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SURVEY OF DENTAL STUDENTS' ATTITUDE REGARDING ORIENTAL
MEDICINE/COMPLEMENTARY AND ALTERNATIVE MEDICINE: COMPARISON BETWEEN TWO
JAPANESE DENTAL SCHOOLS

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Abstract

Background: The present study aimed to examine the impact of “curricula for undergraduate education in oriental medicine (OM)/complementary and alternative medicine (CAM)” on student awareness of OM. A questionnaire survey was conducted involving the Nagasaki University School of Dentistry (NUSD), a university that implements education in OM as part of its undergraduate curriculum, and Tokyo Dental College (TDC), which does not teach OM.

Materials and methods: The third- and fifth-year students of both NUSD and TDC underwent the anonymous questionnaire survey, which included questions regarding their knowledge of OM and CAM, interests in these subjects, and their opinions on the necessity of teaching OM in the undergraduate dental education, and the results were collected for analysis.

Results: Whereas 33% of 5th year NUSD students had knowledge of OM/CAM was 33%, only 10% of 5th year TDC students reported knowledge on the subject. 69% of 5th year NUSD students interested in OM/CAM, while 5th year TDC students who interest them were only 45%. Although 77% of 5th year NUSD students were in favor of OM education implemented in the Faculty of Dentistry, the percentages of TDC students of that were smaller (46% in 3rd year and 48% in 5th year). Whereas 26% of 5th year TDC students did not recognize the necessity of oriental medicine education, only one 5th year NUSD student (2%) did not so.

Conclusion: Introduction of education in OM in the undergraduate dental education program helps students to increase their interests in dental clinical applications.

Key words: Alternative medicine; Complementary medicine; Complementary and alternative medicine; education program; oriental medicine; questionnaire survey; undergraduate dental education

Introduction

Japanese medicine has been influenced by traditional Chinese medicine, and has developed independently while introducing acupuncture and herbal medicine (so called “Kampo”). However, since the introduction of Western studies in the mid-19th century, medicine based on Western ideas has been the mainstream approach, and medical systems based on traditional oriental medicine have become less popular in Japan. In recent years, several studies have established the effects of acupuncture and Kampo medicine (Feng et al., 2013; Lee et al., 2012; Motoo et al., 2014), attracting attention as CAM (Terasawa, 2001; Yu et al., 2006). With this background, many Japanese physicians have provided treatment combined with therapeutic methods based on oriental medicine (Motoo et al., 2009; Saegusa et al., 2015; Yamakawa et al., 2013). Oriental medicine was taught in 5 of the 63 (8%) Japanese medical schools in 1986, and 16 of the 80 (20%) schools in 1998 (Yakazu et al., 1987). However, in 2001, instructions for the implementation of basic Kampo medicine were incorporated into the medical education model core curriculum developed by the Japanese Ministry of Education, Culture, Sports, Science, and Technology (MEXT, 2010), and its positive effects facilitated the introduction of oriental medicine and CAM to education curricula currently implemented by all medical schools in Japan (Arai et al., 2012; Arai et al., 2013; Imazu et al., 2012; Motoo et al., 2011; Tsuruoka et al., 2001).

In the field of dentistry in Japan, only a small number of dental practitioners provide acupuncture treatment, including electro-acupuncture, for the purpose of pain control. Although Kampo medicine can also be applied in the field of dentistry, it has not yet attracted much attention (Sunagawa et al., 2011; Sunagawa et al., 2012). At present, only eight of the 29 dental colleges have undergraduate education programs to teach oriental medicine (Kameyama et al., 2008).

