Chapter
Traditional Treatment for Rheumatoid Arthritis

Krushna Chandra Sahoo

Abstract

The most prevalent musculoskeletal disorder is rheumatoid arthritis (RA). The main concern with RA is extreme fatigue, pain, and weakness. Patients having severe pain are compelled to take medications containing a variety of indigenous substances. These indigenous substances, on the other hand, exacerbated illnesses and delay in seeking appropriate healthcare. Treatment is delayed due to a number of reasons, including patients’ lack of access to trained healthcare professionals, delays in referral to a rheumatologist, and patients’ belief on traditional healing practices. The choice of inappropriate healthcare providers often causes a delay in referral to a rheumatologist. Self-medication and seeking treatment from traditional healers are often compelled the patient to engage in a variety of traditional practices. Cultural values have a significant influence on care-seeking behavior. Since healthcare promotion is dictated by community demands, the healthcare system should understand the contextual phenomena behind common practices for better health education. This chapter will address the beliefs and values that underpin traditional treatment, the sources of traditional learning pathways and ethical aspects of traditional practice.

Keywords: rheumatoid arthritis, musculoskeletal disorder, traditional healing, indigenous treatment practices, use of animal products, care-seeking pathways

1. Introduction

Rheumatoid arthritis (RA) is one of the most common inflammatory musculoskeletal disorders, causing chronic pain in patients [1–6]. It is also a chronic destructive inflammatory disease characterized by the presence and consistency of an inflammatory infiltrate, resulting in joint architecture destruction and impairment of function [1–6]. The fingers, wrist, feet, and ankles are the most commonly affected by RA, and the chronic inflammation causes permanent joint destruction and deformity [1–6]. The main concern with RA is the pain, and its persistence frequently has negative health consequences [5–8]. As a systemic disease, RA has extra-articular manifestations in systems such as the pulmonary, ocular, and vascular systems, as well as other organs or structures that may be affected by the inflammatory process. As a result, timely and rational rheumatoid arthritis treatment is critical [8–10]. Nonetheless, despite greater recognition of the benefits of timely treatment, there is always a delay in obtaining treatment from appropriate healthcare providers among patients [11]. The delays in diagnosis and referral to a tertiary health care facility or specialist, such as a rheumatologist, causes worsening disease conditions and complicating care-seeking pathways [12–18].
2. Rheumatoid arthritis, and complementary and alternative medicines (CAM)

Rheumatoid arthritis is one of the most painful diseases, and patients seek a variety of treatment options, including complementary and alternative medicines (CAMs) [19–26]. CAM has grown in popularity among RA patients worldwide; CAM use is widespread among RA patients and is projected to increase further [2, 9, 27, 28]. The use of CAMs by people living with RA in the United States has been reported to range between 28 and 90 percent [21, 22]. The lifetime prevalence of CAM use in RA patients is 38 percent [29]. CAMs include a wide range of traditional or indigenous practices as well as a variety of products. Herbal treatments, homoeopathy ingredients, and various animal products are among the products available. Massage therapies, acupressure, acupuncture, electro-acupuncture, electrical stimulation, laser therapy, and mind-body therapies are among the indigenous treatment methods [7, 14, 17, 24, 26, 30, 31]. Many different types of physical activity are generally used and encouraged. Homeopathy employs ingredients in high concentrations that are not typically found in conventional medicines or treatments [7].

The fundamental question is why CAMs are not fully integrated into mainstream medical care, even in countries like China and India, which are known to be the birthplace of these traditional CAMs [7, 24, 26, 31]. The reasons could be scientific, political, or economic [19]. However, the most common argument is that traditional complementary and alternative medicine or therapies often create a barrier to scientific scrutiny [19]. The effect of CAMs with slight alterations and combinations can be demonstrated to be similarly effective and can suggest better patents; thus, research does not garner much private funding. The majority of studies are underpowered or poorly designed. As a result, pharmacovigilance research should concentrate on issues such as drug interactions and CAM intervention [19]. However, the most significant barrier to CAM research is a lack of funding and qualified experts to research these products. Currently, these CAMs are being subjected to scientific scrutiny [19].

Whatever the reason behind the popularity of CAMs, it is critical to understand which type of CAM is safe and effective for patients with RA [21, 22]. Physicians should be well informed and at ease discussing common complementary and alternative therapies, particularly their effects, side effects, and potential interactions with conventional RA treatments. Many patients may not volunteer for their use of CAM, so physicians must conduct systematic inquiries during consultations. This should be given extra attention in elderly patients with comorbidities.

