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Complementary and alternative medicine for allergic rhinitis in Japan

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ABSTRACT

Background: Complementary and alternative medicine (CAM) is extensively used in patients with allergic diseases worldwide. The purpose of this study was to investigate the actual situation of CAM practice in the treatment of allergic rhinitis.

Methods: We distributed questionnaires to otolaryngologists at 114 facilities in Japan. The subjects who participated in this study included children <16 years of age and adults ≥16 years of age diagnosed with allergic rhinitis by otolaryngologists. The survey was performed in the period from September 2007 to August 2009. Furthermore, we performed the same investigation out of the hospital setting, such as during general health examinations. All questionnaires were returned to Chiba University and analyzed.

Results: The proportions of patients who had ever experimented with CAM in the hospital survey were 7.1% (225/3170) and 19.2% (1416/7363) of children and adults, respectively. Approximately 36.2% of the adult patients thought that the treatments were effective. The main reasons for CAM use were safety, convenience and low price. However, the group who spent more than \$1000 on CAM felt more dissatisfaction and anxiety related to treatment at the hospital. The situation of CAM practice was not consistent and was instead influenced by the backgrounds of the subjects.

Conclusions: Many patients who receive CAM report feeling that the effects of treatment provided by hospitals are insufficient and have concerns about the side effects of such treatments. Information regarding standard treatments, as described in the guidelines, should become widely known and diffused, and strong communication with patients should be considered.

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Introduction

Forms of complementary and alternative medicine (CAM) are extensively used worldwide. CAM is defined as “a group of diverse medical and health care systems, therapies and products that are

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often not integrated with conventional medicines".¹ The number of CAM therapies is enormous, and the treatments differ by country, race, culture, religion, history and the prevalence of various diseases. Data compiled from public opinion surveys conducted between 1985 and 1992 show rates of CAM use in the general population of 26% in the United Kingdom, 49% in France, 46% in Germany and 34% in the United States.² A follow-up national survey performed in the United States revealed that the use of CAM increased from 33.8% in 1990 to 42.1% in 1997.³

The prevalence of CAM use is high among patients with chronic diseases.⁴ Allergic diseases, including asthma and allergic rhinitis, are common chronic conditions, and CAM therapies are also extensively used in the treatment of allergic diseases. A population-based survey in the United States conducted in 1999 reported the prevalence of CAM use among adults with asthma or rhinosinusitis to be 42%.⁵ In another survey conducted from 2000 to 2001, 26.5% of the participants used CAM treatments for their allergies (Germany).⁶

In recent years, many countries have experienced an increase in the prevalence of allergic rhinitis.⁷ There are many reports evaluating the efficacy of various CAM therapies for allergic rhinitis, such as acupuncture,^{8–10} herbal medicines,^{11–17} homeopathy^{18–24} and physical techniques.^{25,26} However, few reports have focused on the actual situation of CAM use for the treatment of allergic rhinitis.

We therefore performed the first survey on this issue using a questionnaire. The purpose of this study was to investigate the actual situation of CAM practice in patients with allergic rhinitis, as well as the reasons for CAM use, comparing the situation among groups with different backgrounds.

Methods

Distribution and collection of the questionnaire

We distributed questionnaires to the otolaryngologists of 114 hospitals and clinics affiliated with the university of each author in Japan. The subjects who participated in this study included children <16 years of age and adults ≥16 years of age diagnosed with allergic rhinitis by otolaryngologists. The survey was performed in the period from September 2007 to August 2009. Furthermore, we performed the same investigation outside of the hospital, such as during general health examinations and open lecture meetings for allergic rhinitis. All questionnaires were returned to Chiba University and analyzed. The study protocol was approved by the Ethics Committee of Chiba University Hospital, and informed consent was obtained from each subject.

Content of the questionnaire

The details of the questions in the questionnaire are shown in Table 1. The current study focused on the prevalence of CAM use, type of CAM, period and efficacy of a CAM treatment which was used for the longest time, expense, reason for CAM use, provider of information, consultation with the physician and adverse effects. The questionnaires were filled out by the patients. When the children were too young to fill out the questionnaire, their parents completed the form.

