

## Complementary and Alternative Medicine (CAM) in paediatric rheumatology: a European perspective

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### Abstract

#### Objective

*To analyse the use of complementary and alternative medicine (CAM) in children with rheumatic diseases, treated at a paediatric rheumatology centre in Italy.*

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#### Methods

*Parents of children with different kinds of chronic rheumatic diseases anonymously completed a questionnaire about their children's past or current use of CAM. Two groups of patients were analysed: Group A consisted of children who were still attending the centre; Group B consisted of children who had not attended the clinic for more than one year.*

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#### Results

*150 completed surveys were analysed: 22 paediatric patients (14.7%), 10/100 in group A and 12/50 in group B, used CAM to treat their diseases. The therapies used the most were homeopathy, herbal remedies, vitamins and minerals. We observed a significantly greater use of CAM among patients who had not attended the clinic for more than one year (24%) as compared to those who were regularly checked (10%) ( $p=0.02$ ). Parents' use of CAM was significantly related to its use for their children ( $p=0.001$ ). A poor outcome, probably related to the exclusive use of alternative treatments, was observed in three out of six patients who had completely stopped using traditional immunosuppressive drugs.*

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#### Conclusions

*Physicians should be aware of the use of CAM particularly in patients who skip their regular check-ups. The use of CAM to treat childhood rheumatic conditions in Italy seems to be less frequent than in North America.*

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#### Key words

complementary and alternative medicine, juvenile idiopathic arthritis, connective tissue diseases, outcome

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## Introduction

Complementary and Alternative Medicine (CAM) includes a group of health care systems, practices and products that are not considered part of conventional medicine (1).

The use of CAM has been of concern for many years in Western countries (2), but is receiving more attention recently. Parents often use CAM to treat different kinds of chronic illnesses in children (3-6) but little is known about the use of CAM in paediatric rheumatology. One study in patients with a variety of rheumatic disorders, reported a general prevalence of CAM use in two thirds of the patients (6). Other studies which focused on the use of CAM specifically in patients with JIA, reported a prevalence of CAM use between 34% and 92% (5-10). Interestingly, most of these studies are from North America (5-10) and there is little documentation of European experience (11).

Despite the significant diffusion of CAM and the common belief that they are harmless, little is known about their possible benefits, side-effects and interaction with conventional drugs (2). Furthermore, their use may be associated with possible risks such as reactivation of the disease, unexpected consequences and even death (4, 12-16).

Based on the experience of poor outcome in three children with rheumatic diseases at our centre, we decided to assess the prevalence of the use of CAM in children with rheumatic diseases in Italy and to compare it with the North American experience. We were interested to know if patients who had not attended the clinic for more than one year tended to use CAM more than those regularly attending the centre.

## Patients and methods

Between March and June 2010, children with a definite diagnosis of rheumatic disease, treated at the Paediatric Rheumatology Centre of the University of Padua were invited to take part in an anonymous survey on the use of CAM. The cohort of patients was divided into two groups: Group A, patients who were currently attending the Centre and Group B, patients who had dropped out of follow-up appointments for

more than 1 year, after having been on treatment for at least 1 year. Group A, consisting of 100 patients received the questionnaire while they were attending the clinic for a regular check-up; group B, consisting of 97 patients, received the questionnaire by mail. This second group of patients was selected in order to verify the hypothesis that patients who skipped follow-up visits were more likely to be taking alternative treatments.

We developed an anonymous questionnaire in simple Italian that could also be understood by an inexperienced user. The questions asked were selected on the basis of the data already present in the literature, our own clinical experience and the statistical requirements. Indeed, some questions have been modified to be comparable with those used by Hagen *et al.* in their survey (6) in order to compare the results. It consisted of 30 questions focusing on the demographic characteristics of the patients, the types of CAM used among 16 different varieties and parents' opinion about CAM efficacy in comparison with previous or concomitant treatments. At the preliminary stage, we carried out a training pilot study with a group of 20 parents to verify feasibility, comprehensiveness and possible caveats of the questionnaire.

A letter explaining the study was attached to the questionnaire and a physician was available to answer any questions related to its completion.

