

# Use of Complementary and Alternative Medicine among Osteoarthritic Patients: A Review

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## ABSTRACT

**Introduction:** One of the most important indications of complementary and alternative medicines (CAM) is in arthritis. The popularity of CAM in arthritis is consistently on the rise because of the potential side effects of the conventional therapy (Methotrexate) of arthritis. In view of this, it was important to summarize the information, for healthcare professionals and the patients, about the safety and effectiveness of various CAM use in arthritis.

**Materials and Methods:** This comprehensive review is based on the content derived through a thorough literature search using 5 electronic databases such as Science direct, Springer link, PubMed, Jet P and Google scholar. Equivalent terms in thesauruses or Medical Subject Heading (MeSH) browsers were used whenever possible. We included all the articles those are used CAM medications for the treatment of arthritis around the globe and searched for the required articles published in English in peer reviewed journals from January 1999 to February 2014. Reports were then arranged and analysed on the basis of country specific studies.

**Results:** Initially, a total of 156 articles were retrieved, after further screening, 27 articles were selected according to meet objectives of the study and those articles which did not qualify, were excluded. Seventeen appropriate studies were finally included in the review. Indeed most of the studies that fulfilled the objective of this review were carried out in US (n=8, 47%), then in India (n=2, 11.76%), UK (n=1, 5.88%), Canada (n=1, 5.88%), Australia (n=1, 5.88%), Korea (n=1, 5.88%), Thailand (n=1, 5.88%), Turkey (n=1, 5.88%) and Malaysia (n=1, 5.88%).

**Conclusion:** The review revealed that family, friend, past experiences and lack of effectiveness of conventional therapy are the major factors that influenced patients' decision of initiating and persisting with CAM therapy. The review highlighted the need to conduct future studies by using some more specific health related outcome measures.

**Keywords:** CAM medications, CAM use, Osteoarthritis, Pharmacists

## INTRODUCTION

The discipline of complementary and alternative medicine (CAM) has evolved over millennia by drawing on the religious and cultural beliefs on many individuals, however recently, a paradigm shift has been observed as the subject is now more focused on developing and validating therapeutic and preventive approaches using scientific methods. The words 'complementary' and 'alternative' therapies can be used interchangeably; however there is a small, yet important difference that needs to be considered. Complementary therapies can be combined with conventional medical treatment while alternative therapy is a therapy that is used instead of conventional therapy [1].

The definition of CAM is not universally agreed yet but, each different country will have its own definition of CAM. There is no gold standard definition of CAM as every country has its own approach of defining CAM [2]. World Health Organization defined CAM as health practices that involved diverse approaches to incorporate understand and beliefs related to medicines of plant or animal origin, and other traditional or spiritual approaches to manage illness [3]. United States defined CAM as a group of diverse products that are not considered as conventional medicines use in health care systems to manage multiple illnesses [4]. On the other hand, United Kingdom has different view on CAM as they say it a diverse group of health-related therapies and disciplines which are not considered to be a part of mainstream medical care. Other terms sometimes used to describe them include 'natural medicine', 'non-conventional medicine' and 'holistic medicine' [5]. Meanwhile in Malaysia, CAM is usually known as traditional and complementary medicine (TCM). The exact definition of TCM in Malaysia that is given by ministry of health (MOH) is Ministry of Health, Malaysia, define CAM as Traditional and Complementary

Medicine is a form of health-related practice designed to prevent, treat, and/or manage illnesses and/or preserve the mental and physical well-being of individuals and includes practices such as traditional Indian medicine, Chinese medicine, Malay medicine, Islamic medicine practice, homoeopathy and complementary therapies and excludes medical or dental practices utilized by registered medical or dental practitioners [6].