Statistical analysis

All data were analyzed at Chiba University. The data analysis was performed using the chi-square test at a significance level of 5%.

Table 1
The contents of the questionnaire.

| No. | Questionnaire items |
|-----|---|
| 1 | Had you ever used CAM therapies for allergic rhinitis? (yes/no) |
| 2 | What types of CAM have you ever used? Multiple answers are possible. [Following 23 items: Ten-Cha (<i>Rubus suavissimus</i>); Chameleon plant tea (<i>Houttuynia cordata</i>); Guava tea (<i>Psidium guajava</i>); Japanese green tea (<i>Camellia sinensis</i>); Japanese persimmon tea (<i>Diospyros kaki</i>); Gymnema tea (<i>Gymnema sylvestre</i>); Herb tea; Shiso (<i>Perilla frutescens</i>); Green juice; Chlorella; Aloe; Acupuncture; Moxibustion; Chinese medicine; Foods containing lactic acid bacteria (such as yogurt); Cedar pollen candy; Mint gum; Tablet containing lactic acid bacteria; Propolis; Nose steam therapy; Aromatherapy; Spa therapy; Others] |
| 3 | Tell the period of use of a CAM which was used for the longest time. [Less than one month; Approximately half one year; Approximately one year; More than one year; Others] |
| 4 | How was the efficacy of a CAM which was used for the longest time? [Unknown; Ineffective; Slightly effective; Very effective; Others] |
| 5 | How much had you spent on CAM therapies? [Under \$10; \$10–100; \$100–1000; More than \$1000; Others] |
| 6 | What were the reasons why you began CAM therapies? Multiple answers are possible. [Few side effects; Convenience; Low price; Dissatisfaction with the treatment at the hospital; Worry about the side effects of the treatment at the hospital; Insufficient treatment explanation from the physician; Others] |
| 7 | What or who were the providers of CAM information? Multiple answers are possible. [TV or newspaper; Family or friends; Health magazines; Website use; Physicians; Others] |
| 8 | Had you ever talked about CAM therapies with physicians? [yes/no] |
| 9 | How was the reaction of the physicians when you talked about CAM therapies? [Physicians recommended to continue using your CAM treatments; Physicians encouraged to stop using your CAM treatments; No advice] |
| 10 | Had you ever experienced any adverse effects? [yes/no] |
| 11 | Tell me the contents of the adverse effects. |

Results

Answers of the patients who visited the hospitals

A total of 10,533 patients with AR completed the questionnaire.

Prevalence of CAM (Question 1)

Table 2 shows the prevalence of CAM use according to age and gender. The proportions of patients who had ever experimented

Table 2
Prevalence of CAM.

| | Total (No.) | CAM practice (No.) | Prevalence of CAM (%) | p-Value (between the genders) |
|-------------------|-------------|--------------------|-----------------------|-------------------------------|
| Children (<16 yr) | 3170 | 225 | 7.1% | – |
| 16 yr–20s | | | | <i>p</i> < .01 |
| Female | 1027 | 174 | 16.9% | |
| Male | 605 | 69 | 11.4% | |
| Total | 1632 | 243 | 14.9% | – |
| 30s | | | | <i>p</i> < .05 |
| Female | 1144 | 309 | 27.0% | |
| Male | 495 | 104 | 21.0% | |
| Total | 1639 | 413 | 25.2% | – |
| 40s | | | | <i>p</i> < .001 |
| Female | 1013 | 267 | 26.4% | |
| Male | 465 | 84 | 18.1% | |
| Total | 1478 | 351 | 23.7% | – |
| 50s | | | | <i>p</i> < .01 |
| Female | 829 | 183 | 22.1% | |
| Male | 413 | 64 | 15.5% | |
| Total | 1242 | 247 | 19.9% | – |
| 60s–80s | | | | <i>p</i> < .01 |
| Female | 748 | 106 | 14.2% | |
| Male | 624 | 56 | 9.0% | |
| Total | 1372 | 162 | 11.8% | – |
| Total of adults | | | | <i>p</i> < .001 |
| Female | 4761 | 1039 | 21.8% | |
| Male | 2602 | 377 | 14.5% | |
| Total | 7363 | 1416 | 19.2% | – |

with CAM were 19.2% (1416/7363) and 7.1% (225/3170) in adults and children, respectively. Adults used CAM more frequently than children, and significant difference was observed ($p < .001$). Among the adult patients, 4761 females and 2602 males answered the questionnaires. The prevalence of CAM use was 21.8% and 14.5% in females and males, respectively. When compared between the genders, the rates were significantly higher in the female patients than in the male patients at all ages. The peak rates were observed in the patients in their 30s–50s in both genders.