Tokyo Dental College (TDC), established in 1890, is the oldest private dental school in Japan. Since the beginning of the 1970s, a dental anesthesia unit of the curriculum provided 90-minute lectures on oriental medicine for its fourth-year students, which was discontinued in 2002. Nagasaki University was established in 1857, when a Dutch

army physician, Johannes Lijdius Catharinus Pompe van Meerdervoort, started to deliver medical lectures in Dutch for Japanese people; Nagasaki is thus known to be the first place in Japan that introduced Western medicine. School of Dentistry (NUSD) was established in 1979, and is one of the newest national dental schools. NUSD recognized the importance of incorporating oriental medicine-based approaches into conventional Japanese dentistry, and started to implement compulsory dental education programs based on oriental medicine in 2002. At present, the NUSD's undergraduate education program includes more than 30 hours of lecture in oriental medicine and CAM (Kameyama et al., 2010). Therefore, its students have basic knowledge of oriental medicine and CAM, although they have no skills required for treatment. Such education programs for students and backgrounds may change awareness of oriental medicine/CAM.

In the present study, a questionnaire survey was conducted involving students of the NUSD, which includes oriental medicine/CAM education in its curriculum, and TDC, which does not have such programs, to compare the students' opinions and awareness of oriental medicine and CAM.

Materials and Methods

In April 2012, an anonymous questionnaire survey was conducted involving all third- and fifth-year students of TDC (TDC-3 and TDC-5) and NUSD (NUSD-3 and NUSD-5). Students were asked questions related to their experience of oriental medicine/CAM therapy (Q1 and Q2), first image and impression regarding oriental medicine/CAM (Q3 and Q4), knowledge of oriental medicine (Q5, Q9, and Q10), their interest in it (Q6 and Q11), and their opinion on the necessity of the undergraduate education program (Q7 and Q8). Q5, Q6 and Q11 had 5-point scale response (Very much, Yes, Unsure, Not much, Not at all). Q7 to Q9 had 5 different point scale response (Strongly agree, Agree, Unsure, Disagree, and Strongly disagree). Their responses were collected for analysis. The "m×n Chi-square test", using a statistical program file (ystat 2013 for Windows/Macintosh, Igaku Tosho Shuppan, Tokyo, Japan) based on Microsoft Excel was conducted to compare responses to the questions (excluding "Q2") between the two schools and among students in different school years. Yates correction was performed when the number of students in a cell was fewer than ten.

Results

The total number of subjects was 365 students, and the collection rate was 100%; 144 students of TDC-3 (83 males and 61 females), 125 students of TDC-5 (77 males and 48 females), 45 students of NUSD-3 (24 males and 21 females), and 51 students of NUSD-5 (24 males and 27 females).

Responses to questions regarding students' experience of receiving oriental medicine/CAM-related treatment are shown in **Table 1**.

Table 1: Experience of oriental medicine/CAM therapy

Q1: Do you have experience of oriental medicine/CAM therapy?								
	TDC-3		NUSD-3		TDC-5		NUSD-5	
Yes	86	(60%)	35	(78%)	87	(70%)	41	(80%)
No	58	(40%)	10	(22%)	38	(30%)	10	(20%)
Significant difference (p=0.016; Chi-square test)								
Q2: What kind of therapy have you experienced? (Multiple choices allowed)								
	TDC-3		NUSD-3		TDC-5		NUSD-5	
Acupuncture/moxa therapy	29	(20%)	9	(20%)	15	(12%)	11	(22%)
Kampo	50	(35%)	26	(58%)	54	(43%)	33	(65%)
Massage	35	(24%)	10	(22%)	35	(28%)	9	(18%)
Qi-gong/Taijiquan	8	(6%)	2	(4%)	6	(5%)	0	(0%)
Yoga/Ayurveda	8	(6%)	2	(4%)	11	(9%)	8	(16%)
Chiropractic	10	(7%)	0	(0%)	8	(6%)	5	(10%)
Other	0	(0%)	0	(0%)	1	(1%)	1	(2%)
No experience	58	(40%)	10	(22%)	38	(30%)	10	(20%)
Total	198	(138%)	45	(131%)	125	(134%)	51	(151%)

The majority of the TDC-3, NUSD-3, TDC-5, and NUSD-5 students had experience of receiving treatment based on oriental medicine. The rate of NUSD students who had received oriental medicine-based treatment was significantly higher than that of TDC students (Q1, $p=0.0162$). The rate of students who had received Kampo treatment was higher than that of students who had undergone acupuncture in all groups (Q2).

