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Hungarian health care students' choices between complementary and alternative medicine or conventional medicine: A cross-sectional survey

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ABSTRACT

Introduction: Complementary and alternative medicine (CAM) is increasingly being integrated into curricula for health care students. However, little is known about how they choose between CAM and conventional medicine (CM). This study examines how health care students (nurses, paramedics, midwives, health visitors) choose between CAM and CM.

Methods: This study was a cross-sectional survey conducted between April and June 2013. A self-completed questionnaire was administered to undergraduate health care students. The questionnaire was on a 5-point severity scale of diseases, with responses classifying their choices of CAM, CM or their combinations in the medical treatment of diseases. The data was analysed using descriptive and inferential statistics.

Results: Four hundred and seventy one students (response rate: 50.7%) completed the questionnaire. The more serious the disease was, the frequency of choosing primarily CM and secondly CAM increased (from 37.6% up to 59.9%), while it decreased for “only CM” (from 27.8% to 24.8%), for “primarily CAM and secondly CM” (from 27.2% to 11.9%), and for “only CAM” (from 7.4% to 3.4%). The choice patterns of 313 students (66.45%) were examined. Based on these choice patterns, three groups of students were classified: students choosing a combined use of CAM and CM (66.0%); students who believe in CM only and choose not to use CAM (18.5%), and students who basically believe in CM but are open to applying CAM as an add-on treatment based on the severity of the diseases (15.5%).

Conclusion: Health care students' choice patterns suggest that in addition to CM, most of them consider CAM to be an important element of medical treatment.

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Introduction

Complementary and alternative medicine (CAM) is defined as ‘a group of diverse medical and health care systems, practices, and products that are not generally considered part of conventional medicine, are not taught in medical universities, are not used in hospitals, and are not integrated into the dominant health care system. Most of them can be practiced without having M.D. (medical doctor) degrees’ [1, 2]. If a non-mainstream practice is used together with conventional medicine, it is considered “complementary”, while if it is used in place of conventional medicine, it is considered “alternative” [1]. The term ‘conventional medicine’ is defined as ‘medicine as usually practiced by holders of M.D. (medical doctor) or D. O. (doctor of osteopathic medicine) degrees, or by their allied health professionals such as physical therapists, psychologists, and registered nurses’ [1].

Complementary and alternative medicine has remained popular in the developed countries [3–7]. Over the last decade a growing body of research has been published about the theory, perceptions of, and attitudes toward complementary and alternative medicine among health care students and health professionals [8–13]. Findings from these studies showed a positive attitude towards CAM among health care students. The studies also revealed that female students had a more positive attitude towards CAM therapies and that they used CAM more frequently than male students [9, 10, 13, 14].

Previous studies have investigated the primary factors predicting the use of CAM therapies in different types of diseases [15–18]. The most widely studied groups were patients with cancer, diabetes and cardiovascular diseases [15–18]. The use of CAM showed a large difference between the countries and the illnesses as according to the groups. In a European survey carried out among cancer patients, the use of CAM varied between 14.8–73.1%, with an average of 35.9% [15]. In a review on diabetic patients, similar results were found, with 17.0–72.8% using CAM [16]. In these studies, the most commonly used CAM therapies were herbal medicines, nutritional therapies, homeopathy, and vitamins/minerals [15–17]. The rate of CAM use by cancer patients was higher among younger patients, females, and patients with a higher educational level [15]. However, the main determining factors among diabetic patients were age, duration of diabetes, degree of complications and self-monitoring of blood glucose [16].

Many studies have been published on the factors influencing the decision-making process related to using CAM [19–25]. The models explaining decision-making in conventional care can be divided into two groups: healthcare utilisation models and health behaviour models [24]. The healthcare utilisation model involves two approaches: pathway and determinants models [26]. The most known and used determinants model is Andersen’s sociobehavioural model, which defines three components of decision making: predisposing, enabling and need factors [27].

Weeks et al. [25] recently developed a complex model of CAM decision-making that takes into consideration the results of the publication focusing on cancer patients. In an integrative review, the main contextual factors identified as influencing the decision-making processes were social factors, beliefs and cultural norms. They also identified 3 specific phases of the process (early, mid, and late) corresponding to different events during the cancer illness. The authors concluded that decision-making regarding CAM is a ‘nonlinear, complex, dynamic process’.