## Procedure

All the patients selected had a definite diagnosis of rheumatic disease lasting for at least one year. Parents of children belonging to group A were approached while they were waiting for a regular check-up at our centre. One hundred and thirty six patients were approached and 100 agreed to participate. After having filled in the questionnaire, they posted it in a sealed container. Patients belonging to group B were chosen from our database if they had had their last check-up in 2008 but none since then. A group of 112 patients was selected at random and contacted by telephone to establish their availability to take part in the study. Finally, the questionnaire was mailed to 97.

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*Competing interests:* none declared.

The procedure of the study and the questionnaire were approved by the Ethics Committee of the University Hospital of Padua.

*Statistical analysis*

Descriptive statistics were used to analyse the data. Bivariate associations between various characteristics of the patients and their CAM using habits were conducted. Categorical variables were compared by using Pearson's chi-square test and the Fisher-Freeman-Halton test. Continuous variables were compared by the Student's *t*-test for independent samples. All tests of significance were two-sided and *p*-values less than 0.05 were considered significant. All analyses were performed using the StatsDirect statistical software (version 2.7.8 StatsDirect Ltd, Cheshire, UK).

**Case history**

We selected a case history as an example of how an alternative homeopathic treatment can dramatically affect the disease course of a patient with JDM.

A previously healthy caucasian girl developed symptoms typical of JDM at the age of seven. She was treated with MPDN pulses, oral prednisone and methotrexate with a good clinical response. Two months after onset, immunosuppressive treatment had to be temporarily discontinued for almost one month because of a retroperitoneal abscess following an appendectomy. Once treatment was resumed, the disease went into clinical remission again but after one year following the onset of the disease, she started developing calcinosis on both thighs. An intense rehabilitation program was then started with significant results. Unexpectedly, 20 months after disease onset she had a relapse of the disease with deteriorating muscle strength and calcinosis, progressively involving lower limbs, upper limbs and trunk with significant limited motion of her knees, hips and elbows. She was unresponsive to various therapeutic attempts including steroids, higher doses of MTX and CyA, associated with an intensive rehabilitation home programme. Various international experts were consulted to

better address the treatment but none of the suggested therapeutic options were successful.

After 34 months after disease onset she was urgently admitted to our ICU for septic shock and acute peritonitis. On that occasion, the parents reported that all the immunosuppressive drugs had been discontinued 14 months earlier and only homeopathic therapy had been administered.

A surgical exploration led to the diagnosis of multiple intestinal perforations due to necrotising vasculitis of the gut complicated by intestinal calcinosis. After stabilisation of the acute phase which included resuscitation drugs, antibiotic treatment and total parenteral nutrition (TPN), she was treated with IVIG, prednisone and MTX.

Over the following months she developed several intestinal fistulas that could not be healed after three consecutive surgical operations. Intestinal canalisation was never reached, universal calcinosis progressed and the patient eventually died due to a gram negative septic shock one year later.

**Results**

One hundred and fifty patients completed the survey with a 64.4% response rate. One hundred of these were from group A with a response rate of 73.5%. Conversely, only 50 of the 97 patients (51.5%) of group B who agreed to participate mailed the questionnaire back.

The demographic characteristics of the patients are summarised in Table I.

Twenty-two of the 150 patients (14.7%) in the entire group were on CAM, 10 in group A (10%) and 12 in group B (24%) used CAM to treat their disease. Among the patients who did not attend the clinic for more than one year (group B), there was a significantly greater percentage of CAM users (24%) compared to those (group A) who were currently being treated (10%) (*p*=0.022).

Among those using CAM, 16 (7.3%) were currently using CAM and 16 (7.3%) had only used CAM in the past. The specific types of alternative procedures used were: homeopathy (54.5%), herbal remedies (50.0%), vitamins (40.9%) and minerals (31.8%) (Table II). Other less frequently used CAM were: clay (13.6%), diet (9.1%), fish oil (4.5%), chiropractics (4.5%), massage (4.5%) and hippo therapy (4.5%). Other practices, such as acupuncture, relaxation techniques, meditation, hypnosis, biofeedback, aromatherapy, copper bracelets or rings were not reported by any parent. The practitioners who advised or prescribed CAM were: family doctors or paediatricians (45.5%), homeopaths (40.9%), naturopaths (18.2%), iridologists (4.5%) or pharmacists (4.5%).

