statistically higher CAM use in children. The discrepancies in factors influencing CAM use and the potential linkage to sociodemographic differences in a developing country have become obvious and elicit in-depth research and discussion.

Martel et al^[30] showed that CAM use in children is frequently associated with prior CAM use in the family. Nathanson et al^[32] in 2007 reported that parents who themselves used six or more CAM therapies were 33 times more likely to use CAM for their children compared with those who did not use CAM. Studies from Israel and Germany also reported a positive association between prior CAM use in the family and prior positive attitude towards CAM and its use in children.^[36,37]

Regarding where parents received the information about CAM treatment, we found that family members, relatives, and friends were the primary source of information in most cases. Karadeniz et al^[23] reported that 92% of the parents did not inform the treating oncologists about the use of CAM. Längler et al^[37] confirmed this finding in their study on 367 pediatric cancer patients in Germany. They found that in 70% of the cases, parents received information about CAM from family members or friends. In the US family members and friends are the primary source of information in 59% of the cases,^[38] whereas in Mexico the primary information about CAM came from family members accounting for 44%, followed by friends for 32%.^[39] The review of the eleven surveys showed that about 17% of the cases received information about CAM use from physicians. This might be due to less communication about CAM between parents and physicians. But the parents have great expectations for the CAM treatment of their children. The expectations range from symptom-relief to a complete cure of the underlying disease, for example cancer. Therefore it is necessary to stress the importance of CAM use among the members of the medical team, especially the physicians and nurses. The growing social interest in CAM use raises many questions for the patients. Therefore, physicians and nurses need to be educated to handle the CAM related issues. The patients need a competent partner to guide them through the crowded and sometimes confusing CAM market. CAM should become part of the consultation between a patient and a doctor. And it is necessary to integrate education about CAM modalities, especially those that are frequently used in the Turkish society such as herbal medicine, into the medical curriculum for future physicians and nurses. More information might aid physicians in acknowledging and respecting patient's use of CAM. A clear definition of CAM and future in-depth study on parent's nondisclosure of CAM use to treating physicians as well

as CAM use in relation to income and education is of great significance for the improvement of education and the well-being of children.

Acknowledgements

The authors thank all researchers who worked on pediatric CAM in Turkey.

Funding: There was no funding.

Ethical approval: No ethics approval was required.

Competing interest: The authors declare that there is no conflict of interests regarding the publication of this paper.

Contributors: OC and KH collected data, studies in Turkish language and wrote some parts of the draft. LA and ZTJ analyzed the data, contributed to the design and interpretation of the study and to further drafts. ST analysed data and wrote main parts of the first draft of this paper. BR wrote further parts of the draft and revised its. All authors contributed to the intellectual content and approved the final version.

References

- Eisenberg DM, Kessler RC, Foster C, Norlock FE, Calkins DR, Delbanco TL. Unconventional medicine in the United States. Prevalence, costs, and patterns of use. *N Engl J Med* 1993;328:246-252.
- Fisher P, Ward A. Complementary medicine in Europe. *BMJ* 1994;309:107-111.
- MacLennan AH, Wilson DH, Taylor AW. Prevalence and cost of alternative medicine in Australia. *Lancet* 1996;347:569-573.
- Astin JA. Why patients use alternative medicine: results of a national study. *JAMA* 1998;279:1548-1553.
- Molassiotis A, Fernandez-Ortega P, Pud D, Ozden G, Scott JA, Panteli V, et al. Use of complementary and alternative medicine in cancer patients: a European survey. *Ann Oncol* 2005;16:655-663.
- Zuzak TJ, Boňková J, Careddu D, Garami M, Hadjipanayis A, Jazbec J, et al. Use of complementary and alternative medicine by children in Europe: Published data and expert perspectives. *Complement Ther Med* 2013;21 Suppl 1:S34-47.
- NCCAM. Complementary, Alternative, or Integrative Health: What's In a Name? 2002. <http://www.nccam.nih.gov/health/whatiscam> (accessed January 4, 2014).
- Kemper KJ, Vohra S, Walls R; Task Force on Complementary and Alternative Medicine; Provisional Section on Complementary, Holistic, and Integrative Medicine. American Academy of Pediatrics. The use of complementary and alternative medicine in pediatrics. *Pediatrics* 2008;122:1374-1386.
- Brinkhaus B, Joos S, Lindner M, Kohnen R, Witt C, Willich SN, et al. Integration of complementary and alternative medicine into German medical school curricula-contradictions between the opinions of decision makers and the status quo. *Forsch Komplementarmed Klass Naturheilkd* 2005;12:139-143.
- Jobst D, Niebling W. Naturopathic methods as part of the academic curriculum and the role of general practice. *Forsch Komplementarmed Klass Naturheilkd* 2005;12:272-276. [In German]
- CAMBrella, 2011. <http://www.cambrella.eu/home.php> (accessed January 4, 2014).