According to National center for complementary and alternative medicine (NCCAM), CAM can be classified into five major domain groups namely; Alternative Medical System, Mind Body Intervention, Biologically Based Therapy, Manipulative and Body Based Method and Energy Therapy. Alternative Medical System is an intervention that does not involve conventional method like homeopathic medicine and traditional Chinese medicine. Mind body intervention is a technique that improves mind capacity to improve body function. The example of this technique are prayer and listening to music. Biologically Based Therapy usually is related to the nature or food such as dietary supplement, shark cartilage or herbal product. Manipulative and Body Based Method is a method involving movement of the body part. Massage is a very well know example of this type of CAM. Energy Therapy is a therapy related to the use of energy to the body in order to improve health. This therapy is further subdivided into bio field therapy and bio electromagnetic based therapy [4].

The trend of CAM usage is varied around the world. According to one study in Turkey, the most common CAM used is the prayer and belief. It covers about 76% of the regular CAM users. The other frequent usage of CAM is through herbal medicine [7]. Another study conducted in United States complemented the results of above mentioned study as use of prayers (67.4%) for the betterment of health was the common therapy instituted by

people followed by natural products (18.9%) [8]. Among arthritis patients, there are many reasons that influence the usage of CAMs. In another study, about 63.9% of the patients tried CAM to improve health condition, 17.6% have family history of using CAM and 7.8% want to avoid the adverse effects of allopathic drugs [9]. However in Malaysia, the most prevailing use of CAM is traditional Chinese medicine and it covers about 31% of CAM users. The second frequent used of CAM, is the food supplement with the utilization percentage is 18%. The elderly in Malaysia believe that CAM is much more effective compared to the allopathic medicine. The majority of them denied that they used CAM because of allopathic medicine are much expensive rather they believed that CAM are much more effective with minimum side effects as compared allopathic medicines [10].

## RATIONAL

One of the most important indications of CAM is in arthritis. Arthritis is a disease that is highly related to the bone, joints and soft tissue [11]. This chronic condition results in increased frequency of symptoms and severely hampers the physical activities of arthritis patients [12]. Now-a-days, the most common conventional treatment for rheumatoid arthritis is methotrexate (MTX). MTX is proven to be more effective treatment compared to placebo effects. It is believed to have the potential to slow down or to impair the progression of this disease. However, the problem of using MTX is its side effects and toxicity. MTX has potential to cause hepatotoxicity in rheumatoid arthritis patients [13]. This downfall of MTX has resulted in drastic change of arthritis management in the past few years. CAMs are gaining popularity as CAM practitioner encounter around every four in five patients related to joint disorder [14].

## OBJECTIVE OF THE REVIEW

In view of gaining popularity of CAM among arthritis sufferer, it is important that patient and practitioner should have accessible knowledge about the safety and effectiveness of various CAMs used in the management of arthritis. Generally CAMs are considered safer than pharmaceutical; however they do have side effects and can interact with other medicines [15].

## MATERIALS AND METHODS

### Search engine used

This comprehensive review is based on the content derived through a thorough literature search using 5 electronic databases such as Science direct, Springer link, PubMed, Jet P and Google scholar. In this review, we attempted to identify all published studies related to CAMs used in arthritis. The objective was to gather literature from different part of the world to give readers the broader perspective of the topic. We searched for the required articles published in English in peer reviewed journals from January 1999 to February 2014. The search was continued for the period of three months to identify the relevant topics. The search strategy involved using Boolean operators Medical Subject Heading (MeSH) whenever possible. A total of 156 articles were retrieved for electronic databases, which were then reduced to 17 to meet the objectives of the study. The highest number of studies on the use of CAM in arthritis were conducted in United States (n=8, 47%). The review highlighted high rate of CAM use in arthritis patients.

### Data collection process

The search strategy involved using Boolean operators for combination of following terms such as arthritis, CAM, alternative medicines, complementary medicines and arthritis patients. Equivalent terms in thesauruses or Medical Subject Heading (MeSH) browsers were used whenever possible.