3. Various indigenous healing practices

Traditional RA treatment includes the use of plant products or herbal remedies [22, 32, 33], animals or animal products [14, 22, 32, 34–37], and the application of alternative therapies [2, 7, 22, 32, 38, 39]. Traditional approaches to RA treatments include herbs/juices, spiritual practices, topical applications, movement-based therapies, and practitioner-based modalities [32]. These traditional treatments are used as a home remedy and were primarily encouraged or suggested by family members, neighbours, or relatives. The majority of the time, however, these traditional treatments are prescribed by local traditional healers. Traditional medicines are used in a variety of ways, including eating, drinking, tying, anointing, banding, massaging, and fumigation. It was eaten often fresh. The other methods of preparation were cooking, burning, crushing, grinding, wrapping, powdering, or drying. Table 1 shows a detailed list of the animals and animal products that are used in traditional RA care.
| Authors               | Scientific name of the animal                             | Preparation Procedure                                      |
|----------------------|----------------------------------------------------------|------------------------------------------------------------|
| Samal et al. 2020    | *Ocyceros birostris* (Indian Grey Hornbill)              | Body (boiling with spices)                                 |
|                      | *Centropus sinensis* (Crow pheasant)                     | Body (boiling with cumin seeds)                            |
|                      | *Herpestes edwardsi* (Indian grey mongoose)              | Body (rotten for 4–5 days mixed with curd and eating)      |
|                      | *Capra aegagrus hircus* (Goat)                           | Boiling and eating                                         |
|                      | *Canis aureus indicus* (Indian jackal)                   | Body (rotten for 4–5 days mixed with curd and eating)      |
|                      | *Lumbricus terrestris* (Earthworm)                       | Grinding curd and spices and eating                        |
| Kendie et al. 2018   | *Capra aegagrus hircus L.* (goat)                        | Milk (drinking)                                            |
|                      | *Sus scrofa* (pig)                                       | Meat (eating)                                              |
|                      | *Crocodile spp.* (crocodile)                             | Bile (drinking anointing)                                  |
|                      | All spp. of leeches                                      | Head (massaging)                                           |
| Altaf et al. 2017    | *Felis domesticus* (cat)                                 | Fat (massaging)                                            |
|                      | *Bubalus bubalis* (buffalo)                              | Fat, milk, flesh (eating)                                  |
|                      | *Hemiechinus collaris* (gray long eared desert hedgehog)| Body (massaging)                                           |
|                      | *Hystrix indica* (Kerr Indian crested porcupine)         | Fat (massaging)                                            |
| Geisler and Cheung   | *Gallus Gallus domesticus* (chicken)                     | Cartilage Juices (eating)                                  |
|                      | *Fish*                                                    | Oil (eating)                                               |
| Alves and Alves      | *Apis mellifera* (Africanised honey bee)                 |                                                            |
|                      | *Acheta domestica* (house cricket)                       |                                                            |
|                      | *Paragryllus temulentus* Saussure (cricket)              |                                                            |
|                      | *Palembus dermestoides* (peanut beetle)                   |                                                            |
|                      | *Leporinus piau* (Black piau)                            |                                                            |
|                      | *Carcharhinus porosus* (smalltail shark)                 |                                                            |
|                      | *Rhizoprionodon lalandii* (Brazilian sharpnose shark)    |                                                            |
