

## ORIGINAL ARTICLE

## Cross-Sectional Survey on Complementary and Alternative Medicine Awareness among Health Care Professionals and Students Using CHBQ Questionnaire in a Balkan Country\*

Mihajlo B Jakovljevic<sup>1,5</sup>, Vera Djordjevic<sup>2</sup>, Veroljub Markovic<sup>3</sup>, Olivera Milovanovic<sup>3</sup>, Nemanja K Rancic<sup>4</sup>, and Snezana M Cupara<sup>3</sup>

**ABSTRACT** **Objective:** To conduct a study on attitudes, knowledge, and use of complementary and alternative medicine (CAM) therapies in Serbia. Available data about CAM therapies in the region are scarce, opinions lacking from health sector. Balkan region countries had a delay in issuing national policies on CAM therapies. **Methods:** The questionnaire used was based on previously validated CAM Health Belief Questionnaire (CHBQ), formulated as 5-item Likert type scale, adjusted for local environment. Health care students and professionals were evaluated. The questionnaire comprehended 10 closed questions on attitudes, knowledge and use of CAM therapies. This survey was conducted in eight cities of Serbia, January 2010-July 2011. A total of 797 participants was included. The second group of participants was 145 healthcare professionals (50 academic staff, 64 clinical staff, 19 pharmacists, 6 other clinical branch specialists and 6 nurses). Data were collected by an interview. Examinees could acquire maximum of 70 points, 35 representing neutral attitude. **Results:** Students of dentistry ( $54.65 \pm 6.07$ ) were better informed on CAM therapies than medicine students ( $50.26 \pm 7.92$ ). Pharmacy students ( $51.16 \pm 7.10$ ) accepted low-scientific CAM. Pharmacists scored better than university professors ( $55.12 \pm 6.55$  vs.  $50.29 \pm 9.50$ ). Primary health care professionals had better awareness than pharmacists in dispensing pharmacies. Both groups of participants preferred use of vitamins over any other CAM therapy. **Conclusion:** These pioneering efforts in the region exposed weaknesses in CAM attitudes of current and future health care professionals. Nevertheless, awareness on alternative medicine treatment choices is growing among Balkan prescribers. Supportive legal framework would facilitate dissemination of CAM medical practices.

**KEYWORD** survey, complementary and alternative medicine, health care students, health care professionals, complementary and alternative medicine health belief questionnaire

Complementary and alternative medicine (CAM) therapies are practiced in many parts of the world, in spite of the significant differences that exist in regards to CAM practice, prevalence, legislation, education, safety, efficacy, etc. National Center for Complementary and Alternative Medicine defines CAM as a "broad domain of healing resources that encompasses all health systems, modalities and practices and their accompanying theories and beliefs, other than those intrinsic to the politically dominant health system of a particular society or culture in a given historical period". CAM includes all such practices and ideas self defined by their users as preventing or treating illness or promoting health and well-being".<sup>(1)</sup>

Growing interest for using CAM therapies was initiated by patients in Europe, USA, and Australia, resulting in insurance coverage for some CAM therapies. Therefore, evaluation of awareness and use on CAM becomes even more important in less

developed countries, due to the limits that their health budget faces.<sup>(2,3)</sup>

Recognizing a need for addressing issues related to use of CAM therapies was in the delay in most of the Balkan countries. As a consequence of many different political systems and changes in the

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1. Department of Pharmacology and Toxicology, The Faculty of Medical Sciences University of Kragujevac, Serbia; 2. Su Djok, Balkan Su Jok Therapy Center, Serbia; 3. Department of Pharmacy, The Faculty of Medical Sciences University of Kragujevac, Serbia; 4. Centre for Clinical Pharmacology, Medical Faculty, Military Medical Academy, University of Defence, Belgrade, Serbia; 5. Graduate School of Economics, Hosei University, Tokyo, Japan

Correspondence to: Dr. Mihajlo B. Jakovljevic, Tel: 381-34-306800 Ext 223, E-mail: jakovljevicm@medf.kg.ac.rs

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countries located on Balkans peninsula in the second half of the 20th century, there was no legal framework for CAM therapies.

There has been a lack of scientific research on CAM therapies in this region over the last 10 years. Data are available only for two countries, out of eight of them located fully or mostly on Balkans (Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Macedonia, Serbia, and Montenegro). Pro and contra opinions on CAM therapies were noted in 2004,<sup>(4,5)</sup> the first statistics on CAM use (among cancer patients in Greece) appeared in 2005, followed by a survey on CAM use in Croatia in 2008.<sup>(6,7)</sup> Considerable research on CAM was done during last 10 years only in countries considered geographically just outside of Balkans-Italy and Turkey.<sup>(8-10)</sup> In addition, no surveys or relevant data have been published on the use of acupuncture or homeopathy, which in some Balkan countries were practiced for more than 30 years. Research in this domain is not thoroughly investigating patients' attitude, neglecting health sector inclinations towards CAM, e.g., an Italian study showing that almost 9 million people in Italy used at least one non-conventional therapy during 1997–1999.<sup>(8)</sup>

The aim of this study was to conduct a survey, the first of this type in the region, on attitudes, knowledge, and use of CAM therapies among present and future health professionals in Serbia. We intended to examine both health professionals and students of medicine, pharmacy and dentistry schools of several state universities.