## Study selection criteria

During the literature review, abstract of the articles were read for relevance to the research objective. In case of any doubt, full text of the articles was examined before including the article in study. Articles were selected for review if they had identified the type of CAMs used in arthritis, factors associated with CAM usage, and if they had measured the outcome of CAM. Those articles which did not identify any of the mentioned points were not included in this study. Reports were then arranged and analysed on the basis of country specific studies.

## RESULTS

Initially, a total of 156 articles were retrieved for electronic databases by the authors. These articles were then again matched with the objectives of this study and those articles which did not qualify, were excluded. After further screening, 27 articles were selected and distributed among the authors for more appraisals. After a thorough brain storming session by authors, 17 appropriate studies were finally included in the review. Much of the research on CAM use to date has been conducted in United States (US). Indeed most of the studies that fulfilled the objective of this review were carried out in US (n=8, 47%), then in India (n=2, 11.76%), UK (n=1, 5.88%), Canada (n=1, 5.88%), Australia (n=1, 5.88%), Korea (n=1, 5.88%), Thailand (n=1, 5.88%), Turkey (n=1, 5.88%) and Malaysia (n=1, 5.88%).

### CAM used in USA

The first study retrieved and included in this study was conducted Rao et al., [16]. The study was conducted at three university practices and three private rheumatology practices on 232 participants. The objective of this study was to describe patients' perspective on the use of CAM in rheumatologic problem. The study identified four major outcomes namely; history, magnitude, frequency of CAM used and communication about CAM use with physician. The results of this study showed that around two third of the participants had used CAM. Fifty five respondents (24%) had used three or more types of CAM. However, massage therapy was the most common among participants (44%). Analysis also showed that participants who were regular user of CAM were more likely to have osteoarthritis. Another highlight of this study was CAM users were reluctant to discuss their therapy with physician. Therefore, the study concluded that routine enquiry is needed by the physician to detect any CAM use in order to avoid any unwanted interactions.

Kaboli et al., conducted a population based telephone survey on 480 patients with arthritis [12]. The objective of this study was to determine the prevalence of CAM use and its associated factors. The results of this study showed that 28% of patients used one or more CAM treatment. Chiropractic care was the most prevalent type of CAM among participants (90%). Authors also examined the use usage of CAM between rural and urban population but found no difference as 26% of rural population used CAM as compared to 29% by urban population. This study also raised the point that increasing use of CAM is associated with inability of traditional medicine to manage arthritis.

Similarly in 2004, Herman et al., assessed the frequency and type of CAM used between Hispanic and non-Hispanic patient with arthritis at University based primary clinics [17]. Respondents were asked to complete interviewer based survey in English or Spanish. The usage of CAM was reported by 90.2% of participants in which highest use was of oral supplements like glucosamine and chondroitin (34.1%). However, the study revealed that the major objective of CAM users was to use as an additional support to the conventional therapy. The study emphasized physician to incorporate questions about its use into routine assessment and treatment planning.

Another study from US by Quandt et al., investigated the prevalence and predictors of CAM [18]. The authors analysed the data from 2002 National Health Survey and examined the predictors of CAM use among person with arthritis. It was a large survey conducted on 1,06,000 patients. The overall prevalence of CAM user was 75% with biological based therapies outnumbered the other CAM modalities. The study showed that the use of CAM was common among participants and therefore authors suggested that a complete history should be taken into account by physicians before devising a care plan.

In 2008, a survey by Rouster-Stevens et al., examined how 76 people viewed CAM therapies in the management of chronic medical conditions like arthritis [19]. The study described the perception of participants about juvenile arthritis regarding conventional and CAM therapies. A questionnaire was developed which asked patient about the use of over 75 therapies, their perceived helpfulness and whether they would recommend it to other patients. In this review, among the US studies, the use of CAM was highest by the participants (92%). The most popular choice of CAM was massage therapy. The study derived the conclusion that CAM therapies are very helpful and is highly recommended by participants.