|                      | *Rhizoprionodon porosus* (Sharpnose shark)              | Sun-dried, grated and crushed to powder then administered as tea or taken during meals |
|                      | *Sphyrna lewini* (Scalloped hammerhead)                  |                                                            |
|                      | *Oncorhynchus mykiss* (redband trout)                    |                                                            |
|                      | *Astyanax bimaculatus* (Twospot astyanax)                |                                                            |
|                      | *Megalodors uranoscopus* (catfish)                       |                                                            |
|                      | *Platydoras costatus* (catfish)                          |                                                            |
|                      | *Pterodoras granulosus* (catfish)                        |                                                            |
|                      | *Oxydoras niger* (catfish)                               |                                                            |
|                      | *Electrophorus electricus* (electric eel)                |                                                            |
|                      | *Hoplias malabaricus* (trahira)                          |                                                            |
|                      | *Gadus morhua* (atlantic cod)                            |                                                            |
|                      | *Ginglymostoma cirratum* (nurse shark)                   |                                                            |
|                      | *Phractocephalus hemioliopterus* (redtail catfish)       |                                                            |
| Authors | Scientific name of the animal | Preparation Procedure |
|---------|-----------------------------|-----------------------|
| Zungaro zungaro | black manguruyu | |
| Pristis pectinata | smalltooth sawfish | |
| Pristis perotteti | largetooth sawfish | |
| Prochilodus nigricans | (black prochilodus) | |
| Sphoeroides testudineus | checkered puffer | |
| Phyllolemus bicolor | | |
| Iguana iguana | common iguana | |
| Tupinambis meriana | (lizard) | |
| Tupinambis teguixin | (lizard) | |
| Boa constrictor | (boa) | |
| Eunectes murinus | (anaconda) | |
| Epicrates cenchria | (Brazilian rainbow boa) | |
| Oxyrhinus trigeminus | | |
| Drymohius margaritiferus | | |
| Caudisona durissa | (neotropical rattlesnake) | |
| Micrurus ibiboca | | |
| Lachesis muta | (bushmaster) | |
| Phrynorops geoffroanus | (geoffroy’s side-necked turtle) | |
| Phrynorops tuberosus | | |
| Mesolemmys tuberculata | (toadhead turtle) | |
| Caretta caretta | (loggerhead turtle) | |
| Eretmochelys imbricata | (atlantic hawksbill) | |
| Lepidochelys olivacea | | |
| Dermochelys coriacea | (Leatherback turtle) | |
| Rhinoclemmys punctularia | (spot-legged turtle) | |
| Podocnemis expansa | (amazon river turtle) | |
| Podocnemis unifilis | (yellow-spotted river turtle) | |
| Chelonoidis denticulate | (yellow footed tortoise) | |
| Caiman crocodilus | (common cayman) | |
| Caiman latirostris | (cayman) | |
| Palcosuchus trigonatus | | |
| Buteogallus urubitinga | | |
| Ardea cocoi | (white-necked Heron) | |
| Coragyps atratus | (black vulture) | |
| Crax globulosa | (wattled Curassow) | |
| Ortalis vetula | | |
| Authors                           | Scientific name of the animal                      | Preparation Procedure                  |
|----------------------------------|--------------------------------------------------|---------------------------------------|
| Efthimiou and Kukar 2010 [22]    | Omega-3 PUFAs (fish oil)                          | Eating                                 |
| Padmanavan and Sujana 2008 [37] | Melursus ursinus (bear)                           | Fat (massaging)                        |
|                                  | Herpestes fuscus fuscus (brown mongoose)          | Penis (eating with roasted)            |
|                                  | Bubalus bubalis (buffalo)                         | Ghee (eating and massaged)             |
|                                  | Varanus bengalensis (monitor lizard)              | Fat (massaging)                        |
|                                  | Panthera pandas (panther)                         | Fat (massaging)                        |
|                                  | Panthera tigris (tiger)                           | Fat (massaging)                        |
|                                  | Python reticulata (python)                        | Fat (massaging)                        |