One third of the patients began their unconventional therapy at the time of diagnosis of a rheumatic disease, the remaining began after a mean period of 12.2

**Table I.** Demographic and clinical characteristics of the patients.

|  | CAM users (n=22) | CAM non-users (n=128) | <i>p</i> -value |
|--|------------------|-----------------------|-----------------|
| Gender, no. (%)                                    |                  |                       |                 |
| Male   | 6 (27)           | 54 (42)               | 0.200           |
| Female   | 16 (73)          | 74 (58)               |                 |
| Mean age (years)                                   | 10.1             | 10.9                  | 0.488           |
| Disease duration (years)                           | 5.4              | 5.6                   | 0.880           |
| Rheumatic diseases, no. (%)                        |                  |                       |                 |
| Juvenile idiopathic arthritis                      | 12 (55)          | 68 (53)               | 0.948           |
| Vasculitis   | 6 (27)           | 39 (31)               |                 |
| Connective tissue diseases (JDM, SLE, scleroderma) | 4 (18)           | 21 (16)               |                 |
| Regularly attending the follow-up visits, n. (%)   | 10 (45.4)        | 90 (70.3)             | <b>0.022</b>    |
| Higher education degree of the parents (%)         |                  |                       |                 |
| Father   | 52.4             | 38.6                  | 0.233           |
| Mother   | 63.6             | 40.2                  | <b>0.040</b>    |

**Table II.** Comparison between type of CAM used in paediatric rheumatology in Italy and Canada.

| Type of CAM               | Department of Paediatrics<br>Padua, Italy<br>n=22 (%) | Hospital for Sick Children<br>Toronto, Canada<br>n=90 (%) | p-value           |
|---------------------------|---|---|-------------------|
| Herbal remedies           | 11 (50)   | 15 (17)   | <b>p=0.002</b>    |
| Vitamins                  | 9 (41)  | 33 (37)   | p=0.635           |
| Minerals                  | 7 (32)  | 31 (34)   | p>0.999           |
| Fish oil                  | 1 (5)   | 10 (11)   | p=0.455           |
| Other dietary supplements | 0 (0)   | 6 (7)   | p=0.184           |
| Homeopathy                | 12 (55)   | 9 (10)  | <b>p&lt;0.001</b> |
| Chiropractics             | 1 (5)   | 19 (21)   | p=0.069           |
| Manual practice           | 1 (5)   | 8 (9)   | p=0.502           |
| Acupuncture               | 0 (0)   | 4 (4)   | p=0.314           |
| Relaxation techniques     | 0 (0)   | 20 (22)   | <b>p=0.006</b>    |
| Meditation                | 0 (0)   | 6 (7)   | p=0.184           |
| Biofeedback               | 0 (0)   | 1 (1)   | p=0.619           |
| Aromatherapy              | 0 (0)   | 1 (1)   | p=0.619           |
| Copper bracelets or rings | 0 (0)   | 16 (18)   | <b>p=0.020</b>    |

months (3-72 months) of conventional therapy. After beginning the unconventional therapy, six patients (27.3%) completely stopped conventional treatment because of an inadequate response as perceived by the parent, scarce results of the traditional therapy (four), fear of possible adverse effects (three), actual presence of side effects (one) and advice from an unconventional medicine practitioner (one).

Unfortunately, three patients had a negative outcome: two of them (one JIA and one JDM) reported severe permanent disability and the third one, described in the case report, died due to an infection related to intestinal vasculitis and calcinosis, a known complications of JDM. CAM was considered better than traditional drugs by those who were still using them at the time of the study. All parents of these children (100%) were satisfied and 81.8% of them declared an improvement of their child's quality of life. Other reported positive effects, according to parents' opinions, were a decrease of treatment-related side effects (63.6%), reduction of pain (50.0%), improvement in mood (36.4%) and improved motility (36.4%).

We found no statistical differences in age, gender, disease duration and type of rheumatic disease, between CAM users and non-users. Frequent use of CAM was more correlated with mothers' educational level than with that of the fathers' (Table I).

Parents knew about the possibility of using alternative therapies for the treatment of childhood rheumatic disease from physicians (65.3%), the internet (49.0%) and friends (34.7%). Among parents, 44.5% used CAM themselves and this was significantly related to the use of CAM for their children, too (85.0% users vs. 38.1% non-users,  $p=0.001$ ).

