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The impact of complementary and alternative medicine on functional status in rheumatic diseases

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Abstract

This study aimed to evaluate the impact of Complementary and Alternative Medicine (CAM) use on functional status and pain relief in patients with Chronic Rheumatic Diseases (CRDs) using the Visual Analogue Pain Scale (VAS) and Health Assessment Questionnaire (HAQ). This cross-sectional multicentre study involved patients from rheumatology outpatient clinics who met the American College of Rheumatology (ACR) and European Alliance of Associations for Rheumatology (EULAR) criteria for rheumatic disease diagnosis. The exclusion criteria included acute flares or comorbid conditions that could interfere with the outcomes. Data collection included demographic and clinical data, pharmacotherapy, CAM usage, and its impact on the VAS and HAQ scales. The study included 126 patients. A significant proportion (57%) reported CAM use, with a preference for one (67%) or multiple (33%) modalities. CAM users exhibited significantly lower VAS scores, indicating reduced pain perception, and lower HAQ scores, suggesting better functional status than non-users. Correlation analyses highlighted strong positive associations between patient age, disease duration, and CAM use preference, as well as between educational level and specific CAM therapies. CAM use among patients with CRDs is associated with significant improvements in pain perception and functional capacity, as evidenced by lower VAS and HAQ scores. These findings suggest the potential of CAM to complement conventional rheumatology treatments, highlighting its value in patient-centered care and indicating its role in improving patient outcomes. However, the study's cross-sectional design and reliance on self-reported data necessitate further research for causal inferences and robust establishment of CAM efficacy.

Keywords: Complementary and alternative medicine, rheumatic diseases, visual analogue pain scale, health assessment questionnaire

Introduction

Complementary and alternative medicine (CAM) represents a collective domain of diverse medical and healthcare systems, practices, and products, not traditionally part of conventional Western medicine. With its utilisation ranging from complementary—used alongside conventional treatments—to alternative—employed instead of standard medical practice—CAM embodies a significant component of health management strategies, especially in chronic conditions such as rheumatic diseases [1,2].

Chronic rheumatic diseases (CRDs) encompass a range of disorders characterised by inflammation and pain in muscles, joints, and fibrous tissue. The efficacy of traditional medicine often extends beyond the reach of conventional pharmacotherapy. Consequently, the prevalence of CAM in rheumatic diseases is notably high, with its appeal anchored in historical wisdom, cultural traditions, and the quest for holistic and individualised care [3-8].

Despite this widespread utilisation, there remains a gap in research explicitly addressing the impact of CAM on tangible outcomes of rheumatic disease management. Quality of life (QoL), functional status, and cumulative damage are critical metrics for evaluating the efficacy of any therapeutic intervention, whether conventional or otherwise. The Visual Analogue Pain Scale (VAS) is a measurement instrument used to assess pain intensity, allowing patients to mark a point along a continuous line that represents their pain level, typically ranging from "no

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pain" to "worst pain imaginable" [9]. The Health Assessment Questionnaire (HAQ) is a widely used tool designed to evaluate a patient's physical functioning and disability which includes questions related to daily activities such as dressing, eating, walking, and hygiene [10].

In this study, based on the hypothesis that the use of CAM would have a positive effect on functional status and pain management in patients with rheumatic diseases, the frequency of CAM use in rheumatic diseases, the factors influencing this use, and its impact on VAS and HAQ scores were investigated. Through this exploration, we anticipate contributing to the ongoing dialogue concerning the legitimation of CAM within current medical practice by identifying potential areas where CAM may offer substantial benefits or, conversely, where its use may be unfounded or even detrimental. Thus, this study does not merely examine the efficacy of CAM but seeks to discern its place within the comprehensive care of individuals battling the complexities of chronic rheumatic conditions.

Material and Methods

Study Design and Participants

This cross-sectional multicenter study enrolled patients between March and May 2024 from rheumatology and physical medicine and rehabilitation outpatient clinics across two healthcare centers. The inclusion criteria comprised individuals who (i) were over 18 years of age, (ii) provided voluntary, written informed consent, (iii) were diagnosed with rheumatic disease by a specialist and (iv) had at least two follow-up visits after diagnosis. In the diagnoses of patients, the ACR/EULAR diagnostic criteria [11,12] were used for fibromyalgia, rheumatoid arthritis, primary Sjögren's syndrome, and scleroderma; the Assessment of SpondyloArthritis International Society (ASAS) diagnostic criteria [13] were used for ankylosing spondylitis; the International Study Group for Behcet's Disease (ISG) diagnostic criteria [14] were used for Behcet's disease; and the Classification Criteria for Psoriatic Arthritis (CASPAR) [15] were used for psoriatic arthritis.