Types of CAM (Question 2)

The types of CAM are shown in Table 3. Sixty two percent of patients had ever used only one type of CAM, whereas the remaining 38% had used multiple CAM therapies. The frequency of Ten-Cha was 38.8%, which was the highest among all treatments in the adult patients. The rate of consumption of foods containing lactic acid bacteria (such as yogurt) was 32.4%, which was the second highest. The rates of use of Cedar pollen candy, Shiso (*Perilla frutescens*) and Mint gum each exceeded 10%. Treatment with rates above 5% included Chinese medicine and nose steam therapy. Other treatments were used at rates of less than 5%. The rates of consuming foods containing lactic acid bacteria (such as yogurt) and Ten-Cha were 22.7% and 20.9%, respectively, which were the highest among all treatments in children. The rates of nose steam therapy, Chinese medicine, and Shiso (*P. frutescens*) were above 5% in the current study.

Period, efficacy and expense (Questions 3–5)

The results for the treatment period and efficacy of a CAM treatment which was used for the longest time and expense are shown in Table 3. The total rates of treatment duration of “approximately one year” and “more than one year” were 34.3% and 31.1% in adults and children, respectively. The total rates of efficacy of “slightly effective” and “very effective” were 36.2% and 35.7% in adults and children, respectively. In addition, the rates of patients who had spent more than \$1000 were 5.9% and 6.2% in adults and children, respectively.

Reasons for CAM use (Question 6)

The reasons for CAM use are shown in Table 3. The most frequent reason was “few side effects,” at a rate of 47.4% in the adult patients. The second and third reasons were “convenience” and “low price,” respectively. In children, the most popular reason was also “few side effects,” at a rate of 47.1%. The second and third reasons were “convenience” and “dissatisfaction with the treatment at the hospital.”

Provider of CAM information (Question 7)

The providers of CAM information are shown in Table 3. In adult patients, the most common way of learning about CAM therapies was through information obtained from the “TV or newspaper,” at a rate of 45.6%. The second and third most popular ways were to obtain information from “family or friends” and “health magazines,” respectively. The rate of “website use” was not high. In children, the most common way was to obtain information from “family or friends,” at a rate of 47.6%, while the second and third most popular ways were through the “TV or newspaper” and “health magazines.”

Table 3
Answers in patients who visited otolaryngologists.