Table 2: Images, impressions, knowledge and interests regarding oriental medicine/CAM

Q3: What is your first image of "oriental medicine"? (Only one can be chosen)								
	TDC-3		NUSD-3		TDC-5		NUSD-5	
Acupuncture	19	(13%)	10	(22%)	14	(11%)	9	(18%)
Moxa therapy	5	(3%)	2	(4%)	4	(3%)	0	(0%)
Kampo	97	(67%)	31	(69%)	90	(72%)	32	(63%)
Massage	4	(3%)	0	(0%)	1	(1%)	0	(0%)
Qi-gong	3	(2%)	0	(0%)	8	(6%)	1	(2%)
Yoga & Ayurveda	4	(3%)	0	(0%)	5	(4%)	0	(0%)
Chiropractic	1	(1%)	0	(0%)	0	(0%)	0	(0%)
Other	0	(0%)	0	(0%)	0	(0%)	0	(0%)
Do not know any of the above	6	(4%)	0	(0%)	1	(1%)	0	(0%)
Multiple chosen	5	(3%)	2	(4%)	2	(2%)	9	(18%)

No significant difference ($p=0.217$; Yates' corrected Chi-square test)

Q4: What impression do you have regarding oriental medicine/CAM? (Multiple choice allowed)

	TDC-3		NUSD-3		TDC-5		NUSD-5	
Suitable for maintaining and improving our health	59	(41%)	16	(36%)	48	(38%)	24	(47%)
Suitable for curing chronic diseases	18	(13%)	9	(20%)	27	(22%)	13	(25%)
Traditional	39	(27%)	16	(36%)	22	(18%)	19	(37%)
Unique to Western medicine and with its own merits	56	(39%)	27	(60%)	43	(34%)	31	(61%)
No side effects	26	(18%)	2	(4%)	20	(16%)	11	(22%)
No evidence	17	(12%)	7	(16%)	39	(31%)	12	(24%)
Potency is low	25	(17%)	6	(13%)	27	(22%)	7	(14%)
Laborious	8	(6%)	3	(7%)	9	(7%)	1	(2%)
Expensive	5	(3%)	3	(7%)	5	(4%)	1	(2%)
Uncomfortable	7	(5%)	1	(2%)	4	(3%)	1	(2%)
Unanswered	2	(1%)	0	(0%)	0	(0%)	0	(0%)

Q5: Do you have any knowledge regarding oriental medicine/CAM?

	TDC-3		NUSD-3		TDC-5		NUSD-5	
Very much	2	(1%)	0	(0%)	1	(1%)	1	(2%)
Yes	18	(13%)	3	(7%)	11	(9%)	16	(31%)
Unsure	24	(17%)	13	(29%)	24	(19%)	18	(35%)
Not much	34	(24%)	15	(33%)	25	(20%)	12	(24%)
Not at all	66	(46%)	14	(31%)	64	(51%)	3	(6%)
Unanswered	0	(0%)	0	(0%)	0	(0%)	1	(2%)

Significant difference ($p=0.0001$; Yates' corrected Chi-square test)

Q6: Are you interested in oriental medicine/CAM therapy?

	TDC-3		NUSD-3		TDC-5		NUSD-5	
Very much	16	(11%)	4	(9%)	9	(7%)	6	(12%)
Yes	54	(38%)	22	(49%)	47	(38%)	29	(57%)
Unsure	25	(17%)	12	(27%)	26	(21%)	10	(20%)
Not much	33	(23%)	4	(9%)	32	(26%)	5	(10%)
Not at all	14	(10%)	2	(4%)	11	(9%)	0	(0%)
Unanswered	2	(1%)	1	(2%)	0	(0%)	1	(2%)

No significant difference ($p=0.337$; Chi-square test)