### Discussion

The present study was aimed to focus on the use of CAM in the chronic rheumatic diseases of childhood in Italy. We found that one out of seven patients (14.7%), being treated at a tertiary care Paediatric Rheumatology Centre, use CAM to treat their illness. This phenomenon is probably increasing in Italy but it is much lower than in Canada, where two thirds of patients seem to use CAM (6). We do not have a clear explanation for such a difference but possible cultural and social-economical aspects may play a role. CAM has been introduced in Italy only recently and this might represent an important distinctive aspect to consider (17, 18). Indeed, the finding that Italian CAM users had parents with a high level of education indicates that access to CAM is mainly restricted to high income families, usually over-informed and worried about the potential side effects of traditional treatments. Finally, the lower response rate of the

group B patients (51.5% vs. 73.5%), who we suspected as being major users of unconventional therapies, may have underestimated the real number of CAM users. It is likely that some of these parents did not take part in the study because they were CAM users who felt guilty or embarrassed.

Other than a lower use of CAM, we also found less variety of alternative therapies in our population compared with the North American one (Table II). In fact, while vitamins and minerals are commonly used in both populations, herbal remedies and homeopathy represent the more frequent treatments in our cohort. Conversely, relaxation techniques and copper bracelets or rings, highly reported in the Canadian experience, are not used by our patients. A possible explanation may be that, in our country, CAM is prescribed almost exclusively by homeopaths and naturopaths while, in North America, a wider set of health professionals usually prescribe CAM (6). Indeed, the type of CAMs may also change over time as, for example, copper bracelets or rings which were quite popular years ago among the Italian population and are now rarely used.

In both studies, demographic characters such as age or sex and type of rheumatic disease were not related to the use of CAM. Conversely from our study, in the Canadian study, the long duration of illness and the presence of other concomitant diseases were the only factors significantly related to the use of CAM.

Our study was designed to verify if patients who skip their regular check-ups have a higher risk of abandoning conventional treatments to use CAM. Conversely, from the Canadian study, where a control group was contacted by mail after being selected by a random sampling method from a computer database, we selected and interviewed by mail those patients who had not come to our centre for more than one year, presuming there was a high number of CAM users among them. A comparison of the two samples seems to confirm fully our hypothesis: 24% of patients in group B were using CAM versus only 10.0% in group A ( $p=0.022$ ). Indeed,

three of them (25% of group B CAM users) even stopped the conventional immunosuppressive drugs reporting severe disability in two and even death in one.

The high level of parents' satisfaction with CAM does not necessarily represent a real efficacy of these therapies but only the parents' opinions, greatly influenced by the general idea that CAM is "natural and safe", therefore better than traditional immunosuppressive drugs. Furthermore, we should also consider that some CAM users, particularly in group B, could have had a mild form of disease which may have improved even without any treatment. Although there is lack of scientific evidence about the efficacy of CAM (10, 19-21), the reports about their possible side effects are increasing (12-15). Consequently, an alternative and exclusive use of unconventional therapies should be avoided in children with chronic rheumatic diseases since it may cause severe disease flare with irreversible damage. Conversely, their complementary use in association with pharmacological traditional therapies may be allowed if the patient is adequately monitored. In fact, some reports underline the efficacy of manual practices, chiropractics, acupuncture or relaxation techniques in reducing the perception of pain (4, 8, 11) and, very recently, also fish oil, containing omega-3 fatty acids, was shown to have analgesic and anti-inflammatory properties (22).

A possible limit of our study might be the presence of a referral bias. Being focused only on those patients who were being treated at our centre, we have probably underestimated the magnitude of the problem by excluding patients who have refused conventional medical treatment to use CAM at the early onset of the disease. We have partially minimised this bias, with the inclusion, in our study, of patients lost to follow-up, increasing the probability of finding potential CAM users.

## Conclusions

Although we found a lower prevalence of this phenomenon in Italy in comparison with North America, we should be aware of the possible use of complementary or alternative therapies in children with chronic rheumatic diseases. Parents should be informed about possible risks related to the use of CAM and lack of scientific evidence of their efficacy and safety, unless proper randomised controlled clinical trials are performed.

Clinicians should pay particular attention to those patients who do not come regularly to their check-ups because they could be potential CAM users.

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