Participants were excluded if they experienced acute inflammatory episodes, or comorbid conditions that could interfere with the study outcomes like had undergone recent surgical procedures, having malignancy or received other medical interventions within the last six months that could potentially confound the outcomes associated with CAM practices. To facilitate informed consent and ensure ethical compliance, we provided all participants with comprehensive information on the various traditional and complementary treatments. The nutritional supplements questioned in the study were vitamin and minerals including omega-3 fatty acids, glucosamine, and chondroitin. The frequency and duration of yoga or meditation practices, with participants typically engaging in these activities twice weekly, each session lasting approximately one hour. The nature of the diet therapy administered by patients, focusing on anti-inflammatory diets customized to individual patient needs based on their medical histories and specific rheumatic conditions.

Data Collection Procedure

Following informed consent, participants underwent a face-to-face survey, meticulously structured to obtain information about demographic characteristics (age, sex, education, employment status), clinical data (disease duration, clinical manifestations), pharmacotherapy details (current and past medications, adherence levels), traditional and complementary medicine usage (types of therapies used, duration of use, initiation upon recommendation, and financial expenditure), and CAM outcomes on the VAS and HAQ scales.

Ethical Considerations and Consent

a) Approval Details: This study was reviewed and approved by the Adana City Training and Research Hospital Clinical Research Ethics Committee with decision number 3202 at February 29, 2024.

b) Informed Consent: Prior to participation, all individuals provided written consent, acknowledging their understanding of the study's purposes and methodologies as well as their freedom to withdraw participation at any point without impacting their medical care.

c) Permissions: Permissions were obtained to ensure compliance with ethical standards and regulations.

This process ensured that the study adhered to the ethical guidelines outlined in the Declaration of Helsinki, guaranteeing the protection and respect of participants' rights throughout the study.

Statistical Analysis

Statistical analyses were performed to examine the associations between the utilisation of CAM therapies and outcomes of interest, including pain and functional status. Demographic and clinical characteristics, medication use, and CAM-related information were summarised using descriptive statistics. Categorical variables were described with frequency counts and percentages, analyzed with cross-tabulations and Yates' continuity correction. For numerical variables, mean and median with minimum-maximum ranges were presented. The primary outcomes, measured using the VAS for pain and HAQ for functional status, were analysed using Spearman's correlation models to adjust for potential confounders. Statistical significance was set at $p<0.05$, with interpretations reported as $p<0.05$, $p<0.01$, or $p<0.001$ to indicate the level of significance. All statistical analyses were performed using SPSS version 25.0 (IBM Corp., Armonk, N.Y., USA).

Results

An evaluation was conducted on 126 patients who presented to the rheumatology and physical medicine and rehabilitation outpatient clinics. The mean age was established at 49.60 years (27–75). Frequencies of age were the highest at 48 years with 10 occurrences, 57 years with 9 occurrences, and 54 years with 8

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occurrences. Females comprised the majority of the cohort, with a female-to-male ratio of 92/34. The educational levels of the participants were as follows: 53 patients (42%) had a primary education, 34 patients (27%) had a secondary education, and 39 patients (31%) had a university degree.

The distribution of rheumatic diseases was as follows: Fibromyalgia was diagnosed in 34 patients (27%), rheumatoid arthritis in 31 patients (25%), and both gonarthrosis and ankylosing spondylitis were observed in 19 patients each (15%). Psoriatic arthritis was present in 11 patients (9%). Sjögren's Syndrome and Behçet's Disease were identified in 4 patients (3%) and 3 patients (2%), respectively, while scleroderma and gout were each diagnosed in one patient (1%). The mean duration of illness was 6.30 years (1-20).

In this cohort, 73 patients (57%) reported CAM use. Among these, 49 patients (67%) utilised only one CAM modality, whereas 24 patients (33%) used two or more CAM modalities. Conversely, the remaining 53 patients did not undergo CAM. The distribution of CAM use is shown in Figure 1.