| | Adults n = 1416 | Children n = 225 |
|--|--------------------|---------------------|
| Types of CAM | | |
| Phytotherapy | | |
| Ten-Cha (<i>Rubus suavissimus</i>) | 38.8% | 20.9% |
| Chameleon plant tea (<i>Houttuynia cordata</i>) | 3.9% | 0.9% |
| Guava tea (<i>Psidium guajava</i>) | 3.2% | 0.4% |
| Japanese Green tea (<i>Camellia sinensis</i>) | 2.3% | 1.3% |
| Japanese persimmon tea (<i>Diospyros kaki</i>) | 2.1% | 1.3% |
| Gymnema tea (<i>Gymnema sylvestre</i>) | 1.0% | 0% |
| Herb tea (<i>The content is unclear</i>) | 4.7% | 0.9% |
| Shiso (<i>Perilla frutescens</i>) | 11.8% | 6.2% |
| Green juice | 2.6% | 2.7% |
| Chlorella | 1.8% | 0.4% |
| Aloe | 1.8% | 0.9% |
| Physical techniques | | |
| Acupuncture | 1.9% | 1.3% |
| Moxibustion | 1.1% | 0% |
| Qigong | 0.7% | 0.4% |
| Other treatment by ingestion | | |
| Chinese medicine | 9.2% | 8.9% |
| Foods containing lactic acid bacteria (such as yogurt) | 32.4% | 22.7% |
| Cedar pollen candy | 14.2% | 3.6% |
| Mint gum | 11.0% | 1.8% |
| Tablet containing lactic acid bacteria | 5.1% | 2.7% |
| Propolis | 3.6% | 1.3% |
| Other therapies | | |
| Nose steam therapy | 7.5% | 9.3% |
| Aromatherapy | 3.2% | 3.6% |
| Spa therapy | 1.8% | 1.8% |
| Others | 8.5% | 16.0% |
| Period | | |
| Less than one month | 32.6% | 35.1% |
| Approximately half one year | 25.8% | 27.2% |
| Approximately one year; | 8.3% | 5.3% |
| More than one year | 26.0% | 25.8% |
| Others | 7.3% | 6.6% |
| Efficacy | | |
| Unknown | 41.4% | 48.7% |
| No effect | 22.1% | 15.0% |
| Slightly effective | 29.2% | 29.4% |
| Very effective | 7.0% | 6.3% |
| Others | 0.3% | 0.6% |
| Expense | | |
| Less than \$10 | 12.0% | 12.8% |
| \$10–100 | 44.8% | 39.4% |
| \$100–1000 | 27.1% | 35.4% |
| More than \$1000 | 5.9% | 6.2% |
| Others | 10.2% | 6.2% |
| Reason of CAM use | | |
| Few side effects | 47.4% | 47.1% |
| Convenience | 22.6% | 12.9% |
| Low price | 17.2% | 8.9% |
| Dissatisfaction with the treatment at the hospital | 8.5% | 12.9% |
| Worry about the side effect of the treatment at the hospital | 5.5% | 7.6% |
| Insufficient treatment explanation from the physician | 0.8% | 0.9% |
| Others | 27.8% | 32.9% |
| Providers of CAM information | | |
| TV or newspaper | 45.6% | 31.6% |
| Family or friends | 42.0% | 47.6% |
| Health magazines | 24.7% | 20.9% |
| Website use | 6.7% | 7.6% |
| Physicians | 3.9% | 6.7% |
| Others | 10.2% | 9.8% |
| Consultation with a physician | | |
| yes | 15.3% | 14.0% |
| Reaction of physicians (Only patients who answered “yes”) | | |
| The Physician recommended to continue | 14.8% | 36.0% |
| The Physician encouraged to stop | 6.6% | 8.0% |
| No advice | 78.6% | 56.0% |

Consultation with a physician for CAM (Questions 8 and 9)

The rate of consultation with a physician for CAM is shown in Table 3. In adults, the proportion of patients who had talked about their CAM therapies with a physician was 15.3%. Conversely, the vast majority of respondents (84.7%) answered they had not previously talked about their CAM treatments with a physician. Among the 15.3% of patients who had talked with a physician, 6.6% were encouraged to stop using their CAM treatments. Almost all of the patients (78.6%) received no advice from their physicians, while 14.8% of the patients were recommended to continue using their CAM treatments. In children, the proportion of patients who had talked about their CAM therapies with a physician was 14.0%. Among the 14.0% of these patients, 8.0% were told to stop using their CAM treatments. More than half of the patients (56.0%) received no advice from their physicians, and 36.0% of the patients were recommended to continue using their CAM therapies.

Adverse effects (Questions 10 and 11)

There were eight adverse events associated with the use of CAM. These adverse events included five cases of urticaria, two cases of abdominal pain and one case of nausea. Cedar pollen candy caused four cases of urticaria, while Chinese medicine caused urticaria and nausea and both Ten-Cha and foods containing lactic acid bacteria caused abdominal pain, respectively.

