Gender Differences in Attitudes regarding Complementary and Alternative Medicine among Health Care Profession Students in Japan

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[ABSTRACT]
Objective: Gender differences in attitudes toward and knowledge of CAM among health care profession students have not been evaluated in Japan. We examined gender differences in opinions, attitudes and knowledge regarding CAM among Japanese health care profession students.

Methods: The subjects of this study were 1465 health care profession students. We used a questionnaire to obtain information on knowledge, sources of information, personal use, interest, willingness to take lectures, opinions regarding effectiveness and willingness to recommend for 17 different CAM modalities.

Results: The proportions of female students with sufficient knowledge or a little knowledge of massage, chiropractic, Japanese herbal medicine, aromatherapy, diet, dietary supplements, psychotherapy, yoga and music therapy were significantly higher than the proportions of male students (p < 0.05). The frequencies of personal use of aromatherapy and yoga by female students were significantly higher than those by male students (p < 0.05). Female students had high levels of interest in aromatherapy, massage, yoga and chiropractic, while male students had high levels of interest in Japanese herbal medicine, massage and psychotherapy. Both female and male students had positive opinions regarding clinical usefulness and recommendation for massage, Japanese herbal medicine and psychotherapy (p < 0.05).

Conclusions: Female students are more likely to have positive and favorable attitudes toward CAM than are male students in Japan. CAM modalities that female students had an interest in and used were different from CAM modalities for which they had positive opinions regarding clinical usefulness and recommendation to patients.

[Key words] complementary and alternative medicine, CAM, gender difference, student, attitude

INTRODUCTION

The use of complementary and alternative medicine (CAM) has been increasing worldwide in recent years and CAM has been more frequently used by females than by males. In a general population, women are more likely to use CAM and to be interested in receiving CAM¹⁴⁻¹⁶. A cross-sectional study in the United States showed a strong association of female gender with CAM use across ethnic minorities⁵. In patients in northern Israel, women visiting primary care clinics used CAM more often than did men⁶⁻⁷. Several studies have shown more frequent use of CAM by women than by men for chronic and life-threatening illnesses⁸⁻¹⁰. Corbin et al. reported that there was a gender difference among US physicians regarding their interest in CAM education and that female physicians were more likely than male physicians to recommend CAM for patients¹¹.

On the other hand, it has been reported that female students in a medical school had significantly more positive attitudes toward CAM than did male students¹²⁻¹⁵, but several studies have shown no significant difference in gender regarding attitudes toward CAM¹⁶⁻¹⁷. Therefore, gender difference in the
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use of and attitude toward CAM in university students has not been clarified, although it has been shown that female gender is associated with the use of and interest in CAM in the general population and in patients and physicians. In addition, previous studies regarding gender differences in attitudes toward CAM have focused on medical students. Since the role of CAM in healthcare has become more widespread, it is important to investigate the gender difference in knowledge of and attitude toward CAM in health care profession students.

In our previous study, it has shown that perception of CAM therapies differed depending on the groups of health care profession students\(^{19}\). To our knowledge, gender differences in attitudes toward and knowledge of CAM among health care profession students have not been evaluated in Japan. Therefore, we examined gender differences in opinions, attitudes and knowledge regarding CAM among Japanese health care profession students. We also clarified the difference in the variety of CAMs between male and female students.

SUBJECTS AND METHODS

1. Study Design and Subjects

We conducted the survey at the University of Tokushima between July 2011 and August 2011. Three hundred and four nursing students, 154 radiologic science students, 74 laboratory science students, 204 nutrition students, 62 oral health and welfare students, 622 medical students, 270 dentistry students and 410 pharmaceutical science students were enrolled. Twenty students in the postgraduate course of midwifery were included in the group of nursing students.