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Herbal medicines were mostly prescribed or used in powder form. In the majority of cases, patients used roots and tubers to reduce joint swelling. They took herbal remedies in the form of liquid and powdered plant products. Herbal medicines have been used as anti-inflammatory treatments for the treatment of RA [22]. The herbal remedies or plants used for treatment of RA are given in Table 2. A multi-country study conducted in the United Kingdom, Germany, the United States, Australia, and Canada found that self-management of RA with pacing, heat, cold, and rest without medical advice reduced intense pain [4]. A study in the Dominican Republic looked into the religious and environmental theories of arthritis etiology. According to their participants, arthritis was caused by God’s will and due to contact with contaminated water; they believe that by praying, and avoiding

| Authors                      | Scientific name of the animal | Preparation Procedure                                                                 |
|------------------------------|------------------------------|---------------------------------------------------------------------------------------|
|                              | Cervus unicolor (sambar deer) | Fat (massaging)                                                                      |
|                              | Palamnaeus swammerdami (scorpion) | Whole body (boiled and massage with gingiley oil)                                    |
|                              | Vespa orientalis (wasp)       | Body (ground with honey and salt and applied)                                         |

Table 1. Animal or animal products use for treatment of RA.

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| Authors                      | Name of the plants or herbs                                                                 |
|------------------------------|-------------------------------------------------------------------------------------------|
| Geisler and Cheung 2015 [32] | Curcuma longa (turmeric)                                                                   |
|                              | Zingiber oYcinale (ginger)                                                                 |
|                              | Prunus avium (cherry)                                                                      |
|                              | Ricinus communis (castor oil)                                                              |
| Yang et al. 2013 [33]        | Black cohosh                                                                              |
|                              | Angelica sinensis                                                                         |
|                              | Licorice                                                                                  |
|                              | Tripterygium wilfordii                                                                     |
|                              | Centella asiatica                                                                         |
|                              | Urtica dioica                                                                             |
| Efthimiou and Kukar 2010 [22]| Camellia sinensis (green tea)                                                              |
|                              | Celastrus aculeatus                                                                        |
|                              | Lepidium meyenii                                                                          |
|                              | Uncaria (cat's claw)                                                                       |
|                              | Tripterygium wilfordii (thunder god vine)                                                 |
|                              | Perna canaliculus                                                                         |
|                              | Curcuma longa (turmeric)                                                                   |
|                              | Curcuma phaeocaulis                                                                       |
|                              | Zingiber oYcinale (ginger)                                                                 |
|                              | Semecarpus anacardium Linn.                                                                |

Table 2. Use of herbal remedies for treatment of RA.
contact with contaminated water, RA can be cured [40]. Patients used heat and physical therapies, supplementation, traditional medicines, and prayer to get relief from RA [27, 28]. It was also observed that patients would sometimes practice hot compression by applying mustard oil to the affected areas [14]. The various applications of traditional alternative therapies for RA are provided in Table 3. Traditional healers have given powders or ash to RA patients on occasion [14]. According to a study conducted in the United States of America, 70% of patients never mention traditional treatments to their physicians, which is regarded as an invisible mainstreaming of alternative care [21, 22].

4. Key reasons for traditional healing practices and its consequences

Patients with RA have a wide range of health-care options, including self-medication with home remedies, traditional or indigenous healing practices,

| Authors                        | Application of alternative therapies                                                                 |
|--------------------------------|------------------------------------------------------------------------------------------------------|
| Khanna et al. 2017 [38]        | Seven days fasting followed by vegan diet                                                            |
|                                | An elimination diet plan                                                                             |
|                                | Provision of elemental diet                                                                          |
|                                | Supplementation of dietary fibers and whole grains                                                    |
|                                | Use of specific fruits and spices                                                                    |
| Zhao et al. 2017 [7]           | Fish and plant oils                                                                                  |
|                                | Herbs and traditional Chinese medicine                                                              |
|                                | Supplements and diet regimes                                                                        |
| Geisler and Cheung 2015 [32]   | Use of magnets or copper bracelets                                                                  |
|                                | Movement based therapies – yoga, pilate’s, tai chi                                                   |
|                                | Acupuncture                                                                                          |
|                                | Energy healing                                                                                       |
|                                | Reflexology                                                                                          |
|                                | Massage                                                                                              |
|                                | Eating dark chocolate, and lecithin rich food                                                        |
|                                | Eating honey and apple cider vinegar                                                                 |
|                                | Eating horse liniment                                                                                |
|                                | Meditation, prayer, biofeedback, relaxation                                                          |
| Ernst and Posadzki 2011 [2]    | Magnets therapy                                                                                      |
|                                | Homeopathy                                                                                           |
|                                | Avocado-Soybean Unsaponifiables (ASU)                                                                |
|                                | Tai chi                                                                                              |
| Graham et al. 2011 [39]        | Foot orthoses                                                                                        |
| Efthimiou and Kukar 2010 [22]  | Acupuncture                                                                                          |
|                                | Electro-acupuncture                                                                                 |
|                                | Bee-venom acupuncture                                                                                |

Table 3. Application of traditional alternative therapies for RA.
traditional herbal treatment, and treatment from informal healthcare providers (untrained or unqualified providers), trained prescribers, and specialists [10, 13, 14, 23]. Patients’ pain frequently prompted medication decisions, which were frequently purposeful and multifaceted [7, 15]. Because of their fatigue, pain, and disability, people with musculoskeletal disorders are among the highest self-reported users of CAMs, particularly traditional treatments [41]. The swelling and joint damage that characterize active RA are the end results of complex autoimmune and inflammatory processes involving components of both the innate and adaptive immune systems, which compel them to seek care from multiple providers, especially in LMICs. Furthermore, foot deformity is common (80%) among RA patients, leading to foot ulceration [39]. The traditional treatment used by RA patients to alleviate or recover from severe pain [11–15, 42–45].