This paper is part of a larger study that investigated and compared health care students’ attitudes toward CAM, their knowledge of CAM, their personal use of CAM, and their opinions about the integration of CAM into higher education and the health care system in Hungary. Our results show that health care students’ attitudes are positive. The most commonly known CAM methods are relaxation, acupuncture, herbal medicine and meditation. What is more, students believe that the integration of CAM into higher education and into health care in Hungarian is necessary [13].

In contrast to the growing body of knowledge concerning patients’ use of CAM, little is known about the choices that health care students make between CAM and conventional medicine (CM) with consideration given to different levels of disease severity. This paper addresses this gap. The primary aim of this study was to examine how health care students choose between CAM and CM on a 5-point severity scale of diseases, and how their choices change as the severity of diseases increases. Secondly, the study aimed to identify choice patterns in order to classify different groups of students according to the choices made in relation to CAM, CM, or combinations of both in the medical treatment of diseases.

Materials and methods

Design

This study was cross-sectional in design using a survey method.

Study sample

The study sample consisted of 1st to 4th year undergraduate students from the Faculty of Health of the University of Debrecen. The sample target was 929 students (719 full time, 210 part time) including students in nursing ($n = 266$), paramedics ($n = 256$), midwifery ($n = 211$) and health visitor ($n = 196$).

Study questionnaire

A cross-sectional survey was designed using a self-administered questionnaire. This part of the questionnaire was part of our larger study, and there were 9 groups of questions in total. They included demographic data (age, gender, year and specialty, marital status, full/part time);

items about attitudes towards CAM, personal use of and perceived effectiveness of CAM, knowledge of CAM, information sources, Complementary Medicine course; and opinions about the integration of CAM into higher education and the health care system in Hungary. This part of the questionnaire was comprised of a 5-point severity scale of diseases including the following levels:

- mildest: diseases lasting for some days only;
- mild: diseases lasting for some weeks without any complications;
- moderate: diseases demanding hospital care;
- serious: chronic diseases, and diseases deteriorating life quality;
- most serious: life-threatening or incurable diseases.

The following four response categories were available:

- only CAM;
- primarily CAM and secondly conventional medicine (abbreviated as CAM + CM);
- only conventional medicine (abbreviated as 'only CM');
- primarily conventional medicine and secondly CAM (abbreviated as CM + CAM).

For each level of disease severity, students were asked to indicate which response categories they would choose during the treatment of diseases. E.g. which response category would you choose if you had one of the mildest diseases that last for some days only? Put an X into the chosen box (Table 1).

Table 1 – An example from the questionnaire

Which response category would you choose if you had one of the mildest diseases that last for some days only? Put an X in the chosen box!			
Only complementary and alternative medicine	Primarily complementary and alternative medicine and secondly conventional medicine	Only conventional medicine	Primarily conventional medicine and secondly complementary and alternative medicine

The questionnaire was pre-tested among 8 students for content, language clarity, usability and the time required to answer it. No changes were needed in this part of the questionnaire from the pre-test.

Data collection

The study was carried out at the University of Debrecen, Faculty of Health in Nyíregyháza between April and June 2013. Written permission to perform the research was obtained from the University of Debrecen, Faculty of Health. Since the Eva-sys online version of the questionnaire was used, it was completed during seminars when computers were available for the students. They had one chance to complete the questionnaire. Before completing the questionnaire, the students were given a brief description about the goal of the study. Participation in the study was voluntary.

Statistical analysis

Data were analysed using the Statistical Package for Social Sciences (SPSS) software (Version 22.0). Descriptive statistics were used to summarize the data. For this, choices between CAM and CM were analysed using frequencies of the four response categories for each of the five levels of disease severity. Likewise, the frequency of changes in the choice between CAM and CM as the severity of diseases increases was assessed.

To identify the choice patterns, Multidimensional Crosstabs were used with the following variables: four response categories and five levels of severity of diseases. Proportion analysis was used to compare the frequencies of each response category with the levels of severity [28]. The choice pattern was identified as follows: a student opts for one of the four response categories on each severity level of diseases. The students' choices from the four response

categories as the 5-point severity scale increases, draws a choice pattern. In order to clarify the choice pattern, three examples are shown.