This region was selected due to unique historical set of circumstances among other Balkan countries. CAM therapies were not considered an official way of practicing medicine during communist time and different health care professionals in Serbia were showing open skepticism towards it. Unlike some Western countries or Soviet Union at that time, which legally allowed practicing acupuncture, homeopathy or chiropractics, health practitioners in Serbia were not familiar with many of CAM therapies and were not allowed to practice it. Patients unsatisfied by conventional medicine or those searching for safer treatment, induced sporadic treatments in the last decade of the 20th century. Treatments of acupuncture were given between 1990–1999, when some of CAM therapies were also illegally practiced. During communist time

no medical or pharmacy school had any CAM subject included in curricula. Situation has not changed much even now, since all 4 state universities still do not teach CAM subjects in medical and pharmacy schools. The only exception to this rule is the discipline of pharmacognosy. It is the only complementary medicine field of research officially studied within university level education in health sciences throughout Balkan universities. The underlying reason of this phenomena is long historical tradition of medicinal plant therapeutic application in the region.

National policies on CAM therapies were absent in many countries in the world within last ten years, according to the WHO reports.<sup>(11)</sup> CAM therapy as a term was for the first time legalized by health care law in Serbia in 2005, acquiring the definition of "traditional medicine". In December of 2007, the complete guide for practicing diagnostic, healing and nine rehabilitation methods was endorsed by Ministry of Health. Starting from that time, CAM therapies in Serbia could be practiced exclusively by health professionals (medical doctors, dentists, pharmacists and nurses) in both private and state health care institutions.<sup>(12)</sup>

This study is to note opinion of health care professionals on CAM. Authors have tried to investigate wide population of present and future health professionals extending the research on medical doctors, pharmacists, dentists and health care students. Diversity of the sample (different cities, different employees within health care system, different specialty of medical staff, different universities) makes this study unique for Serbia and Balkan region.

## METHODS

The survey was conducted in 8 cities from January 2010 to July 2011. The sample population consisted of both male and female medical doctors, dentists, and pharmacists, employed in both public and private health care facilities. It also included undergraduate students attending schools of medicine, dentistry and pharmacy of 2 state universities. All participants were randomly selected and given both written and oral information about the study. A written consent for participation was obtained from each participant. The ethical considerations were in accordance with the Declaration of Helsinki.<sup>(13)</sup> The confidentiality of each participant was strictly ensured throughout the project. The study was approved by

the Ethical Committee of Medical Faculty, University of Kragujevac, Serbia, nr. 01-994/1.

We have developed our own questionnaire according to the recent methodological literature.<sup>(14,15)</sup> The basis for our questionnaire was previously published and validated 10-item CAM health belief questionnaire (CHBQ), which showed to be practical and reliable instrument, used with success for attitude-belief assessment.<sup>(16)</sup> CHBQ was formulated as 5-item scale, in case of this research standardized and validated after translation into Serbian language.<sup>(16)</sup> Authors have listed 32 CAM methods—24 officially recognized by Serbian Ministry of Health and other 8 currently practiced by local health care professionals,<sup>(12)</sup> with intention to evaluate the use of each specific CAM therapy.

The questionnaire contained 2 sections. First section comprehended demographic data of participants. Different information was collected from the investigated groups. Health care employees were asked the name of affiliated institution and specific health profession, while students were asked the name of university, academic program, and attending year.

The second section of questionnaire was composed of 10 closed questions addressing attitudes, beliefs, and knowledge of CAM therapies. Questions were part of a 5-point Likert scale, range being "1-agree", "2-partially agree", "3-do not have opinion", "4-partially do not agree", "5-do not agree". Each interviewed participant was asked to mark method that he/she has been using or prescribing during previous experience. Original questionnaire in Cyrillic alphabet is available from the first author (Mihajlo B Jakovljevic).

Responses to CHBQ were related to the score in a such manner so that higher scores of the questions numbered 1–5, 9–10 and the lower scores of questions 6–8, indicated more positive attitude. Questions numbered 6–8 were stated negatively in order to obtain the minimum acquiescence. Examinees could acquire 70 points as maximum, 35 midpoints representing neutral attitude.