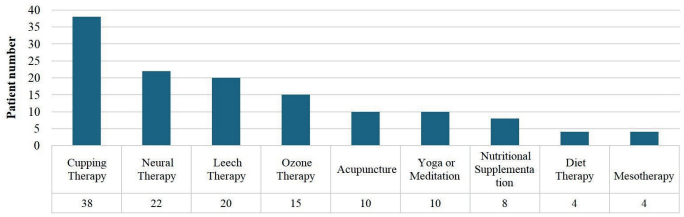

Figure 1. CAM use distribution among rheumatology patients; CAM: complementary and alternative medicine

Upon review of the data regarding the use of CAM among rheumatology patients, it was found that 40 patients (55%) were influenced by family and friends in their decision to use CAM, 26 individuals (36%) followed the advice from healthcare providers, and seven patients (9%) were guided by information obtained from social media.

Among the 73 patients using CAM, 67 (92%) reported experiencing beneficial effects from adjunctive therapies. Additionally, 43 (59%) of the CAM utilizing patients regularly engaged in these therapies. Within this subset, 17 patients (23%) indicated that they consistently allocated more than 10% of their income to CAM treatment.

Investigation of the VAS pain scores in conjunction with CAM use revealed an median VAS score of 3, ranging from 0 (no pain) to 8 (most severe pain) while the mean HAQ score in the context of CAM utilization was 0.3 (0-1.8).

Comparative analysis of VAS and HAQ scores revealed statistically significant differences between CAM users and non-users in the rheumatology patient cohort. CAM users reported lower VAS scores, with a mean of 2.47, compared to 4.18 for non-users, indicating less perceived pain among those who engaged in CAM therapies (p=0.023). Additionally, CAM users had lower HAQ cores, suggesting a trend towards better functional status. The mean HAQ score for CAM users stood at 0.25, whereas non-users had a mean score of 0.95, further substantiating this observation (p=0.020). These outcomes, analysed using an independent samples t-test, underscored the potential impact of CAM practices on pain perception and functional status in individuals with rheumatologic conditions (Table 1).

Table 1. Comparison of mean VAS and HAQ scores among CAM users and non-users in rheumatology patients

	CAM use preference			
	Yes	**No**	**t-statistic[a]**	**p-value**
VAS score	2.47	4.18	0.996	p=0.023
HAQ score	0.25	0.95	1.296	p=0.020

[a] Independent Samples T-Test (p<.05); CAM: complementary and alternative medicine, VAS: visual analogue pain scale, HAQ: Health Assessment Questionnaire

According to the correlation analysis, patient age displayed strong positive correlations with the preference for using CAM (r=0.650, p<0.001), regular use of CAM (r=0.600, p<0.001), and allocation of more than 10% of income to CAM usage (r=0.580, p<0.001).

Disease duration also showed a strong positive correlation with preference for CAM (r=0.620, p<0.001) and a significant association with the allocation of a substantial portion of income to CAM (r=0.590, p<0.001).

Primary education level was significantly correlated with overall CAM use (r=0.550, p<0.001), with particularly strong correlations observed for cupping therapy (r=0.700, p<0.001) and leech therapy (r=0.680, p<0.001). Secondary education displayed a moderate positive correlation with acupuncture therapy (r=0.450, p=0.01).

Individuals with tertiary education showed strong positive correlations with the use of neural therapy (r=0.750, p<0.001), acupuncture (r=0.770, p<0.001), ozone therapy (r=0.730, p<0.001), and yoga meditation practices (r=0.780, p<0.001).

The VAS scores were strongly negatively correlated with regular CAM use (r=-0.650, p<0.001), financial investment in CAM (r=-0.670, p<0.001), and the use of multiple CAM modalities (r=-0.640, p<0.001).

The HAQ scores showed strong negative correlations with regular CAM use (r=-0.710, p=0.009), financial commitment to CAM (r=-0.710, p=0.010), and the use of multiple CAM modalities (r=-0.650, p<0.001). Notably, a diagnosis of fibromyalgia was strongly correlated with the preference for cupping therapy (r=0.720, p<0.001), whereas ankylosing spondylitis and psoriatic arthritis were both strongly correlated with the preference for acupuncture (r=0.700, p<0.001 and r=0.680, p<0.001, respectively) (Table 2).