Responses to questions regarding students' opinions, knowledge, and interest of oriental medicine/CAM-related treatment are presented in **Table 2**. Association of oriental medicine with Kampo medicine was the largest proportion of TDC-3, NUSD-3, TDC-5, and NUSD-5 students, followed by association with acupuncture. Whereas there were a few TDC-3 and TDC-5 students who had no knowledge of either Kampo medicine or acupuncture, there were no NUSD students reporting no knowledge. However, there were no significant differences among the four groups ($p=0.2170$). Whereas the most common image of oriental medicine (Q4) among the TDC-3 and TDC-5 students was "health maintenance and promotion", that among the NUSD-3 and NUSD-5 students was "Having strengths that Western medicine does not". Responses to questions regarding students' knowledge of oriental medicine/CAM showing significant differences among the four groups (Q5; $p=0.0001$). Whereas 33% of NUSD-5 students had knowledge of oriental medicine/CAM, only 7% of NUSD-3 students reported knowledge on the subject. Few TDC-3 and TDC-5 students stated that they had knowledge of oriental medicine/CAM (TDC-3: 14%, TDC-5: 10%); approximately 50% of them stated that "they had no knowledge of them at all". On the other hand, the majority of students were interested in oriental medicine, regardless of college or school year (Q6). Although there were no significant differences among the four groups ($p=0.3370$), 69% of NUSD-5 students were interested in oriental medicine/CAM.

Table 3 shows responses to questions regarding the importance of oriental medicine/CAM in medicine and dentistry, and needs of their education. The majority of students in all groups recognized the importance of oriental medicine in the future (Q7); the percentage of NUSD-5 students was higher than that of the other groups, although there were no significant differences among the four groups ($p=0.7796$). A total of 77% of NUSD-5 students were in favor of lectures and practical training in oriental medicine implemented in the Faculty of Dentistry (Q8). On the other hand, the percentages of TDC-3 and TDC-5 students in favor of oriental medicine education were significantly smaller (50% or lower) ($p=0.0178$). Whereas 26% of TDC-5 students stated that "they did not recognize the necessity of oriental medicine education", only one NUSD-5 student (2%) did so.

Table 3: Importance and educational needs of oriental medicine/CAM

Q7: Oriental medicine and CAM will be viewed as important for health care and dentistry.								
	TDC-3		NUSD-3		TDC-5		NUSD-5	
Strongly agree	14	(10%)	2	(4%)	9	(7%)	6	(12%)
Agree	58	(40%)	27	(60%)	61	(49%)	29	(57%)
Unsure	51	(35%)	10	(22%)	33	(26%)	12	(24%)
Disagree	16	(11%)	6	(13%)	17	(14%)	4	(8%)
Strongly Disagree	5	(3%)	0	(0%)	3	(2%)	0	(0%)
Unanswered	0	(0%)	0	(0%)	2	(2%)	0	(0%)

No significant difference ($p=0.780$; Yates' corrected Chi-square test)

Q8: Education (lecture, practice, and others) of oriental medicine is needed for the undergraduate dental curriculum.

	TDC-3		NUSD-3		TDC-5		NUSD-5	
Strongly agree	6	(4%)	7	(16%)	8	(6%)	7	(14%)
Agree	61	(42%)	24	(53%)	52	(42%)	32	(63%)
Unsure	51	(35%)	10	(22%)	33	(26%)	11	(22%)
Disagree	19	(13%)	4	(9%)	25	(20%)	1	(2%)
Strongly Disagree	7	(5%)	0	(0%)	7	(6%)	0	(0%)

Significant difference ($p=0.018$; Yates' corrected Chi-square test)

Table 4 shows the responses to questions regarding the application of oriental medicine in dental clinical settings. Approximately 50% of NUSD students, regardless of school year, were aware that oriental medicine had been adopted in dental clinical settings. On the other hand, approximately 80% of TDC students were not aware; there was a significant difference between the two schools ($p<0.0001$). Whereas 73% of NUSD-5 students stated that "they wanted to incorporate oriental medicine into their dental practice", a significantly lower percentage of TDC students (40%) wished to do so (Q11, $p=0.0018$). Approximately 50% of NUSD students were aware that Kampo medicine is covered by national health insurance (Q10). On the other hand, a significantly lower percentage of TDC students (approximately 30%) were aware of the fact ($p=0.0012$).