There were 145 participants employed within public and private primary care health care institutions (dispensaries, pharmacies, dental offices), randomly selected throughout the country. And 652 students attending different years of medical, dentistry or

pharmacy curricula, at two state universities, were examined.

Data were collected by face-to-face interview of 10–15 min. Before each interview, a participant was given the definition of CAM therapies.<sup>(1)</sup> The interviewer was a medical doctor, but not an employee of the institution which the participant was affiliated to.

### Statistical Analysis

Descriptive analysis was employed with categorical variables expressed as a percentage value. Continuous variables were reported as mean value  $\pm$  standard deviation. Analysis and graphics were performed by SPSS Statistics 18.0 IBM and Microsoft Excel. Having a non-homogeneous sample, we tested significance of difference by Mann-Whitney test, with a marginal value  $<0.05$ .

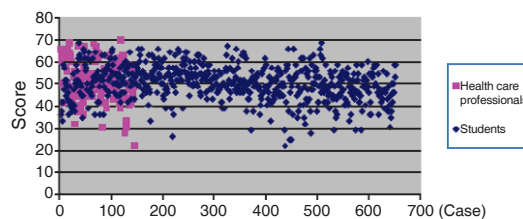
## RESULTS

The evaluated sample included 797 examinees. Response rate among professional health care employees was 75% and among students 90%.

Structure of the undergraduate health care student sample was: 488 (75%) medicine, 137 (21%) pharmacy and 27 (4%) dentistry. In regards to the level of academic progress, there were 45% of students attending 1st-6th semester, and 55% attending last 7th-12th semester.

There were 145 health care employees, 50 of which were members of academic staff (comprehending all academic levels from teaching assistants to full time professors), 64 members of clinical staff (general practitioners, internal medicine, gynecology, dermatology, and gastroenterology specialists), 19 pharmacists, 6 other clinical branch specialists (psychologists, toxicologists, biologists, dentists) and 6 nurses.

All participants acquired CHBQ score above the midpoint (Figure 1).



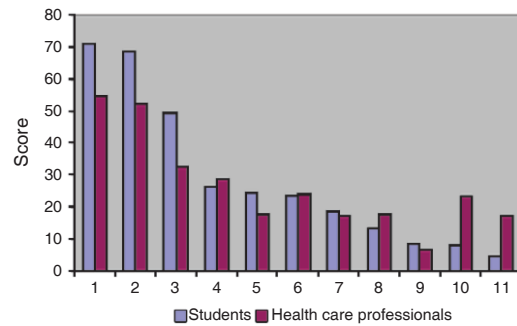
**Figure 1. Distribution of CHBQ Score for All Participants**

The total score was the following for different health schools: medicine  $50.26 \pm 7.92$ , dentistry  $54.65 \pm 6.07$ , and pharmacy  $51.16 \pm 7.10$ . The students of medicine were better informed on principles of holistic approach and CAM therapies than dentistry students ( $P=0.026$ , questions 1, 2, 5, 6, 10), pharmacy students considered that low-scientific CAM therapies should not be completely discarded ( $P=0.029$ , question 7), pharmacy students had higher levels of awareness and acceptance of the holistic treatments than dentistry students ( $P=0.000, 0.023, 0.25, 0.36, 0.003$ , questions 1, 2, 5, 6, 10, respectively). Regardless of the health school attended, all the students (medical, dentistry and pharmacy) at higher levels of their academic education (junior and senior) possessed better understanding of CAM principles and therapies ( $P=0.047, 0.013, 0.001, 0.000, 0.036, 0.05, 0.045, 0.004, 0.004, 0.004$ , questions 1–10 respectively). Students closer to their graduation (at all health care schools) considered that CAM therapies had not only placebo effect ( $P=0.004$ , question 8). Responses to other questions exhibited no statistical significance.

In the group of 145 health professionals the total pharmacists' score was better than the score of university professors ( $55.12 \pm 6.55$  vs.  $50.29 \pm 9.50$ ,  $P=0.039$ ). Knowledge on CAM therapies of health care professionals within primary health care members was better than the one of pharmacists in dispensing pharmacies ( $P=0.012$ , question 7). Employees of tertiary health care were more convinced that symptoms were part of holistic health than pharmacists in industry and health care professionals in private clinics ( $P=0.047$ , question 4). Combining conventional and CAM was accepted better by members of primary health care than pharmacists in industry and health care professionals in private clinics ( $P=0.034$ , question 9). Pharmacists in industry and health care professionals in private clinics were more prone to think that CAM therapies had no placebo effect ( $P=0.037$ , question 8) and that conventional medicine and CAM could be combined ( $P=0.013$ , question 9) than academic stuff ( $P=0.032$ , question 9).