Comparison of seasonal and perennial allergic rhinitis in the adult patients

Table 4 shows a comparison between the patients with seasonal allergic rhinitis (SAR) and perennial allergic rhinitis (PAR). Ten-Cha and foods containing lactic acid bacteria (such as yogurt) were the most popular CAM treatments in the SAR group. On the other hand, nose steam therapy and Chinese medicine were the most common treatments in the PAR group. Regarding the period of CAM use, the total rates of “approximately one year” and “more than one year” were significantly higher in the PAR group than in the SAR group ($p < .001$). In terms of the efficacy of CAM, the total rates of “slightly effective” and “very effective” were significantly higher in the PAR group than in the SAR group ($p < .001$). Additionally, the proportion of patients who spent more than \$1000 was higher in the PAR

group and a tendency towards significance was observed ($p = .058$). The proportion of patients who choose at least one of the following three answers (“dissatisfaction with the treatment at the hospital,” “worry about the side effects of the treatment at the hospital” and “insufficient treatment explanation from the physician”) was 10.7% and 17.1% in the SAR and PAR groups, respectively. The patients with PAR felt significantly more dissatisfaction and anxiety related to treatment at the hospital ($p < .05$).

Comparison of the groups who spent \$1000 or more, or less than \$1000 on CAM among the adult patients

There were no differences the type of CAM between the groups who spent \$1000 or more ($n = 83$) or less than \$1000 ($n = 1188$) on CAM, and Ten-Cha, foods containing lactic acid bacteria and Chinese medicine were the most popular CAM therapies in both groups (data not shown). The group who spent \$1000 or more on CAM thought that the CAM treatments were more effective ($p < .05$) and felt more dissatisfaction and anxiety related to treatment at the hospital ($p < .05$) (Table 5).

Comparison of the subject groups with different backgrounds in the adult patients

We performed the same questionnaire survey outside of the hospital setting among subjects who received general health examinations or attended open public medical lecture meetings (Table 6). A total of 762 subjects had previously received an AR diagnosis at the hospital. Although the type of CAM was not significantly different compared with that observed in the AR patients examined at the hospital, the rate of CAM use was higher in the subjects assessed outside of the hospital. As for the reasons for CAM use, the rates of dissatisfaction and anxiety related to treatment at the hospital were higher in these subjects ($p < .001$).

Discussion

We investigated whether patients who received treatment at the hospital for allergic rhinitis (AR) had ever experienced therapy with CAM. Consequently, we found that approximately 19% of the adult patients and 7% of the pediatric patients had received treatment with CAM. Despite their various experiences, the efficacy of CAM therapies, including mild effects was noted in approximately

Table 4
Comparison between SAR and PAR.

| Types of AR | No. | Types of CAM | | | | | | | |
|-------------|--|--------------------------|----------------------------|--|--|---|--|--|--|
| SAR | 942 | Ten-Cha 50.1% | | Foods containing lactic acid bacteria 42.1% | | Cedar pollen candy 18.6% | | Shiso 14.8% | |
| PAR | 175 | Nasal nebulizer 20.6% | | Chinese medicine 18.9% | | Ten-Cha 18.3% | | Foods containing lactic acid bacteria 17.1% | |
| Types of AR | Period | | Efficacy | | Cost | | | | |
| | Approximately one year or longer than one year | <i>p</i> -Value (OR) | Slightly or very effective | <i>p</i> -Value (OR) | More than \$1000 | <i>p</i> -Value (OR) | | | |
| SAR | 31.5% | – | 33.4% | – | 4.1% | – | | | |
| PAR | 49.6% | <.001 (2.15) | 46.6% | <.001 (1.76) | 7.5% | 0.058 (1.86) | | | |
| Types of AR | Reason for CAM use | | | | | | | | |
| | Few side effects | Convenience | Low price | Dissatisfaction with the treatment at the hospital | Worry about the side effect of the treatment at the hospital | Insufficient treatment explanation from the physician | Dissatisfaction and anxiety related to treatment at the hospital | <i>p</i> -Value (OR) | |
| SAR | 48.5% | 23.8% | 17.8% | 8.0% | 5.6% | 0.6% | 10.7% | – | |
| PAR | 46.5% | 16.2% | 9.3% | 10.0% | 4.7% | 3.1% | 17.1% | <.05 (1.72) | |

AR, Allergic rhinitis; SAR, Seasonal allergic rhinitis; PAR, Perennial allergic rhinitis.