Table 4: Future promise of oriental medicine and ethical Kampo for clinical dentistry

Q9: Do you think oriental medicine is routinely applied in Japanese clinical practice?								
	TDC-3		NUSD-3		TDC-5		NUSD-5	
Strongly agree	6	(4%)	0	(0%)	3	(2%)	3	(6%)
Agree	25	(17%)	21	(47%)	22	(18%)	27	(53%)
Unsure	79	(55%)	21	(47%)	60	(48%)	17	(33%)
Strongly Disagree	34	(24%)	3	(7%)	40	(32%)	3	(6%)
Unanswered	0	(0%)	0	(0%)	0	(0%)	1	(2%)

Significant difference ($p < 0.0001$; Yates' corrected Chi-square test)

Q10: Do you know that Kampo medicine is covered by national insurance?								
	TDC-3		NUSD-3		TDC-5		NUSD-5	
Yes	46	(32%)	23	(51%)	36	(29%)	24	(47%)
No	98	(68%)	22	(49%)	89	(71%)	27	(53%)

Significant difference ($p = 0.0012$; Chi-square test)

Q11: Do you want to utilize oriental medicine if you become a dentist?								
	TDC-3		NUSD-3		TDC-5		NUSD-5	
Very much	9	(6%)	0	(0%)	13	10%	5	10%
Yes	51	(35%)	24	(53%)	33	26%	32	63%
Unsure	52	(36%)	18	(40%)	51	41%	7	14%
Not much	25	(17%)	2	(4%)	19	15%	7	14%
Not at all	7	(5%)	1	2%	9	7%	0	0%

Significant difference ($p = 0.0018$; Yates' corrected Chi-square test).

Discussion

The present study examined the effects of undergraduate education programs in oriental medicine and CAM for dental students on their images and awareness of this field, by comparing the results of a survey of oriental medicine awareness among NUSD and TDC students.

The present study was conducted in April 2012 involving third- and fifth-year students. Third-year students of NUSD start to receive oriental dental education. Students of most medical and dental schools in Japan undergo clinical clerkship training when they are in their fifth to sixth years. Therefore, it is appropriate to examine differences in the awareness of oriental medicine between students of the two dental schools by conducting a comparison of these students. Furthermore, comparison of the third- and fifth-year students of the same dental school allows us to identify differences in the awareness of oriental medicine among students who received and did not receive education in oriental medicine.

The image of oriental medicine/CAM most commonly held by the students of each dental school was that of Kampo medicine (Q2). In general, patients with musculoskeletal symptoms often receive acupuncture, chiropractic, and massage treatment. People in Japan receive these types of treatment more often than orthodox Western medicine, and there are no significant differences in the rate of undergoing such treatments among different age groups (Yamashita et al., 2002). For example, some Japanese athletes receive acupuncture treatment to recover from muscle fatigue or alleviate pain (Sun et al., 2009). Furthermore, OTC drugs containing crude drug extracts have long been easily available to the general public in Japan (Yamashita et al, 2002). People can easily purchase these drugs at the drug store without medical prescription, and broadcast of TV commercials of such products is also common. According to a previous study involving Japanese medical students, while 17.8% of them had the experience of using Ethical Kampo, 52.6% had taken OTC Kampo, suggesting the popularity of OTC Kampo among young Japanese people (Imanishi et al., 2002).

In Japan, the rate of receiving treatment based on orthodox Western medicine has been reported to correlate with the age. On the other hand, the rate of receiving oriental medicine-based treatment, including Kampo prescriptions and acupuncture, does not vary depending on the age, sex, education level, or area of residence, although it is lower than the that of undergoing treatment based on Western medicine (Asaoka, 2000). However, the results of the present study found that a larger percentage of NUSD students had received treatment based on oriental medicine/CAM than TDC students (Q2). Although there were no significant differences in the percentage of students who had received acupuncture among any of the groups (12 to 22%), the percentages of NUSD-3 and NUSD-5 students who had received such treatment were higher than the TDC students. TDC is a private dental school with a long history, and its students

include a large number of children of dentists. Such students may view oriental and traditional Japanese medicine with prejudice, and tend to value modern Western medicine. On the other hand, because the NUSD has relatively been newly developed, the number of its students whose families are not health care professionals is greater compared with TDC, and as a result, NUSD students may have a less biased view of oriental medicine/CAM.