Example 1: the student opts for only CM response category on each severity level.

Example 2: the student opts for only CM on the mildest, mild, moderate and serious levels, and for CM + CAM on the most serious level.

Example 3: the student opts for only CM on the mildest, mild and moderate levels, and for CM + CAM on the serious and the most serious levels.

Since the students could choose from 4 response categories on all the 5 severity levels, mathematically the total number of choice patterns is 1024. Choice patterns chosen by at least 10 students (2% of the participants) were selected into the statistical analysis (see Table 4).

Results

Four hundred and seventy-one students (350 full time students (74.3%), 121 part time students (25.7%), 53 males (11.3%), 418 females (88.7%)) completed the questionnaire (Table 2): 185 (25.5%) nurses, 62 (8.6%) paramedics, 125 (17.2%) midwives, and 99 (13.7%) health visitors (health visitors are preventive professionals, who provide general care for children until 18 years. They work in districts in close connection with paediatric family doctors/general practitioners or in schools). Data were collected from students from the 1st year (211, 44.8%), 2nd year (100, 21.2%), 3rd year (93, 19.7%), and 4th year (67, 14.2%). The mean age was 25.19 (ranges from 18 to 53). The response rate was 50.7% (471/929).

Table 2 – Year and specialty characteristics of the study sample

Specialty of students	Year no (%)				Total N (%)
	1st	2nd	3rd	4th	
Nursing	59 (20.4)	55 (25.3)	42 (29.6)	29 (37.7)	185 (25.5)
Paramedic	59 (20.4)	2 (0.9)	1 (0.7)	0 (0.0)	62 (8.6%)
Midwifery	50 (17.3)	23 (10.6)	31 (21.8)	21 (27.3)	125 (17.2%)
Health visitor	43 (14.9)	20 (9.2)	19 (13.4)	17 (22.1)	99 (13.7%)
Total	211 (44.8)	100 (21.2)	93 (19.7)	67 (14.2)	471 (100)

Choice between CAM and CM for severity of disease

Table 3 shows how students chose between CAM and CM on the five levels of severity of diseases. For the mildest level, 37.6% chose CM + CAM, followed by only CM (27.8%), CAM + CM (27.2%) and 7.4% choosing only CAM. For the mild level, 43.3% chose CM + CAM, followed by only CM (30.8%), CAM + CM (21.9%), and only CAM (4%). For moderate level, 49.9% chose CM + CAM, followed by only CM (34%), CAM + CM (13.8%) and only CAM (2.3%). For the serious level, over half of the students (58.8%) chose CM + CAM, followed by 27.2% choosing only CM,

10.8% choosing CAM + CM, and 3.2% choosing only CAM. For the most serious level, over half of the students chose CM+CAM (59.9%), followed by only CM (24.8%), CAM + CM (11.9%) and only CAM (3.4%). No significant differences were found between specialties either on the mildest ($p = 0.077$), the mild ($p = 0.580$), the moderate ($p = 0.281$), the serious ($p = 0.086$), or on the most serious ($p = 0.433$) levels. Similarly, no significant differences were found between years either on the mildest ($p = 0.078$), the mild ($p = 0.5823$), the moderate ($p = 0.460$), the serious ($p = 0.495$), or on the most serious ($p = 0.274$) levels.

Table 3 – Students' choices between CAM and CM on the five levels of disease severity

Response categories	Choice between CAM and CM on...				
	No %				
	Mildest level	Mild level	Moderate level	Serious level	Most serious level
Only CAM	35 (7.4)	19 (4.0)	11 (2.3)	15 (3.2)	16 (3.4)
CAM + CM	128 (27.2)	103 (21.9)	65 (13.8)	51 (10.8)	56 (11.9)
Only CM	131 (27.8)	145 (30.8)	160 (34.0)	128 (27.2)	117 (24.8)
CM + CAM	177 (37.6)	204 (43.3)	235 (49.9)	277 (58.8)	282 (59.9)
Total	471	471	471	471	471

Changes in the choice between CAM and CM as the severity of diseases increases

As the level of severity of disease increased (Chart 1), the percentage of students choosing only CAM significantly decreased from the mildest (7.4%) to mild level (4.0%) ($p = 0.036$), and it did not change significantly until the most serious level (3.4%) ($p = 0.731$).