Traditional healers are preferred because of the lack of trained healthcare providers and patients’ trust in indigenous healing approaches, as well as the ease of access to care and patients’ faith in traditional healing [11, 23]. The patient’s care-seeking behaviour and treatment preferences vary depending on their education, culture, and beliefs [13, 27, 28]. Self-medication and seeking care from traditional healers frequently force people to engage in various indigenous practices. The studies revealed that there are two key factors responsible for the gap between onset of symptoms, definite diagnosis and appropriate health care or treatment from the right providers. These factors include poor health literacy among the patients and inaccessibility to modern health care systems or unavailability of trained providers, which often happens in rural and remote areas, where more than one-third of the patients live. Furthermore, these factors frequently result in a delay in care pathways or a proper referral system, aggravating disease conditions [11]. The major underlying reasons for treatment delay were the influence of ethnicity, such as folk beliefs, family and friends, and dietary manipulation [43].

Depression is the most common comorbidity in RA, and it has a significant impact on the quality of life [1]. It has been documented that some patients used traditional CAM therapy in addition to other modern antidepressants to recover from RA-related psychiatric disorders, particularly depression and anxiety [1]. The satisfaction with support was associated with adaptive behaviour, whereas disappointment was associated with maladaptive behavior [5, 13, 14]. Furthermore, the primary motivators of indigenous practice were easy access to healers and no prescription fees; the primary demotivators were high prices and ineffective treatment. Furthermore, the RA causes productivity loss; one of the major concerns was RA-related work-disability – permanent disability and temporary job loss [18]. For example, a study in Lithuania found that RA patients were 24 percent less likely to be employed than the general population [18]. Some of the patients sought care through multiple health care providers, and even received traditional treatment in order to avoid disability and RA-related productivity loss [18].

Treatments are frequently influenced by the patients’ perspective and experience with the illness, such as the likely duration of disease onset, symptomatology, severity, diagnosis, urgency of care, and available facilities [46]. A meta-ethnography study of RA patients revealed that many were unsure about the severity and duration of the disease [47]. Patients’ seeking care in various care practices during the disease period has a significant impact on disease cure [13, 48]. There were few positive outcomes from indigenous treatment; in many cases, patients experienced negative outcomes such as disease severity, side effects from incorrect treatment, and frequent delays in receiving appropriate care [13, 14]. As a result, improving the quality of life of RA patients is critical. Community literacy and mass screening would both contribute to the early detection and management of RA. It is
critical to understand patients’ perspectives in order to develop a more effective health care delivery model.

5. Empirical knowledge on traditional healing

Cultural factors are regarded as vital components in the promotion of conventional therapies; the use of traditional RA management has been influenced by cultural factors [7, 27]. Traditional cultures recognized the importance of belief healing requirements and devised complex rituals to elicit expectancy and participation from healers, patients, and the local community. Traditional healing techniques have been an integral part of nearly all societies’ healing rituals since the beginning of time [36]. The sources of empirical knowledge of traditional healing were based on either learning from or motivated by family, relatives or local community members or with the attraction and preference of local traditional healers [14, 15, 27]. This was mostly due to an article of faith on severe pain reduction, or to witnessing others being cured, or to societal pressure. The key knowledge pathway of indigenous RA treatment was ancient tales, customs, and belief or faith in religious or traditional healers.

Many countries around the world have deep roots in traditional healing practices. According to the World Health Organization (WHO), traditional medicine is used for primary health care by 3/4 of the world’s population [49]. Indigenous cultures are often known for their oral tradition – healing and medicine knowledge transmitted orally from one generation to the next [49]. Moreover, there is great diversity in indigenous cultures worldwide. Specific healing practices are practiced by one community may not be accepted by another. The treatment practices are often difficult to generalize without scientific proof. Understanding people’s beliefs about etiology, feelings, thinking, and the content of lay beliefs is critical in medical sociology [49]. However, it is difficult to verify indigenous knowledge by scientific or adequately evaluated assumptions underlying such treatment practice as a basis for its’ typical criteria and philosophies [50]. The convictions of the patients about etiology were often based on faith [40, 42, 48]. However, misleading assumptions frequently result in a community’s health being jeopardized.