2. Instrument

The questionnaire used in this study consisted of two parts. The first part was socio-demographic information including gender, age and grades. The second part was 7 items to assess the following: (1) knowledge of CAM (sufficient knowledge, a little knowledge and no knowledge), (2) sources of CAM information (television, books and magazines, friends and family, internet, lecture, drug store), (3) interest in CAM (great interest, a little interest, not much interest and no interest) (4) personal experiences with CAM (frequent, sometimes, rarely and never), (5) willingness to take lectures on CAM in the curriculum (very willing, slightly willing, not so willing, not willing and undecided), (6) opinion regarding the clinical usefulness of CAM (very useful, a little useful, not so useful, never useful and undecided) and (7) willingness to recommend CAM to patients (very willing, slightly willing, not so willing, not willing and undecided). We evaluated 17 CAM modalities: acupuncture, Ayurveda, homeopathy, massage, chiropractic, reflexology, Japanese herbal medicine, Western herbal therapy, aromatherapy, diet, dietary supplements, psychotherapy, biofeedback, yoga, balneotherapy, music therapy and qigong.

3. Procedure

The questionnaire was given to each group of students during the first semester of the academic term (June–July, 2011). We requested the students to complete the responses for the questionnaire at the end of the lecture and collected the questionnaires on the same day. The questionnaire could be completely in about 10 minutes. For students working in the hospital, questionnaires with a cover letter and consent form were given to the students and the questionnaires were collected 2 weeks later. Questionnaires from students who did not want to participate in the study and incomplete questionnaires were excluded.

4. Ethics

The Ethics Committee of Tokushima University Hospital approved the study. The students were provided with information about the aim and content of the research and gave oral consent to participate in the research. Students were reassured that their participation was voluntary and that the questionnaire was anonymous.

5. Statistical analysis

Statistical analyses for data evaluation were carried out using SPSS version 14.0 for Windows. Pearson’s chi-square test and Mann-Whitney rank sum test were used to determine differences between female students and male students. A p value of less than 0.05 was considered to be statistically significant.

RESULTS

The overall response rate for all groups was 69.1% (1465/2120). The response rates for the groups were 49.0% for medical students, 85.2% for nursing students, 74.0% for radiologic science students, 87.8% for laboratory science students, 83.8% for nutrition students, 67.4% for dentistry students, 95.2% for oral health and welfare students and 71.5% for pharmaceutical students. We analyzed data for 1459 of the 1465 students because of 6 gender omissions.

The mean age of the subjects was 21.0 years (age range of 18
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The mean ages of male and female students were 21.6 and 20.6 years, respectively. The numbers of male and female subjects were 574 and 885, respectively, and the proportions of male and female subjects were 39.3% and 60.7%, respectively. The numbers and proportions of male and female subjects in each health care profession are shown in Table 1. There were 298 (20.3%) first-, 365 (24.9%) second-, 349 (23.8%) third-, 318 (21.7%) fourth-, 81 (5.5%) fifth- and 55 (3.8%) sixth-grade students.

1. Knowledge of CAM

As can be seen in Fig. 1, the proportions of female students with sufficient knowledge or a little knowledge of massage, chiropractic, Japanese herbal medicine, aromatherapy, diet, dietary supplements, psychotherapy, yoga and music therapy were significantly higher than the proportions of male students (p < 0.05). Female students had high levels of knowledge of yoga, dietary supplements, Japanese herbal medicine, aromatherapy, massage and psychotherapy. On the other hand, male students had high levels of knowledge of Japanese herbal medicine, dietary supplements, massage and yoga.

2. Sources of CAM Information

The sources of CAM information for male and female students were television, books and magazines (59.9% and 61.5%, respectively), friends and family (16.8% and 17.8%, respectively), internet (8.7% and 6.5%, respectively), lecture (8.9% and 7.9%, respectively) and drug store (4.7% and 5.7%, respectively). There were no significant differences in the proportions of sources of CAM information between male and female students.

3. Personal experiences with CAM

As can be seen in Fig. 2, personal use of aromatherapy and yoga by female students was significantly more frequent than that by male students (p < 0.01). On the other hand, use of acupuncture, chiropractic, psychotherapy, music therapy, balneotherapy and qigong by male students was significantly more frequent than that by female students (p < 0.05).