No significant difference could not be found in students' knowledge of oriental medicine and CAM (Q5) between TDC-3 and TDC-5 students. On the other hand, the percentage of NUSD-5 students who were interested in these subjects was significantly higher compared with those of other groups. Our results also revealed that the percentage of NUSD-5 students who were not interested in these topics was also significantly lower. This was presumably because all NUSD-5 students received compulsory lectures in oriental medicine for approximately 20 hours when they were in the third year. Approximately 50% of NUSD-3 and NUSD-5 students were aware that oriental medicine has been adopted into clinical practice (Q9). The percentage of NUSD students who had been aware that Ethical Kampo is covered by health insurance was higher than that of TDC students (Q10). This was presumably because TDC is a dental college, whereas the NUSD has schools of medicine and pharmaceutical sciences. Thus, it may be easier for NUSD students to obtain information related to oriental medicine and CAM from the students and teach staff of these faculties.

We could not find the significant differences in students' interest in oriental medicine/CAM among the four groups. However, the percentages of NUSD-3 and NUSD-5 students who were "very interested" and "interested" in them were tended higher than those of the TDC-3 and TDC-5 students. Furthermore, the percentages of NUSD-3 and NUSD-5 students who were "not interested in them at all" and "not interested in them" were tended lower than those of the TDC-3 and TDC-5 students. The NUSD states on its website that it places more emphasis on education in oriental medicine/CAM than other colleges. Therefore, even before entering the school, most students already know that they will be able to learn oriental medicine/CAM in its undergraduate courses. Some students may specifically enter the NUSD because they are interested in oriental medicine. Several previous studies suggested that, after undergoing oriental medicine/CAM programs, students become more interested in these topics (Akan et al., 2012; Arai et al., 2013; Asaoka, 2000; Furnham and McGill, 2003; Imanishi et al., 2002; Yamamoto and Yoshida, 2002; Yurtseven et al., 2015). On the other hand, students of TDC, whose six-year undergraduate education curriculum does not include medicine/CAM programs, have fewer opportunities to become interested.

In a previous study, the question: "Do you want to prescribe Kampo formulas in the future as a practitioner?", was asked to the fourth-year students of the Faculty of Medicine of a university in Japan prior to and following lectures and experience-based learning. The percentage of students who answered: "Would mainly prescribe Kampo medicine" or "Would mainly practice Western medicine and actively incorporate Kampo medicine", increased from 55 to 71% after attending lectures (Arai et al., 2013). Our results also indicated that students who had undergone such an education curriculum had a better general impression of oriental medicine and were significantly more interested in it. The introduction of an undergraduate education curriculum based on oriental medicine not only improves students' knowledge of oriental medicine, but also motivates them to incorporate oriental medicine into their medical practice in the future. On the other hand, students attending colleges that do not implement education in oriental medicine have few opportunities to obtain accurate knowledge on the topic and its adoption by dental clinical settings. If an undergraduate curriculum has not adopted an oriental medicine program, students' motivation to incorporate oriental medicine into their future practice may be lowered, even when they recognize its importance. In fact, only one (2%) of the NUSD-5 students who had undergone education in oriental medicine did not recognize the necessity of its implementation. On the other hand, 26% of the fifth-year students of TDC, which has no education curriculum for oriental medicine, did not recognize the necessity. These results clearly reflect differences in the awareness of oriental medicine among students of the two schools.