Seburg et al., however, studied 134 participants and examined the self-reported use of CAM in juvenile arthritis [20]. CAM usage was mentioned by 72% of participants. The most commonly used CAM modality was yoga (45%). The study revealed that although majority of the patients used CAM but only few discussed it with health care providers. Findings encouraged physician to engage patients in discussion about their CAM therapies before designing its conventional treatment plan.

Another study from US included in this review described the longitudinal pattern of CAM use in arthritis patients and also identified the predictors of commonly used CAM therapies [21]. After a 4 year follow up of 1121 patients, about 33% of patients reported using CAM modality at all assessments. Chiropractic care and massage were among the two most used CAM therapies. The study published that pattern of CAM use was not in line with arthritis guidelines, therefore it is utmost important for the health care providers to weight the benefits of CAM vs risk before practicing it.

Recently, use of CAM was observed in Afro-Americans suffering from arthritis. The study was multicenter registry that studied the factors associated with CAM use by gender and disease duration [22]. The study showed high usage of CAM among Afro-Americans (95%). The study revealed that those with longer duration of disease were using soaked raisins while women were more likely to pray. Healthcare providers need to consider ethnic disparities in order to assess CAM to avoid unwanted drug reactions.

### Use of CAM in Canada

Various studies were also conducted in Canada regarding the use CAM, however only study met the criteria for this review. This study was organized by Feldman et al., in 2004 in which they described the frequency of CAM use explored CAM associated variables [23]. 118 patients were selected for this study, of which prevalence of CAM users was 33.9%. Dietary supplement was the most CAM used by patients. The study also measured the adherence of conventional treatment in the same group of patient and found that no difference between CAM user and non-CAM user. Therefore, it was concluded that increased use of CAM was not associated with any decrease in adherence to conventional medical treatment.

### CAM use in UK

Not many studies are conducted in UK regarding the use of complementary and alternative medicine. In fact, only a single

study was found which matched with the objectives of this study conducted by Chandola et al., in 1999 on patients attended musculoskeletal clinics [24]. One hundred and sixty six patients were interviewed on the same day of clinic by means of a structured questionnaire. Thirty eight percent of participants had considered the use of CAM of which acupuncture was the most popular type of treatment to be considered. The findings indicated substantial use of CAM by arthritis patients in UK, However, results also emphasized on the detail review of both complementary and alternative therapies to enhance effectiveness when given concomitantly.

### Use of CAM in Australia

Similarly, in Australia, a study was designed to assess the knowledge and attitudes of pharmacist toward CAM [25]. Fifteen hundred participants were distributed self-administered questionnaire, of which 77% indicated the use of CAM. The most commonly used CAM was herbal and vitamin supplements. The study also identified that pharmacists have positive views on CAM therapy in general. However, 27% of respondents did not have access to CAM information for patients. Overall, the study suggested that there is need to gain access to CAM resources in order to educate healthcare professional in particular and public in general.

### Use of CAM in Turkey

Another study was conducted by Araz et al., to determine the frequency of regular CAM users among the adult residences in Turkey [7]. The study was conducted to the 988 residence of Turkey with the range age of 18 to 80. The participants were then categorized into three groups as regular CAM users (404), irregular CAM users (445) and non-users (139). This study showed that praying was the most frequent CAM therapy that is being used among participants (76%). Then, it is followed by herbal therapy 24.3% (98) and music therapy is least used with the percentage of 20.8% (84). In this study, important factors that affect the positive CAM used among the participants were previous experiences and educational level. From educational perspectives, high educational level respondents were less likely to use CAM compared to the respondents who had lower educational level. From this study, it was found that the regularity of CAM used will give favourable result to the arthritis patients. Moreover, the positive attitude combined with high health awareness would increase the frequency of CAM used.