The frequency of CAM + CM decreased significantly from the mildest (27.2%) to moderate level (13.8%) ($p < 0.001$), and it did not change significantly until the most serious level (11.9%) ($p = 0.436$). The frequency of choosing only CM increased significantly from the mildest (27.8%) to moderate level (34.0%) ($p = 0.048$), and it significantly decreased from moderate to serious level (27.2%) ($p = 0.028$), but changes in choice at the most serious level (24.8%) were not significant ($p = 0.458$). The frequency of choosing CM + CAM increased significantly from the mildest (37.6%) to moderate level (49.9%) ($p = 0.000$) and

from moderate to serious level (58.8%) ($p = 0.007$), and it did not change until the most serious level (59.9%) ($p = 0.791$).

Students' choice patterns

Nine choices patterns could be drawn upon based on 313 students' (66.45%) choices as the severity of diseases increases (Table 4). In Table 4 the students' choices between the four response categories on the five levels of severity of diseases are shown in the second to the sixth columns of the table. The last column of the table shows the frequencies of choice patterns.

In three choice patterns students chose the same response category on each level of severity of diseases: 141 students (45.0%) chose CM + CAM, 58 students (18.5%) chose only CM, and 19 students (6.0%) chose CAM + CM from the mildest up to the most serious levels. In the other six choice patterns, students changed their choices

CM, conventional medicine; CAM, complementary and alternative medicine

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Chart 1 – Changes in the frequencies of the four response categories as the severity of diseases increases

Table 4 – Students' choice patterns

	Students' choices from the four response categories on...					Frequency Total N = 313 No (%)
	Mildest level	Mild level	Moderate level	Serious level	Most serious level	
Choice patterns (chosen by 10 students at least)	CM + CAM	CM + CAM	CM + CAM	CM + CAM	CM + CAM	141 (45.0)
	Only CM	Only CM	Only CM	Only CM	Only CM	58 (18.5)
	CAM + CM	CAM + CM	CAM + CM	CAM + CM	CAM + CM	19 (6.0)
	CAM + CM	CM + CAM	CM + CAM	CM + CAM	CM + CAM	22 (7.0)
	CAM + CM	CAM + CM	CM + CAM	CM + CAM	CM + CAM	25 (8.0)
	Only CM	CM + CAM	CM + CAM	CM + CAM	CM + CAM	11 (3.5)
	Only CM	Only CM	CM + CAM	CM + CAM	CM + CAM	11 (3.5)
	Only CM	Only CM	Only CM	CM + CAM	CM + CAM	15 (5.0)
	Only CM	Only CM	Only CM	Only CM	CM + CAM	11 (3.5)
	Only CM	Only CM	Only CM	Only CM	CM + CAM	11 (3.5)
Total						313

between CAM and CM, and they shifted from one response category to another on either level of severity of diseases as follows:

- on the mildest level choosing CAM + CM, then shifting to CM + CAM on mild level up to the most serious level (22, 7.0%);
- on the mildest and mild levels choosing CAM + CM, then shifting to CM + CAM on the moderate level up to the most serious level (25, 8.0%);
- on the mildest level choosing only CM, then shifting to CM + CAM on the mild level up to the most serious level (11, 3.5%);
- on the mildest and mild levels choosing only CM, then shifting to CM + CAM on the moderate level up to the most serious level (11, 3.5%);
- on the mildest, mild and moderate levels choosing only CM, then shifting to CM + CAM on the serious level up to the most serious level (15, 5.0%);
- on the mildest, mild, moderate and serious levels choosing only CM, then shifting to CM + CAM (11, 3.5%) on the most serious level.

Discussion

Most people in European countries grow up in a culture where treating diseases with conventional medical therapy is the norm. However, the popularity and use of CAM methods (e.g. natural products) has increased among both the general population and patients with chronic diseases over the last few decades [3–6, 15–18]. Prior to this study, little was known about the choices health care students make between CAM and CM or their combinations.

Our methodological approach is suitable for providing a more precise and detailed look at the choices of health care students between CAM and CM in medical treatment rather than using only the attitude scale. Firstly, our study revealed how health care students choose between CAM and CM on a 5-point severity scale of diseases. Secondly, different groups of students were classified on the basis of their choice patterns between CAM, CM or their combinations in the medical treatment of disease.