Table 5

Comparison between groups who had spent more or less than \$1000 on CAMs.

| Group of expense | n | Efficacy | | Reason for CAM use | | | | | | | |
|------------------|------|----------------------------|----------------------|--------------------|-------------|-----------|--|--|---|--|----------------------|
| | | Slightly or very effective | <i>p</i> -Value (OR) | Few side effects | Convenience | Low price | Dissatisfaction with the treatment at the hospital | Worry about the side effect of the treatment at the hospital | Insufficient explanation from the physician | Dissatisfaction and anxiety related to treatment at the hospital | <i>p</i> -Value (OR) |
| Less than \$1000 | 1188 | 34.7% | – | 43.5% | 21.2% | 16.3% | 7.7% | 4.6% | 0.6% | 12.6% | – |
| More than \$1000 | 83 | 46.8% | <.05 (1.67) | 57.7% | 17.3% | 9.6% | 11.5% | 13.5% | 1.9% | 21.2% | <.05 (1.92) |

Table 6

Comparison between different background groups.

| Backgrounds | Prevalence of CAM | | | Type of CAM | | | |
|-------------------------|-------------------|--------------------|----------------------|-------------|---------------------------------------|--------------------|-------|
| | Total No. | CAM practice n (%) | <i>p</i> -Value (OR) | Ten-Cha | Foods containing lactic acid bacteria | Cedar pollen candy | Shiso |
| Hospital | 7363 | 1416 (19.2) | – | 38.8% | 32.4% | 14.2% | 11.8% |
| Outside of the hospital | 762 | 348 (45.7) | <.001 (3.53) | 44.8% | 42.8% | 17.0% | 16.1% |

| Backgrounds | Period | | Efficacy | | Expense | |
|-------------------------|--|----------------------|----------------------------|----------------------|------------------|----------------------|
| | Approximately one year or longer than one year | <i>p</i> -Value (OR) | Slightly or very effective | <i>p</i> -Value (OR) | More than \$1000 | <i>p</i> -Value (OR) |
| Hospital | 34.3% | – | 36.2% | – | 5.9% | – |
| Outside of the hospital | 40.0% | <.05 (1.27) | 43.8% | <.05 (1.37) | 39.2% | <.001 (10.2) |

| Backgrounds | Reason for CAM use | | | | | | | |
|-------------------------|--------------------|-------------|-----------|--|--|---|--|----------------------|
| | Few side effects | Convenience | Low price | Dissatisfaction with the treatment at the hospital | Worry about the side effect of the treatment at the hospital | Insufficient treatment explanation from the physician | Dissatisfaction and anxiety related to treatment at the hospital | <i>p</i> -Value (OR) |
| Hospital | 47.4% | 22.6% | 17.2% | 8.5% | 5.5% | 0.8% | 14.9% | – |
| Outside of the hospital | 55.1% | 22.1% | 12.3% | 16.3% | 11.2% | 2.9% | 27.9% | <.001 (2.21) |

36% of the patients, with no clear effects in the remaining 60% or more of patients. The low percentage of patients who underwent CAM therapy may be related to the fact that such patients visited the hospital regularly.

On the other hand, in studies performed at facilities outside of the hospitals, such as during general health examinations, the percentage of use of CAM was 52.6%, which was higher than that noted in the hospital patients, and the percentage of patients who judged CAM therapy as being efficacious was also high (43.8%). Although the high percentage of use of CAM reflected the efficacy of alternative medicine treatment in these patients, the subjects had been diagnosed and treated for AR at the hospital at least once. The reasons for use of CAM in these patients included safety, insufficient effects of treatment provided by medical facilities and concerns about the side effects of the treatments provided by medical facilities. Anxiety, insufficient treatment effects at medical facilities and the inconvenience of visiting the hospital were also common reasons among the patients whose spending on CAM was high. These findings are different from those of a previous survey that focused on reasons for CAM use,²⁷ in which the majority of CAM users were not dissatisfied with conventional medicine, but rather used CAM largely because of their own values, beliefs and philosophical orientations toward health and life. One of the reasons for the differences between our findings and those of previous surveys was the exclusion of patient values, beliefs, and philosophical orientation from the questionnaire used in the present study. Further investigation is warranted to determine whether these factors were contributors to CAM use in Japanese patients.