### CAM used in India

In India, Chandrashekara et al., studied the utilization of CAM in arthritis [26]. Authors interviewed 114 patients in order to achieve the objective of the study, however direct question regarding CAM was avoided. Prescriptions were also analysed of both conventional and CAM practitioners. Almost 43% of participants had used CAM drugs and 50% of them had used more than one modalities. Ayurveda practice outnumbered the other types in in this particular study followed by homeopathy. Majority of the CAM user in this study believed that conventional medicines do not have cure to arthritis and they were also of the opinion that side effects are rare with use of CAM. The study concluded that a scientific scrutiny to these practices and absolving them if beneficial is needed.

Another study was conducted in northern India in order to evaluate the prevalence and usage characteristics of CAM in Indian patients with arthritis at tertiary hospital. Zaman et al., studied 102 patients and reported the popularity of CAM among 82% of the patients [27]. Ayurveda (28%) was the most common type of CAM used by participants followed by homeopathy (20%). The factor that persuaded the patients to opt for CAM therapy was increased pain. About 78% of CAM users started the therapy on the advice of friends and relatives. The downside of the study that authors reported was CAM practices were not revealed to treating

physicians. Therefore the study emphasized on physicians to take complete history of patients before prescribing conventional medicines to avoid undue side effects and drug interactions.

### CAM used in Korea

Lee et al., in 2008 measured the prevalence of CAM in Korean patients with arthritis [28]. Interview based questionnaires were developed to assess patients at an outpatient department of hospital. A total of 153 patients were enrolled in this study and of which 82% were reported to be CAM users. Among users of CAM, 35% considered it to be very important in relieving the symptoms of arthritis, while 14% felt it was effective in obtaining psychological relaxation. Majority of CAM users preferred traditional oriental medical treatment for an ailment to arthritis. Interestingly, 64% patients said that they would also like to try other type of CAM. The most characteristic feature of this study was the reluctance of patients to share their CAM therapy with their physicians in spite of side effects, suggesting the need of active involvement of physicians with CAM users.

### CAM used in Thailand

To improve the understanding of CAM use among arthritis in Thailand, Sukitawut et al., studied 53 patients after interviews were conducted for 3 months. 64.1% of patients were using CAM for managing arthritis [29]. Majority of patients were using Massage therapy followed by Thai herbs. Forty one percent had used more than one modality of CAM. Those who used CAM, 59% of them reported that it was introduced to them by relatives and neighbors. The results also showed that 20.6% totally believed in its effectiveness, 29.4% partially believed and 47.1% at least wanted to try it. Majority of the patients normally used CAM on the recommendation of relatives and friends. Study concluded that prolonged use of CAM without any medical supervision can produce some harmful effects.

### CAM used in Malaysia

A study was conducted to evaluate the use of CAM among the patients with chronic diseases such as arthritis at outpatient clinics in Malaysia. This study was conducted by Hassan et al., to study 205 arthritis patients as subjects [9]. Majority of the patients were male (53%) and female (47%). Most of the arthritis patients were in the range of 50 to 64-year-old consisted 50.9%. In this study, majority of the patients were Indian (45.2%) followed by Chinese (32.4%) and Malay (22.4%). Higher educational level had high influence on CAM as 53.3% of the CAM users were from the background of higher educational level. Regarding the social life among CAM users, 73.8% state that they never smoke and 75.7% mentioned that they never consumed alcohol. The utilization rate of CAM as reported in this study was 63.9%. The type of CAM utilized was varied in Malaysia as the highest percentage of CAM used was vitamin supplements (48.2%), followed by herbal drug (26.4%), ginseng (4.7%) and traditional Chinese medicine (4%) and the least utilized CAM was prayer (1.87%). The study also reported that few patients also experienced adverse effects such as rashes, pimple and gastric problem. The factor that persuaded the patients to use CAM was to try some new alternative treatment. The second common reason was the family history of the CAM used while others stated their reason to use CAM was to prevent and avoid adverse effects of conventional drugs. The use of CAM was influenced by many sources of information before patients adopt the therapy. The highest influence was from friends (32.5%), followed by health professionals (25.9%) and advertisement (15.8%). Based on the patient's perception, (77.6%) believed that CAM will improve health and 22.4% believe that CAM neither improved health nor reduced health.