The following patterns were observed in the choices between CAM and CM as the severity of diseases increased. Over one third of the students (37.6%) chose CM + CAM on the mildest level. The frequency of this option significantly increased from level to level by about 21%, and on the most serious level over half of the students chose CM + CAM. Over one quarter of the students chose only CM on the mildest level. The frequency of only CM significantly increased up to moderate level (34.0%) then significantly decreased, and on the most serious level it was about the same as on the mildest level. Over one quarter of the students (27.2%) chose CAM + CM on the mildest level. The frequency of CAM+CM decreased from level to level by about 15%, and on the most serious level nearly one tenth of the students chose this option. About 7% of the students chose only CAM on the mildest level and after a significant decrease on the most serious level approximately 3% of the students chose this option. These patterns concur with previous studies indicating that CAM use as an add-on treatment of medical treatment increases with serious clinical and health conditions [15, 29–32].

Having identified the choice patterns, it was possible to analyse the above patterns more thoroughly, and to classify groups on the basis of students' choices between CAM and CM. 313 students' (66.45%) choice patterns proved to be evaluable statistically, while the others, due to low frequency of choice patterns, did not.

Nine choice patterns were able to be identified, which could be divided into three major groups: students choosing combinations of CAM and CM, students choosing only CM, and students choosing primarily CM and then CAM as an add-on treatment at a level of severity of diseases.

Two-thirds of the students (66.0%) formed the first group. They chose CM as well as CAM on each level of severity of diseases. Most of them (45.0%) chose CM + CAM while a minority of them (6.0%) chose CAM + CM on each level. 15.0% of them shifted from CAM + CM to CM + CAM on mild (7.0%) or moderate (8.0%) levels. This data suggests that these students, as future health care professionals, consider CAM to be an important element of medical treatment on each severity level of disease. This finding is supported by our previous results, which found that health care students' attitudes towards CAM were positive and they were convinced that the integration of CAM into the curricula was needed [13] as it could help to improve their holistic approach to treat diseases [9, 10, 13, 33]. Our previous publication from the large study found that approximately 60% of the students believed that the integration of CAM methods into the health care system would be effective [13].

Although the combined use of CM and CAM has been increasing in many countries [15–18], it is not usual in the Hungarian medical treatment. In addition, limited data is available concerning this issue. A Hungarian study found that 52.7% of surgeons and anaesthesiologists are interested in CAM, and 48.4% would like to learn about CAM, but only 7.0% of them supported the application of CAM in clinical practice [34].

Less than one fifth of the students formed the second group (18.5%). They chose only CM on each level of severity of diseases. This data suggests that these students believe in only CM and they reject the use of CAM in medical treatment. Our previous study found that about one-third of students attributed results of CAM in most cases to the 'placebo-effect' [13]. Their beliefs might have been shaped by their academic studies, which are based on CM, and it may substantially determine their choices between CAM and CM [34]. Another reason might be that in spite of the legal regulations, many individuals continue to engage in a practice without qualifications or without publicly recognized qualifications in Hungary, which has led to ineffective treatment in many cases.

Only 15.5% of the students formed the third group. They shifted from CM only to CM + CAM on mild (3.5%), moderate (3.5%), serious (5.0%) or the most serious (3.5%) levels. These students believed in CM only in the medical treatment of disease, but were open to applying CAM as an add-on treatment at a level of severity of diseases.

Our study had limitations. Firstly, in using a self-reported questionnaire, answers may not reflect students' real choices between CAM and CM. Secondly, our study was conducted among students from one university; therefore further investigation should be done sampling students from a number of universities. Finally, students had just one opportunity to complete the questionnaire, which may have contributed to the low response rate of 50.7%.

Conclusion

Identifying choice patterns made it possible to provide an analysis of the choices between CAM and CM, while, on the other hand groups of students could be classified. Based on the choice patterns, three groups of health care students could be classified: students who have a need of the combined use of CAM and conventional medicine (66.0%), students who believe in only conventional medicine and refuse CAM (18.5%), and students who basically believe in conventional medicine but are open to CAM use (15.5%) in medical treatment. Our results suggest that alongside conventional medicine, most health care students consider CAM to be an important element of medical treatment.

Conflict of interests

The authors have no conflict of interests to disclose.

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