The majority of NUSD-5 students were interested in oriental medicine, and aware that they had knowledge in the field to some extent. More than 60% of them commented that oriental medicine has strengths that Western medicine does not. In Japan, more than 130 types of insurance-covered ethical Kampo extract preparations are widely used to alleviate the symptoms of colds and other internal diseases, and evidence to support their effects is ongoing (Terasawa, 2001). In dental clinical settings, acupuncture is implemented to control or alleviate pain associated with caries (Grillo, et al., 2014), orthodontic treatment (Vachiramon and Wang, 2005), tooth extraction (Kitade and Ohyaibu, 2000; Tevares et al., 2007), and temporomandibular disorders (Jung et al., 2011; La Touche et al., 2010), treat indefinite complaints (Sardella et al., 2013), and suppress abnormal choke reflex (Kameyama et al., 2015; Lu et al., 2000; Sari and Sari, 2010), although evidence to support their effects has not yet been established. Furthermore, because only seven types of ethical Kampo extract preparation are covered by dental insurance as of 2015, dentists have significantly fewer opportunities to prescribe these preparations than physicians. Although these preparations are considered to be effective for burning mouth syndrome, dry mouth, oral malodor, and stomatitis (Kameyama et al., 2009; Nagai et al., 2001; Umemoto et al., 2007; Yamaguchi, 2015), only limited clinical research data are available (Wang et al., 2015). In addition to teaching students the philosophy of oriental medicine and specific treatment methods, it is also necessary to actively promote its clinical research, so that students can learn the mechanism of treatment, its effects, and the results of clinical research.

Currently, using of oriental medicine/CAM and popularity of them have been increasing worldwide among general population (Chen et al., 2007; Braun et al., 2013). Along with this, it has recently been widely spread the

introduction of oriental medicine/CAM courses in an undergraduate medical education curriculum (Wetzel et al., 1998). Prevalence of the education on oriental medicine/CAM for Western doctors appears to be effective in improving attitudes, knowledge, and skills amongst both physicians and medical students towards the use of oriental medicine/CAM (Quarthey et al., 2012). It might also be useful to enhance their knowledge towards the adverse effects of herbal medicines and remedies used by oriental medicine/CAM therapies and their drug interactions (Abebe et al., 2011; Kim et al., 2013).

A large proportion of dental patients have also been reported using of CAM therapies in the United States (Abebe et al., 2011; Spector et al., 2012; Kummet et al., 2015). Differ to medical school, however, it has not yet been widely spread the introduction of oriental medicine/CAM courses in an undergraduate education curriculum in US dental school (Spector et al., 2013., Madhan et al., 2016). Our previous study also demonstrated that all 80 medical schools in Japan have required courses, nevertheless only eight of 29 dental schools have courses of oriental medicine/CAM in an undergraduate dental education curriculum (Kameyama et al., 2008). The results of the present study showed that undergraduate dental students attending colleges that implement education in oriental medicine had a higher level of knowledge, recognition of the necessity of further education, and interest in the field, as well as motivation to incorporate oriental medicine/CAM into their future practice. Unfortunately, education programs for oriental medicine/CAM are not included in the dental education model/core curriculum developed by the Japanese Ministry of Education, Culture, Sports, Science, and Technology (MEXT), or the Standards for the Japanese National Dentistry Examination, which are the minimum requirements for six-year undergraduate dental education established by the Ministry of Health, Labour, and Welfare. Because the Japanese National Dentistry Examination, which dental students take after graduating from college, is based on these education curricula, they are not required to obtain knowledge in oriental medicine for the examination. To promote oriental medicine/CAM in the field of dental education in Japan, it is necessary to not only identify the needs of treatment based on oriental medicine in dentistry and establish its effects, but also request the MEXT and Ministry of Health, Labour, and Welfare to introduce oriental medicine into the above-mentioned model core curricula.

Conflicts of Interest Statement

The authors declare that they have no financial interests in this study.

Authors' contributions

Both Atsushi Kameyama and Kazuo Toda contributed to the design of the questionnaire and collected the data. Atsushi Kameyama analyzed the data and wrote the manuscript. Both Atsushi Kameyama and Kazuo Toda read and approved the final manuscript.

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