Table 2. Spearman's correlation analysis of demographic, clinical and CAM preference variables in rheumatology patients

	Age	Disease duration	Primary education	College education	University education	Fibromyalgia	Ankylosing spondylitis	Psoriatic arthritis	Sjögren's syndrome	CAM use preference	Cupping therapy	Acupuncture therapy	Leech therapy	Neural therapy	Yoga-meditation	Monthly expenditure	VAS score	HAQ score
Age																		
Disease duration	0.08																	
Primary education	0.728	**0.039***																
College education	0.173	0.347	0.511															
University education	0.132	0.231	0.511	0.155														
Fibromyalgia	0.761	0.132	0.116	0.370	0.961													
Ankylosing spondylitis	0.089	0.982	0.126	0.136	**0.024***	0.116												
Psoriatic arthritis	0.055	0.55	0.230	0.170	0.132	0.330	**0.037***											
Sjogren's syndrome	0.059	0.852	0.847	0.976	0.335	0.295	0.453	0.230										
CAM use preference	0.391	0.172	0.918	0.407	0.208	**0.025***	**0.042***	0.124	0.567									
Cupping therapy	0.049	0.572	**0.045***	**0.009****	0.062	**0.005****	0.523	0.391	0.248	0.222								
Acupuncture therapy	0.159	0.652	0.391	0.172	0.407	**0.001****	**0.045***	**0.049***	**0.035***	**0.039***	0.572							
Leech therapy	0.918	0.407	0.208	0.834	0.918	0.523	**0.049***	0.170	0.976	0.407	0.391	0.407						
Neural therapy	**0.045***	**0.009****	0.062	0.555	0.407	**0.009****	0.407	**0.025***	0.335	0.208	**0.049***	0.118	0.23					
Yoga-meditation	0.391	0.172	0.407	0.407	0.511	0.126	0.126	0.230	0.847	0.918	0.407	0.407	0.170	0.407				
Monthly expenditure	0.116	0.126	0.230	0.847	0.918	0.523	**0.049***	0.170	0.976	**0.008****	0.391	0.407	0.391	0.118	0.407			
VAS score	0.089	0.982	0.126	0.136	0.407	0.391	0.054	0.976	0.295	**0.004****	**0.007****	**0.049***	0.118	0.126	0.208	**0.005****		
HAQ score	0.055	0.550	0.230	0.170	0.085	0.330	0.407	0.567	0.453	**0.009****	**0.003****	**0.005****	0.976	0.136	0.295	**0.010****	**0.006****	

* P<0.05, suggesting a statistically significant correlation; ** indicates p<0.01, suggesting a highly statistically significant correlation; CAM: complementary and alternative medicine, VAS: visual analogue pain scale, HAQ: Health Assessment Questionnaire

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Discussion

This investigation into the use of CAM among rheumatology patients in Turkey highlights its significant interaction with various rheumatic conditions. The findings offer valuable insights into CAM's role in managing rheumatic diseases. The analysis revealed that CAM utilization was linked to improved pain management and functional status, as evidenced by lower VAS scores and more favorable HAQ scores among CAM users compared to non-users. Specifically, CAM users reported significantly lower pain intensity and demonstrated a trend toward better physical functioning.

Contrary to the findings of Alvarez et al., who suggested an inverse relationship between health status and CAM usage due to possible dissatisfaction with conventional care in Mexican patients, our cohort reported high satisfaction with CAM, as demonstrated by a significant proportion of users adhering to regular use and willing to allocate substantial financial resources to these treatments [4]. Notably, there was a marked tendency among college-educated participants to engage in CAM practices more readily, which may reflect an informed approach to health self-management. The improved VAS and HAQ scores associated with CAM expenditure further denote the patient-perceived efficacy of these modalities, aligning with the global trend toward integrating holistic wellness practices.

The strong positive correlations between patient age and both the preference for and regular use of CAM, along with the allocation of financial resources to CAM therapies, underline a pattern in which older patients not only prefer but also consistently invest in CAM modalities. This pattern could reflect the chronic nature of rheumatic diseases and the possible long-term satisfaction with CAM outcomes in this demographic group. Older patients in our study exhibited a pronounced inclination toward both the preference for and regular use of CAM, as well as a readiness to invest in such treatments, suggesting a potential alignment with their long-term health management strategies in chronic disease contexts. This demographic connection could be interpreted as a support of CAM's effectiveness or a reflection of a culturally ingrained belief system.

The duration of disease correlates positively with the preference for CAM use, suggesting that patients with more extended disease histories may turn towards CAM as an adjunct or alternative to conventional treatments. This relationship may be driven by the progressive nature of rheumatic conditions and the patients' desire for holistic care approaches that potentially offer symptom management beyond what is achievable with traditional pharmacotherapy alone. A correlation was also noted between longer disease duration and preference for CAM, indicating that, as patients accrue experience with their condition, they may become more receptive to alternative therapies. This correlation may reveal complement the perceived gaps in the effectiveness of conventional therapy.