4. Interest in CAM

The proportions of female students who had interest in all CAMs except for Japanese herbal medicine and qigong were significantly higher than the proportions of male students (p < 0.05) (Fig. 3). There were no significant differences in interest in Japanese herbal medicine and qigong between male students and female students. Female students had high levels of interest in aromatherapy, massage, yoga, chiropractic and Japanese

Table 1 Numbers and proportions of male and female students in each health care profession

<table>
<thead>
<tr>
<th>All</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>All students</td>
<td>1459 (39.3%)</td>
<td>885 (60.7%)</td>
</tr>
<tr>
<td>Medical</td>
<td>305 (60.3%)</td>
<td>121 (39.7%)</td>
</tr>
<tr>
<td>Nursing</td>
<td>276 (6.5%)</td>
<td>258 (93.5%)</td>
</tr>
<tr>
<td>Radiologic science</td>
<td>113 (76.1%)</td>
<td>27 (23.9%)</td>
</tr>
<tr>
<td>Laboratory science</td>
<td>65 (29.2%)</td>
<td>46 (70.8%)</td>
</tr>
<tr>
<td>Nutrition</td>
<td>171 (15.8%)</td>
<td>144 (84.2%)</td>
</tr>
<tr>
<td>Dentistry</td>
<td>180 (54.4%)</td>
<td>82 (45.6%)</td>
</tr>
<tr>
<td>Oral health and welfare</td>
<td>57 (3.5%)</td>
<td>55 (96.5%)</td>
</tr>
<tr>
<td>Pharmaceutical</td>
<td>292 (47.9%)</td>
<td>152 (52.1%)</td>
</tr>
</tbody>
</table>

Fig. 1 Knowledge of CAM in male and female students.
Solid bar: male students, open bar: female students
* p < 0.001, # p < 0.05

Fig. 2 Personal experiences with CAM in male and female students.
Solid bar: male students, open bar: female students
* p < 0.001, ** p < 0.01, * p < 0.05
Japanese herbal medicine, whereas male students had high levels of interest in Japanese herbal medicine, massage, psychotherapy and supplements.

5. Willingness to take lectures on CAM

As can be seen in Table 2, the proportions of female students with willingness to take lectures on CAM except for qigong were significantly higher than the proportions of male students (p < 0.05). Female students had high levels of willingness to take lectures on aromatherapy, Japanese herbal medicine and yoga, while male students had high levels of willingness to take lectures on Japanese herbal medicine, psychotherapy and supplements.

6. Opinions regarding clinical usefulness of CAM and willingness to recommend CAM to patients

The proportions of female students who had positive opinions regarding the usefulness of all CAM therapies except for Japanese herbal medicine and willingness to recommend all CAM therapies to patients except for Japanese herbal medicine were significantly higher than the proportions of male students (p < 0.05) (Table 2). Both female and male students had positive opinions regarding the usefulness of Japanese herbal medicine and willingness to recommend Japanese herbal medicine to patients. Female students had positive opinions regarding the usefulness of massage, Japanese herbal medicine and psychotherapy, while male students had positive opinions regarding the usefulness of massage, Japanese herbal medicine and psychotherapy. In addition, female students had positive opinions regarding the willingness to recommend massage, Japanese herbal medicine and psychotherapy, while male students had positive opinions regarding the willingness to recommend massage, Japanese herbal medicine and psychotherapy.

DISCUSSION

In the present study, we showed that female students had higher levels of knowledge of and interest in CAM therapies except for Japanese herbal medicines and qigong and had more positive opinions regarding willingness to take lectures, clinical usefulness and willingness to recommend to patients except for Japanese herbal medicines and qigong.