## DISCUSSION

This review comprised of several articles that studied the usage of CAM among arthritis patients across the globe. In this paper, the trend, prevalence, type of CAM therapy utilized and factors that contribute to the CAM used was discussed. The articles selected that studied trend of CAM used in arthritis were from different countries such as United States, United Kingdom, Canada, Australia, Turkey, Korea, Thailand, India and Malaysia were discussed.

The review highlighted that many CAM modalities are used in order to treat pain in arthritis patients. It is suggested that exercise and taking supplements will reduce the pain of patients suffering from arthritis [30]. Besides that, the usage of glucosamine/chondroitin and the practice of acupuncture were also found beneficial in reducing the pain from the arthritis diseases. There authors were also of the opinion that body based manipulative therapy, natural products, energy therapy, and mind body therapy were also found useful in arthritis [1].

The practice of CAM in arthritis was found to be different in each country. In US the majority of the studies were conducted on older patient, however this review also encompassed studies from US which were conducted on adolescents and parents of children suffering from arthritis. The highest prevalence of CAM use was reported by Tamhane et al., [22] (95%), while the study that indicated lowest use of CAM was conducted by Kaboli et al., [12]. It is worthwhile to mention here that a study which showed the highest prevalence of CAM use conducted on Afro-American patients. Massage and Chiropractic care were the common types of CAM modalities revealed by the selected studies. While oral supplements, biological therapies, yoga, soaked raisins and prayer were also used in US. Interestingly, the outcomes of all the studies conducted in US were in line to each other as they agreed to the point that the use of CAM is high in arthritis among US patients, however majority of patients were reluctant to discuss their CAM therapy with their physician. Almost all the studies in US suggested healthcare professionals to must keep an eye on usage of CAM by patients while devising a conventional therapy plan. At the same time Yang et al., [21] also concluded that the use of CAM in US was not consistent with the guidelines. The study urged patients to use CAM therapy under supervision of an expert to avoid any adverse reactions and undue interactions.

In contrast, not many studies have been done in other parts of the world to identify the usage of CAM in arthritis. An attempt was made by Chandola et al., in UK to the address the issue [24]. In comparison to US, the prevalence of CAM users was relatively low as 38% of the participants reported the use of CAM. The choice of CAM therapy also differed as the most common type of CAM modality used by patients was acupuncture. The probable reasons of this difference could be the psychological characteristics such as personality, coping and perceived social support [31]. Trend from UK encouraged the use of CAM therapy along with the conventional therapy as patients believed that adding CAM therapy could increase the effectiveness of conventional medicines in achieving its desired goals. With reference to prevalence, the situation of Canada is also not much different from UK as Feldman et al., reported in their study that CAM was used by 33.9% of patients [23]. Various factors could influence this relatively decrease prevalence of CAM as Adam et al., [32] reported that reported that geographical location could play a vital role as the tendency of Canadian people in central region to use CAM is much lower as compared to western region (42% vs 71%). Unlike US, dietary supplements were commonly used in Canada. Although, the existence of CAM users in Australia is much higher (77%) as compared to Canada, majority of people preferred dietary supplements as a choice of CAM. The factor that influenced the use of dietary supplements are however different

as adherence was the major factor that demarcated the user of Canada from Australia. Majority of the people in Australia believed that conventional medicines are not proving to be effective in managing the condition of arthritis which diverted their minds towards the use of CAM while the views in Canada are of the opinion that the use of CAM alongside conventional medicines would enhance overall effectiveness.