6. Health system responsibilities and preparedness

The absences of adequate facilities in rural and remote areas, as well as a lack of patient awareness, were major motivators for indigenous approaches to RA treatment. When patients do not have adequate access to modern care, they rely on traditional healers for primary care [51]. There is compelling evidence that community members frequently prefer self-medication to traditional providers for many health issues [51]. As a result, there is a need for RA management at primary health care centres with a proper referral system [13]. Patient-centered care models are essential for effective treatment [52]. The primary need for RA patients is physician consultation through active listening and professionalism with chronic pain management [42]. Inadequate community literacy on RA is the major reason for proper treatment [36, 44]. Patients with RA must be well informed and educated on modern treatment, which is a critical component of care [10, 12]. Furthermore, public health practitioners’ understanding of indigenous health concepts may be beneficial in reducing unnecessary treatment burden and care complexity [53].

In countries where much effort has been put into building a single uniform health service delivery system, the pluralistic health care system is ignored. In the
meantime, understanding the pluralistic medical system is critical to improving community health. India has a pluralistic medical culture with a well-documented history and practice of alternative medicine – Ayurveda, Yoga, and Naturopathy (AYUSH) [54]. Furthermore, multidisciplinary holistic approaches that focus on context-specific health determinants are important for understanding the cultural influence on RA care seeking pathways [13, 55, 56].

7. Conclusions

Patients with RA seek immediate care from multiple traditional providers with a wide range of products and services with no gatekeeping. The most significant concern expressed by practitioners, policymakers, and researchers is the safety and efficacy of traditional treatments, which can be addressed by conducting a thorough examination of the products in common use. Primary health centres are the entry point for retaining RA patients; the availability of RA-trained providers at primary health centres, along with a proper referral system, is critical for convalescing care-seeking pathways. Furthermore, community education on early symptoms, diagnosis, and proper treatment is critical.

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Conflict of interest

The author declares there is no conflict of interest.

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References

[1] Dougados M, Soubrier M, Antunez A, Balint P, Balsa A, Buch MH, et al. Prevalence of comorbidities in rheumatoid arthritis and evaluation of their monitoring: results of an international, cross-sectional study (COMORA). Ann Rheum Dis. 2014;73(1):62–8.

[2] Ernst E, Posadzki P. Complementary and alternative medicine for rheumatoid arthritis and osteoarthritis: an overview of systematic reviews. Current pain and headache reports. 2011 Dec;15(6):431-7.

[3] Gibofsky A. Epidemiology, pathophysiology, and diagnosis of rheumatoid arthritis: A Synopsis. The American Journal of managed care. 2014 May 1;20(7 Suppl):S128-35.

[4] Hewlett S, Sanderson T, May J, Alten R, Bingham III CO, Cross M, March L, Pohl C, Woodworth T, Bartlett SJ. ‘I’m hurting, I want to kill myself: rheumatoid arthritis flare is more than a high joint count—an international patient perspective on flare where medical help is sought. Rheumatology. 2011 May 12;51(1):69-76.

[5] Holtzman S, Newth S, Delongis A. The role of social support in coping with daily pain among patients with rheumatoid arthritis. Journal of Health Psychology. 2004 Sep;9(5):677-95.

[6] Papana A, Meng SJ, Wei YX, Wang W, Ruth M, Page C, et al. Prevalence of rheumatoid arthritis in low – and middle – income countries : A. 2015;5(1).

[7] Zhao S, Otieno F, Akpan A, Moots RJ. Complementary and alternative medicine use in rheumatoid arthritis: considerations for the pharmacological management of elderly patients. Drugs & aging. 2017 Apr 1;34(4):255-64.

[8] Villeneuve E, Nam JL, Bell MJ et al. A systematic literature review of strategies promoting early referral and reducing delays in the diagnosis and management of inflammatory arthritis. Annals of the Rheumatic Diseases, 2012; 27: 13–22.

[9] Yang L, Sibbritt D, Adams J. A critical review of complementary and alternative medicine use among people with arthritis: a focus upon prevalence, cost, user profiles, motivation, decision-making, perceived benefits and communication. Rheumatology international. 2017 Mar 1;37(3):337-51.