It is difficult to evaluate the efficacy of CAM treatments. Comparative studies have been performed to assess various

alternative medicine therapies^{8–26} in AR. Recent studies on CAM therapy for AR and respiratory disorders^{28,29} indicated that acupuncture, herbal medicines, and homeopathy remain popular to this day. Phototherapy, which was not included in our questionnaire as it is rarely used in Japan, is a relatively new treatment that was evaluated by several studies.^{30,31} Although improvements in symptoms have been reported in some studies that included comparisons with a placebo group or sham treatment,^{8,9,11–13,18–20,25,26} the details of such comparative studies, including the evaluation methods and investigators, were not discussed sufficiently. Therefore, the evidence in many of these studies is insufficient. Although high efficacy has been reported in some studies, additional studies were unable to confirm these results.

CAM therapies are also widely used by patients with asthma and atopic dermatitis.^{32,33} Many patients with asthma use acupuncture, herbal medicines, homeopathy, and breathing techniques.³² A recent review³³ of CAM for atopic dermatitis showed evidence supporting the use of acupuncture and acupressure, stress-reducing techniques, balneotherapy, herbal medicines, topical applicants, dietary therapy, and health supplements. While some of these approaches might be effective, evidence supporting the efficacy of CAM in these allergic diseases is not consistent, similar to that observed for AR. Recent studies assessing the efficacy of CAM for asthma emphasized that CAM endorsement was associated with negative standard treatment beliefs, uncontrolled asthma, and poorer health-related quality of life.^{34,35}

On the other hand, many comparative studies have been performed of standard treatments, including meta-analyses, and the considerable placebo effect has attracted much attention in such studies. Since there are no objective biomarkers of the effects on

AR, the therapeutic effects must be evaluated subjectively by the patients. It is widely known that assessing the therapeutic effects in AR patients is not easy because of the high rate of the placebo effect.^{36–38} The effects of CAM are believed to be due to the placebo effect in many cases. However, it is also difficult to demonstrate that CAM treatments do not have any effects.

Based on the results of this investigation of CAM therapies, CAM treatments may be selected by patients as a result of insufficient knowledge regarding standard treatments. Although domestic and international guidelines are available, information on the importance, effects and safety of standard treatments may be insufficient for most patients as well as general physicians. The development of highly efficacious treatment methods would obviously be useful; however, it is also important to clearly show the importance of the present standard treatments. The health insurance system in Japan covers all citizens, and patients have an obligation to pay 30% of medical expenses in the system. Although it should be clarified why patients do not receive ordinary drug therapy, most of the patients in our study had visited the hospital and had received treatment for AR at least once. The lack of a sufficient explanation from the physician and/or strong communication with the patient might lead to dissatisfaction and anxiety against these treatments. More than half of the patients in our series who consulted with a physician about CAM were unable to receive advice on this issue. At present, physicians do not have sufficient information on CAM to be able to provide effective advice to the patients as the efficacy of most CAM therapies has not yet been objectively evaluated.

The results of this investigation showed that approximately 19% of the AR patients who were receiving treatment at a medical facility had received CAM therapies, although their evaluation of CAM treatments was not high. However, the assessment of patients whose spending on CAM was high and AR patients who did not continue to receive treatment at medical facilities showed high consultation rates and high evaluation rates for CAM treatments. These patients received CAM therapies because they felt that the effects of the treatments provided by the hospitals were insufficient and had concerns about the side effects of such treatments. On the other hand, about half of the patients whose spending on CAM was high were not satisfied with the results. Among the potential reasons for this outcome are the lack of superiority of these CAM therapies over standard treatments and very high expectations of CAM therapies. Information regarding standard treatments, as described in the guidelines, must become widely known and diffused among AR patients as well as physicians who are not specialized in treating allergies, and strong communication with patients should be considered.

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Conflict of interest

The authors have no conflict of interest to declare.

Authors' contributions

YO, SH, and SY designed the study and made the questionnaire of the study. SY and YO wrote the manuscript. DS checked data and performed the statistical analysis. TS, TI, HY, TH, YK, KH, YM, KM, NT, SF, MO, SO, KO contributed to data collection. All authors concurred with the submission.

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