Similar to this study’s findings, previous studies have also shown that female students had more positive attitudes toward CAM than did male students. In health sciences students, female students were also shown to have a significantly more positive attitude than male students regarding the use of CAM. Female students are more open to ideas and theories supporting alternative forms of medicine than are male students and have more of a tendency to accept CAM than male students. It has been reported that there was a significant difference between opinions of male and female pharmacy students regarding placebo effects of CAM and that more female students than male students thought that CAM approaches held promise for treatment of symptoms and diseases. Since male medical students were more likely than female medical students to believe that complementary medicine is not scientific and that it should not be taught in medical school, Furnham et al. suggested that male students seem to be more skeptical about complementary medicine than are female students. Female students may be more proactive in their health beliefs towards preventive care and have more positive opinions for the importance of CAM in health care than male students.

On the other hand, several studies have shown no significant gender differences in attitudes toward CAM. We enrolled not only medical students but also nursing students, nutrition students and pharmaceutical science students. It has been shown that nursing students are familiar with CAM. Baugniet et al. reported that nursing students regarded massage, chiropractic and acupuncture as being useful. Kim et al. reported that massage and meditation were the most familiar therapies for nursing students. Halcon et al. reported that the CAM therapies rated most highly by nursing students in terms of effectiveness were acupuncture, massage, chiropractic, supplements and prayer. These CAM modalities are familiar for nurses because many of these modalities are similar to nursing...
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Interventions such as touch, massage and stress management. Thus, these types of hands-on care have been routinely taught in nursing education, and CAM modalities such as massage, chiropractic and psychotherapy are likely to have high acceptance by nursing students as basic nursing skills.

We found that levels of interest in CAM modalities were different in male students and female students. Female students had high levels of interest in aromatherapy and yoga, while male students had high levels of interest in Japanese herbal medicine, massage and psychotherapy. Greenfield et al. reported that both male and female students gave the highest rating for chiropractic, though female students gave more positive ratings for acupuncture, chiropractic, herbal medicine, homeopathy and osteopathy than did male students. In Israeli medical students, more female students than male students showed an interest in phytotherapy.

Interestingly, female students in our study had high levels of interest, experience and willingness to take lectures for aromatherapy interventions such as touch, massage and stress management. Thus, these types of hands-on care have been routinely taught in nursing education, and CAM modalities such as massage, chiropractic and psychotherapy are likely to have high acceptance by nursing students as basic nursing skills.

We found that levels of interest in CAM modalities were different in male students and female students. Female students had high levels of interest in aromatherapy and yoga, while male students had high levels of interest in Japanese herbal medicine, massage and psychotherapy. Greenfield et al. reported that both male and female students gave the highest rating for chiropractic, though female students gave more positive ratings for acupuncture, chiropractic, herbal medicine, homeopathy and osteopathy than did male students. In Israeli medical students, more female students than male students showed an interest in phytotherapy.

Interestingly, female students in our study had high levels of interest, experience and willingness to take lectures for aromatherapy.
matherapy and yoga, but CAM therapies for which they had positive opinions regarding clinical usefulness and willingness to recommend to patients were Japanese herbal medicine, massage and psychotherapy. On the other hand, CAM modalities for which male students had high levels of interest, experience, willingness to take lectures, positive opinion regarding clinical usefulness and willingness to recommend to patients were common modalities such as Japanese herbal medicine, massage and psychotherapy. In other words, female students felt unsure about the clinical usefulness of and had hesitation about recommending aromatherapy and yoga to patients even though they had interest in and experience with these CAM modalities and would like to take lectures on these modalities. However, CAM modalities that male students would recommend to patients were the same as the CAM modalities that they had an interest in and experience with and would like to take lectures on. This difference between male students and female students is very interesting. Female students may feel that there is a lack of evidence for clinical usefulness of aromatherapy and yoga.