In the literature, the use of CAM by patients with rheumatoid arthritis has been linked to the perceived burden of the disease, particularly in psychosocial realms. Kraaimaat et al. and Jacobs et al. highlighted that this perceived augmentation of the impact of rheumatoid arthritis, despite the absence of clinical exacerbation, often propels patients towards CAM [16,17]. Their findings also suggest that while patient satisfaction with rheumatology care remains high, there is a propensity among patients to supplement their management plans with CAM strategies. In line with these observations, our study also revealed a pronounced level of contentment with CAM among subjects. This high degree of satisfaction may indicate that, for some patients, CAM serves not just as an adjunct but potentially as an alternative to intensified conventional therapy under rheumatological guidance. Our results reinforce the notion that patient engagement with CAM is multifaceted and rooted in both the search for an enhanced quality of life and the complex psychological landscape of living with a chronic rheumatic condition.

The findings of this study diverge from those of Moore et al. and Zochling et al., who reported lower functional status among CAM users in similar patient populations [18,19]. These discrepancies highlight the necessity of further studies to evaluate CAM's impact and underscore the importance of patient-tailored treatment paradigms.

Educational level also played a significant role in CAM choice, with strong correlations between primary education and therapies, such as cupping and leech therapy. This finding may reflect cultural and socioeconomic factors that influence healthcare choices. The preference for specific CAM therapies, such as neural therapy, acupuncture, and yoga meditation among individuals with tertiary education further underlines the impact of educational background on healthcare decisions.

Interestingly, the VAS scores showed a strong negative correlation with regular CAM use and financial commitment to CAM, again, the HAQ scores correlated negatively with these factors. These correlations imply that while patients who use CAM regularly and those who invest more financially in CAM report less pain, they also report less functional impairment. Moore et al. found lower scores on the physical role domains in a large group of CAM-user American, British, and Canadian SLE patients compared to non-users [18]. In addition, Zochling et al. reported a lower functional status in a large group of Australian knee and hip osteoarthritis CAM-user users compared to non-users [19]. There are several possible explanations for the association between a lower health status and CAM in rheumatology patients. Similar to our study, Michalsen et al. claimed remarkable efficacy of CAM use among various rheumatology patients [20]. Conversely, in our study, patients with rheumatologic diseases who underwent CAM exhibited improved outcomes and this was evidenced by lower VAS and lower HAQ scores.

Our findings provide clinicians with evidence supporting the use of CAM as a viable complement to conventional treatments in

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rheumatic disease management. Lower VAS scores and favorable HAQ scores among CAM users suggest potential benefits in pain reduction and functional status improvement, guiding clinicians in holistic patient care approaches.

The study highlights how different patient demographics and disease durations influence the preference and efficacy of CAM. This can aid clinicians in tailoring treatments based on individual patient profiles, potentially enhancing treatment outcomes and patient satisfaction. Also, the results suggest a need for enhanced educational initiatives within medical training to incorporate knowledge about CAM. This can ensure that future healthcare professionals are better equipped to discuss and recommend CAM options informed by evidence, addressing the growing patient interest in these treatments.

Study Limitations

This study had several limitations that warrant consideration. The cross-sectional design precludes causal inferences, implying that the observed associations do not confirm causality. The reliance on self-reported data may introduce recall bias and limit the accuracy of reported CAM usage patterns. The study results are also limited by the absence of a control group for comparison, making it difficult to ascertain the unique impact of CAM independent of other variables.

Conclusion

The findings of this study underscore the potential of CAM to complement conventional rheumatology treatments, highlighting its value in patient-centered care and indicating its role in improving patient outcomes. This study provides compelling evidence of the beneficial role of CAM in the management of rheumatic diseases. Our analysis demonstrated that CAM use was associated with significant improvements in pain perception and functional capacity, as indicated by better VAS and HAQ scores. These findings underline the value of integrating CAM into the therapeutic repertoire for rheumatologic conditions, aligning treatment with patients' cultural preferences and their self-reported sense of health and well-being. As the demand for patient-centered care increases, the incorporation of CAM may offer a more personalized and satisfactory healthcare experience, suggesting its potential as a complement to conventional rheumatological treatments. Future studies could benefit from longitudinal designs to track changes over time and randomized controlled trials to establish the efficacy of CAM interventions more robustly.

Conflict of Interests
The authors declare that there is no conflict of interest in the study.

Financial Disclosure
The authors declare that they have received no financial support for the study.

Ethical Approval
This study was reviewed and approved by the Adana City Training and Research Hospital Clinical Research Ethics Committee with decision number 3202 at February 29, 2024.

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