Furthermore, it was found that 85% of arthritis patients were using CAM. It was noted that that factor that is influencing the use of CAM was their previous experiences. This could be due to their strong belief and religious faith as prayer was the most common technique used the patients. Therefore, the study reported that those who have favourable attitude towards CAM therapy were benefitted from the treatments. The authors, however, suggested that if efficient information could be provided to patients, therapy can have better outcomes. In comparison to other studies included in this review, this paper also identified the trend of CAM in primary care clinics. The result showed that rheumatoid arthritis patients are more inclined towards CAM therapy as compared to osteoarthritis patients. The high usage of CAM therapies is high among women patients and higher among patients under 55-year-old. These factors indicated that age and gender are the important predictors of CAM usage in population. This result is also supported by another study which examined the factors that influence CAM in a community setting [33].

Ayurveda is the most common type of CAM practice reported by Chandrashekara et al., and Zaman et al., in 2002 and 2007 respectively [26,27]. Although the prevalence rate was different in both the studies (43% vs 82%), they derived the same conclusion that traditional medicines are not as effective as compared to CAM and also in chronic diseases like arthritis, prolong use of orthodox medicines could produce severe side effects which in their believe are rare with alternative medicines. Another factor that could contribute to the high use of Ayurveda among Indians is their past experiences as the history of Ayurveda is very long and families are using this technique for ages that has increased their belief in using such type of therapy.

In Malaysia, the trend is varied among three major races in the country. The Indians show (45.2%), Chinese (32.4%), and Malays show (22.4%) adherence to CAM therapy. Indians show majority of CAM used in community of Malaysia. With respect to gender, the majority of the CAM users are men (53%) while women are (47%). For age, majority of patients are from the age of 50 to 64-year-old. A mediocre rate of prevalence was observed in Malaysia as 63.9% of patients reported its use. Like Australia and Canada, dietary supplements were most popular among Malaysians. In addition, Malay massage and traditional Chinese medicines were also used by Malaysian patients. This study also highlight the importance of ethnic disparity as in multicultural society like Malaysia each ethnic group has its own faith in their traditional type of practices as Hassan et al., also reported the holistic approach of patients towards CAM therapy [9]. The same is case reported in Korea by Lee et al., as majority of patients preferred their traditional medicines like was the case in Malaysia [28], although prevalence rate was much higher as compared to Malaysia (82%). The criteria of using one's own traditional medicine is also followed by Thailand as Massage is their traditional alternative treatment and Sukitawut et al., highlighted it in their study [29]. The prevalence of CAM among Thai patients was 64.1% which is similar to the one reported by Hassan et al., in Malaysia [9].

## LIMITATIONS

This review has some limitations. The search is only limited to only those articles which are written in English. Secondly in this review the emphasis is more towards CAM used among general population of arthritis patients and it is not specific towards

rheumatoid arthritis or osteoarthritis. Moreover, the included articles reported lack of generalization in their result findings which itself serves as a limitation of this literature search.

## CONCLUSION

This review highlights the trend of CAM usage among arthritis patients throughout the world. The trend of CAM used has both similarities and differences between these countries. However the evidences from these countries along with other studies suggest the rate of prevalence of CAM is much higher globally. Massage, Chiropractic care and dietary supplements are among the dominant CAM modalities used widely. Another important conclusion that can drawn from this study was the reluctance of patients to discuss their CAM therapy with Physicians. Family, friend, past experiences and lack of effectiveness of conventional therapy are the major factors that influenced patients' decision of initiating and persisting with CAM therapy. These suggestions are based on general review of the studies included in this review. A number of specific recommendations can made based on this review. The overall whelming dominance of US based studies was quite positive as there is a need to conduct such studies in other countries as well. The quality of work could be improved by employing more appropriate methodologies, using consistent boundaries across the studies and by using some more specific outcome measures like demography and health status of patients. These types of studies would pave the way for future review that could use circumscribed approach by targeting specific issues that would be considered as part of the armamentarium in managing arthritis.

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