[10] Townsend A, Adam P, Cox SM, Li LC. Everyday ethics and help-seeking in early rheumatoid arthritis. Chronic illness. 2010 Sep;6(3):171-82.

[11] Kumar K, Daley E, Carruthers DM, Situnayake D, Gordon C, Grindulis K, Buckley CD, Khattak F, Raza K. Delay in presentation to primary care physicians is the main reason why patients with rheumatoid arthritis are seen late by rheumatologists. Rheumatology. 2007 Jun 18;46(9):1438-40.

[12] Oliver S. Exploring the healthcare journey of patients with rheumatoid arthritis: a mapping project—implications for practice. Musculoskeletal Care. 2008 Dec;6(4):247-66.

[13] Pati S, Sahoo KC, Samal M, Jena S, Mahapatra P, Sutar D, Das BK. Care-seeking pathways, care challenges, and coping experiences of rural women living with rheumatoid arthritis in Odisha, India. Primary Health Care Research & Development. 2019;20.

[14] Samal M, Sahoo KC, Pati S, Tripathy SR, Parida MK, Das BK. Use of Animal and Animal Products for Rheumatoid Arthritis Treatment: An Explorative Study in Odisha, India. Frontiers in medicine. 2020 Jan 14;6:323.
[15] Salt E, Peden A. The complexity of the treatment: the decision-making process among women with rheumatoid arthritis. Qualitative Health Research. 2011 Feb;21(2):214-22.

[16] Rudan I, Sidhu S, Papana A, Meng SJ, Xin–Wei Y, Wang W, Campbell–Page RM, Demaio AR, Nair H, Sridhar D, Theodoratou E. Prevalence of rheumatoid arthritis in low–and middle–income countries: A systematic review and analysis. Journal of global health. 2015 Jun;5(1).

[17] Radovits BJ, Fransen J, Eijsbouts A, van Riel PL, Laan RF. Missed opportunities in the treatment of elderly patients with rheumatoid arthritis. Rheumatology. 2009 Aug 1;48(8):906-10.

[18] Burton W, Morrison A, Maclean R, Ruderman E. Systematic review of studies of productivity loss due to rheumatoid arthritis. Occupational Medicine. 2006 Jan 1;56(1):18-27.

[19] Chandrashekara S. Complementary and alternative medicine in rheumatoid arthritis. Chinese journal of integrative medicine. 2011 Oct;17(10):731-4.

[20] Deshmukh SA, Kalkonde YV, Deshmukh MD, Bang AA, Bang AT. Healthcare seeking behavior for back and joint pain in rural Gadchiroli, India: a population-based cross-sectional study. Indian journal of community medicine: official publication of Indian Association of Preventive & Social Medicine. 2014 Oct;39(4):229.

[21] Efthimiou P, Kukar M, MacKenzie CR. Complementary and alternative medicine in rheumatoid arthritis: no longer the last resort!. HSS journal. 2010 Feb 1;6(1):108-11.

[22] Efthimiou P, Kukar M. Complementary and alternative medicine use in rheumatoid arthritis: proposed mechanism of action and efficacy of commonly used modalities. Rheumatology international. 2010 Mar 1;30(5):571-86.

[23] Handa R, Rao URK, Lewis JFM, Rambhad G, Shiff S. Literature review of rheumatoid arthritis in India. 2015; (July):1–12.

[24] Lee JD, Park HJ, Chae Y, Lim S. An overview of bee venom acupuncture in the treatment of arthritis. Evidence-based complementary and alternative medicine. 2005 Feb;2(1):79-84.

[25] Stamm T, Hieblinger R, Boström C, Mihai C, Birrell F, Thorstensson C, Fialka-Moser V, Meriaux-Kratochvila S, Smolen J, Coenen M. Similar problem in the activities of daily living but different experience: a qualitative analysis in six rheumatic conditions and eight European countries. Musculoskeletal care. 2014 Mar;12(1):22-33.

[26] Taibi DM, Bourguignon C. The role of complementary and alternative therapies in managing rheumatoid arthritis. Family & community health. 2003 Jan 1;26(1):41-52.

[27] Stack RJ, Shaw K, Mallen C, Herron-Marx S, Horne R, Raza K. Delays in help seeking at the onset of the symptoms of rheumatoid arthritis: a systematic synthesis of qualitative literature. Annals of the rheumatic diseases. 2011: annrheumdis-2011.