- 12 WHO launches the first global strategy on traditional and alternative medicine. *Cent Eur J Public Health* 2002;10:145, 156.
- 13 Pritchard-Jones K, Lewison G, Camporesi S, Vassal G, Ladenstein R, Benoit Y, et al. The state of research into children with cancer across Europe: new policies for a new decade. *Ecancermedalscience* 2011;5:210.
- 14 Längler A, Zuzak TJ. Complementary and alternative medicine in paediatrics in daily practice--a European perspective. *Complement Ther Med* 2013;21 Suppl 1:S26-33.
- 15 Ozturk C, Karayagiz G. Exploration of the use of complementary and alternative medicine among Turkish children. *J Clin Nurs* 2008;17:2558-2264.
- 16 Araz N, Bulbul S. Use of complementary and alternative medicine in a pediatric population in southern Turkey. *Clin Invest Med* 2011;34:E21-29.
- 17 Bülbül SH, Turgut M, Köylüoğlu S. Parents' views about alternative practices in children. *Turkish J Pediatr* 2009;52:195-202. [In Turkish]
- 18 Orhan F, Sekerel BE, Kocabas CN, Sackesen C, Adalioglu G, Tuncer A. Complementary and alternative medicine in children with asthma. *Ann Allergy Asthma Immunol* 2003;90:611-615.
- 19 Bozkaya ÖG, Akgün İ, Birgi E, Çinkoğlu A, Gög K, Karadeniz D. Practice of alternative medicine in childhood by parents. *J DEU Med Faculty* 2008;3:129-135. [In Turkish]
- 20 Kaya Y, Ergüven M, Tekin E, Özdemir M, Hamzah ÖY. Use of alternative treatment methods in children with asthma bronchiale in our region. *J Child* 2009;9:84-89. [In Turkish]
- 21 Arýkan D, Sivrikaya SK, Olgun N. Complementary alternative medicine use in children with type 1 diabetes mellitus in Erzurum, Turkey. *J Clin Nurs* 2009;18:2136-2144.
- 22 Gözümlü S, Arikan D, Büyükcavci M. Complementary and alternative medicine use in pediatric oncology patients in eastern Turkey. *Cancer Nurs* 2007;30:38-44.
- 23 Karadeniz C, Pinarlı FG, Oğuz A, Gürsel T, Canter B. Complementary/alternative medicine use in a pediatric oncology unit in Turkey. *Pediatr Blood Cancer* 2007;48:540-543.
- 24 Genc RE, Senol S, Turgay AS, Kantar M. Complementary and alternative medicine used by pediatric patients with cancer in western Turkey. *Oncol Nurs Forum* 2009;36:E159-164.
- 25 Taşar MA, Bostancı I, Karabulut B, Dallar Y. A rare extrahepatic syndrome related to acute hepatitis type B: epididymitis in an adolescent. *Acta Gastroenterol Belg* 2005;68:270-271.
- 26 Tasar MA, Potur ED, Kara N, Bostancı İ, Dallar Y. The complementary or alternative medicine practices in children of low-income families: data of Ankara Hospital. *Turkish J Pediatr Dis* 2011;5:81-88. [In Turkish]
- 27 Kaya AO, Coskun U, Buyukberber S, Benekli M, Tekin E, Cifter C, et al. Efficacy and toxicity of preoperative chemotherapy with docetaxel and epirubicin in locally advanced invasive breast cancer. *J BUON* 2010;15:248-254.
- 28 Ben-Arye E, Traube Z, Schachter L, Haimi M, Levy M, Schiff E, et al. Integrative pediatric care: parents' attitudes toward communication of physicians and CAM practitioners. *Pediatrics* 2011;127:e84-95.
- 29 Al-Qudimat MR, Rozmus CL, Farhan N. Family strategies for managing childhood cancer: using complementary and alternative medicine in Jordan. *J Adv Nurs* 2011;67:591-597.
- 30 Martel D, Bussi eres JF, Th eor et Y, Lebel D, Kish S, Moghrabi A, et al. Use of alternative and complementary therapies in children with cancer. *Pediatr Blood Cancer* 2005;44:660-668.
- 31 Gagnon EM, Recklitis CJ. Parents' decision-making preferences in pediatric oncology: the relationship to health care involvement and complementary therapy use. *Psychooncology* 2003;12:442-452.
- 32 Nathanson I, Sandler E, Ram rez-Garnica G, Wilttrout SA. Factors influencing complementary and alternative medicine use in a multisite pediatric oncology practice. *J Pediatr Hematol Oncol* 2007;29:705-708.
- 33 Paisley MA, Kang TI, Insogna IG, Rheingold SR. Complementary and alternative therapy use in pediatric oncology patients with failure of frontline chemotherapy. *Pediatr Blood Cancer* 2011;56:1088-1091.
- 34 Hamidah A, Rustam ZA, Tamil AM, Zarina LA, Zulkifli ZS, Jamal R. Prevalence and parental perceptions of complementary and alternative medicine use by children with cancer in a multi-ethnic Southeast Asian population. *Pediatr Blood Cancer* 2009;52:70-74.
- 35 Neuhouser ML, Patterson RE, Schwartz SM, Hedderson MM, Bowen DJ, Standish LJ. Use of alternative medicine by children with cancer in Washington state. *Prev Med* 2001;33:347-354.
- 36 Weyl Ben Arush M, Geva H, Ofir R, Mashlach T, Uziel R, Dashkovsky Z. Prevalence and characteristics of complementary medicine used by pediatric cancer patients in a mixed western and middle-eastern population. *J Pediatr Hematol Oncol* 2006;28:141-146.
- 37 Laengler A, Spix C, Seifert G, Gottschling S, Graf N, Kaatsch P. Complementary and alternative treatment methods in children with cancer: A population-based retrospective survey on the prevalence of use in Germany. *Eur J Cancer* 2008;44:2233-2240.
- 38 Friedman T, Slayton WB, Allen LS, Pollock BH, Dumont-Driscoll M, Mehta P, et al. Use of alternative therapies for children with cancer. *Pediatrics* 1997;100:E1.
- 39 Gomez-Martinez R, Tlacuilo-Parra A, Garibaldi-Covarrubias R. Use of complementary and alternative medicine in children with cancer in Occidental, Mexico. *Pediatr Blood Cancer* 2007;49:820-823.

Received July 22, 2013

Accepted after revision May 28, 2014