With regard to personal experience, general surveys of university students have demonstrated that female students are more likely to use CAM personally^{13,14,20,23} and that male students have more negative attitudes^{28}. Female students were more likely to have personally used aromatherapy or reflexology than were male students^{29}. Wilkinson et al. also reported that the frequency of aromatherapy by female students was significantly higher than that by male students, while there were no gender differences in other CAM therapies^{29}. In the present study, the CAM modalities that were used personally by male and female students were different. Female students had more frequently used aromatherapy and yoga, while male students had more frequently used acupuncture, balneotherapy, chiropractic, music therapy, psychotherapy and qigong.

Both male and female students had an interest in Japanese herbal medicine and had positive opinions regarding willingness to take lectures on, clinical effectiveness of Japanese herbal medicine and willingness to recommend this CAM to patients. In Japan, the content of CAM education in schools is mainly Japanese herbal medicines and acupuncture. Pharmaceutical and medical students received lectures on Japanese herbal medicine in their curriculum. Lectures are probably the reason for their knowledge of and positive opinions regarding Japanese herbal medicine. We did not find a gender difference in the source of CAM information. The proportions of students who obtained information on CAM from magazines or television were approximately 60% in both male and female students, but the percentages of both male and female students who obtained information on CAM from lectures were small. The significance and necessity of incorporating CAM into educational curricula in order to meet patients’ needs have been increasingly recognized in recent years^{26,30}. The interest in CAM may be different between male and female students if the opportunity for CAM lectures increases.

This study has several limitations. First, the reliability of answers could not be verified since we used a self-administered questionnaire. Second, the subjects were health care profession students who had a strong interest in health care. In addition, opinions and attitudes may differ among health care profession students. Baugniet et al. reported that perceptions about the usefulness of CAM therapies differed among groups of health profession students^{26}. The grade in students may influence knowledge and attitudes regarding CAM. It has been reported that the effectiveness of CAM was rated lower by third-year students than by first-year students^{29}. Desylvia et al. also reported that personal use of and favorable attitudes toward CAM in third-year students were less than those in first-year students^{31}. In addition, previous studies demonstrated that students’ desire for CAM education declined with progress through medical school^{19,32}. These differences may be due to an increase in opportunities for contact with patients in whom effects of CAM were not found through time. Finally, this study may not be representative of students as a whole since questionnaires were distributed to students attending lectures.

In conclusion, female students are more likely to have positive and favorable attitudes toward CAM than are male students in Japan. In addition, the CAM modalities that female students had high levels of interest in, experience with and willingness to take lectures on were aromatherapy and yoga, but CAM modalities for which they had positive opinions regarding clinical usefulness and willingness to recommend to patients were Japanese herbal medicine, massage and psychotherapy. On the other hand, CAM modalities that male students would recommend to patients were the same as CAM modalities that they had an interest in and experience with and would like to take lectures on. Further studies on gender-specific preferences regarding CAM are needed.

ACKNOWLEDGMENT

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CONTRIBUTIONS

Authors TT, MK and TY wrote the first draft of the paper. TT and MK collected data and statistically analyzed data. All authors (TT, MK, MI, SK, TY) contributed to the final draft of the paper, had full access to the data, and take responsibility for the integrity of the data and the accuracy of the data analysis.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest for this work.

REFERENCES

要旨

補完代替医療（CAM）に関する認識は医療系大学生の男女間で異なる

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医療系大学生の補完代替医療（CAM）に関する男女間の認識の相違について実態を明らかにすることを目的とし，医学科，看護学・助産学，放射線科，検査科，栄養学，歯学科，口腔保健学，薬学生部学生2120名を対象に，無記名の構成的質問紙によるアンケート調査を行い，属性および17種類のCAMについて7項目を質問した。医療系大学生のCAMに対する認識は，性別によって差がみられることが明らかになった。女子学生は，男子学生に比べてCAMに対して肯定的で積極的な傾向が認められた。また，女子学生はCAMに「興味関心」や「受講希望」であっても，「有効性」や「推奨」とは連携していなかったが，男子学生はこれらの項目が連携しており，性別によるCAMに対する認識と態度の違いが示唆された。

キーワード：補完代替医療，CAM，認識，学生，性差