Differentiation of use of CAM therapies by CHBQ score showed that participants were mainly accepting vitamins. Different CAM therapies scored significantly are presented in Figure 2.

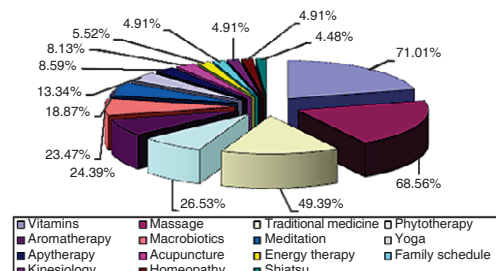
Evaluation of responses to the 11th question



**Figure 2. Evaluation of Individual CAM Therapy-CHBQ Score for Students and Healthcare Professionals**

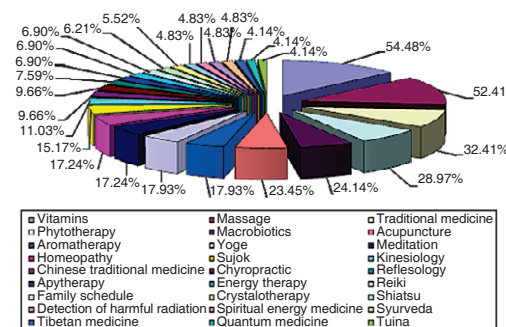
Notes: 1: vitamins; 2: massage; 3: traditional medicine; 4: phytotherapy; 5: aromatherapy; 6: macrobiotics; 7: meditation; 8: yoga; 9: apytherapy; 10: acupuncture; 11: homeopathy

showed that population more than 4.00% of all students used only 15 of 32 CAM therapies (Figure 3). The biggest number of students (71.01%) used vitamins.



**Figure 3. The Most Frequently Used CAM Therapies in the Past by Students**

Employees tried a wider range of CAM therapies (27 of 32), but still vitamins remained the most preferred (54.48%, Figure 4). Number of examinees less than 4% used other therapies.



**Figure 4. The Most Frequently Used CAM Therapies in the Past by Health Care Professionals**

## DISCUSSION

We conducted a survey among medical doctors, dentists, and pharmacists employed in both public and private sector and among health care undergraduate

students (schools of medicine, dentistry and pharmacy) in order to find out their attitude on CAM therapies. Based on observation that university professors knew less about CAM therapies than pharmacists in dispensing pharmacies, we assume that this fact could be attributed to the demand pharmacist daily face by responding to the frequent patients' questions about different products used by CAM therapies. At the same time, pharmacists in dispensing pharmacies were informed less on CAM than health care professionals within primary care. Pharmacists employed by industry and healthcare professionals in private clinics were not open-minded for combining the conventional and CAM treatment options, not accepting holistic approach to human health, unlike health care professionals of tertiary care. Acceptance of combination conventional medicine and CAM was present in the following groups of examinees in descending order: the health care professionals in primary health care, pharmacists in dispensing pharmacies and industry, and the last members of academic staff. This result as well as that academic staff is the least knowledgeable on CAM could be in correlation with absence of CAM subjects within health care undergraduate curricula. On the other hand, health care students seem to be better informed on CAM as they get closer to their graduation. This progress we can assume happens due to both professional and individual maturity, which calls for expansion of knowledge related to own health. Out of our expectations was the peculiar result that medical students were the least knowledgeable on CAM, while dentistry students knew more than pharmacy students.

Being the first of this type in the region of Balkans, we are pleased that the data were successfully obtained from the large sample (797 examinees). Though this region has never been tested on these issues, there are some limitations of this study. We consider that in a next attempt we could improve distribution of student sample, so that the largest state university would supply the largest number of students. The result that dentistry students are currently the best informed health care students on CAM could be verified by extending the number of dentistry students to the equal number of pharmacy and medicine students. The structure of health care employees sample could be diversified. In spite of these limitations, we consider that this study might be

a good starting point for further evaluation of health sector which share equal responsibility with patients for employing CAM. Considering health budget limitations in the most of the Balkans countries, evaluation of CAM attitude and use among health care professionals and students could be a valuable tool in structuring health policies.

These pioneering efforts to assess awareness and knowledge on CAM therapies in health care sector could be useful for improving legal framework of these medical practices. This survey provided complex picture on contemporary CAM perceptions among health care students and professionals, pointing that there is no wide knowledge about treatment choices outside of conventional medicine, at the present. Health care students, who will be responsible for making health-promoting decisions, exhibited defensive psychological behavior towards alternative medical knowledge they are not familiar with. We hope that this work could be a modest contribution in raising issues on CAM methods, with aim that those therapies providing evidence of efficacy, safety and cost/effectiveness could be better accepted and integrated in health care.

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### Author Disclosure Statement

We declare that there have no been competing interests while or after conducting this study.

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