[28] Stack RJ, Simons G, Kumar K, Mallen CD, Raza K. Patient delays in seeking help at the onset of rheumatoid arthritis: the problem, its causes and potential solutions. Aging health. 2013 Aug;9(4):425-35.

[29] Hunt K, Ernst E. Patients' use of CAM: results from the Health Survey for England 2005. Focus Altern Complement Ther. 2010;15:101–3.

[30] Baig S, DiRenzo DD. Complementary and Alternative Medicine Use in Rheumatoid Arthritis.
Current rheumatology reports. 2020 Oct;22(10):1-9.

[31] Rambod M, Nazarinia M, Raieskarimian F. The prevalence and predictors of herbal medicines usage among adult rheumatoid arthritis patients: A case-control study. Complementary therapies in medicine. 2018 Dec 1;41:220-4.

[32] Geisler CC, Cheung CK. Complementary/alternative therapies use in older women with arthritis: Information sources and factors influencing dialog with health care providers. Geriatric Nursing. 2015 Jan;36(1):15-20.

[33] Yang CL, Or TC, Ho MH, Lau AS. Scientific basis of botanical medicine as alternative remedies for rheumatoid arthritis. Clinical Reviews in Allergy & Immunology. 2013 Jun;1;44(3):284-300.

[34] Kendie FA, Mekuriaw SA, Dagnew MA. Ethnozoological study of traditional medicinal appreciation of animals and their products among the indigenous people of Metema Woreda, North-Western Ethiopia. Journal of ethnobiology and ethnomedicine. 2018 Dec;14(1):1-2.

[35] Altaf M, Javid A, Umair M, Iqbal KJ, Rasheed Z, Abbasi AM. Ethnomedicinal and cultural practices of mammals and birds in the vicinity of river Chenab, Punjab-Pakistan. Journal of ethnobiology and ethnomedicine. 2017 Dec;13(1):1-24.

[36] Alves RR, Alves HN. The faunal drugstore: Animal-based remedies used in traditional medicines in Latin America. Journal of ethnobiology and ethnomedicine. 2011 Dec;7(1):1-43.

[37] Padmanabhan P, Sujana KA. Animal products in traditional medicine from Attappady hills of Western Ghats. 2008.

[38] Khanna S, Jaiswal KS, Gupta B. Managing rheumatoid arthritis with dietary interventions. Frontiers in nutrition. 2017 Nov;8:4-52.

[39] Graham AS, Hammond A, Williams AE. Therapeutic foot health education for patients with rheumatoid arthritis: a narrative review. Musculoskeletal Care. 2011 Sep;9(3):141-51.

[40] Niu NN, Davis AM, Bogart LM, Thornhill TS, Abreu LA, Ghazinouri R, Katz JN. Patient disease perceptions and coping strategies for arthritis in a developing nation: a qualitative study. BMC musculoskeletal disorders. 2011 Dec;12(1):228.

[41] Stamm T, Lovelock L, Stew G, Nell V, Smolen J, Jonsson H, Sadlo G, Machold K. I have mastered the challenge of living with a chronic disease: life stories of people with rheumatoid arthritis. Qualitative Health Research. 2008 May;18(5):658-69.

[42] Kristiansson MH, Brorsson A, Wachtler C, Troein M. Pain, power and patience—a narrative study of general practitioners’ relations with chronic pain patients. BMC family practice. 2011 Dec;12(1):31.

[43] Kumar K, Daley E, Khattak F, Buckley CD, Raza K. The influence of ethnicity on the extent of, and reasons underlying, delay in general practitioner consultation in patients with RA. Rheumatology. 2010 Feb;49(5):1005-12.

[44] Sheppard J, Kumar K, Buckley CD, Shaw KL, Raza K. ‘I just thought it was normal aches and pains’: a qualitative study of decision-making processes in patients with early rheumatoid arthritis. Rheumatology. 2008 Aug;47(10):1577-82.

[45] Ward V, Hill J, Hale C, Bird H, Quinn H, Thorpe R. Patient priorities of care in rheumatology outpatient clinics:
a qualitative study. Musculoskeletal Care. 2007 Dec;5(4):216-28.

[46] Lavallee LF. Practical Application of an Indigenous Research Framework and Two Qualitative Indigenous Research Methods: Sharing Circles and Anishnaabe Symbol-Based Reflection. Int J Qual Methods - Arch. 2009;8(1):21–40.

[47] Daker-White G, Donovan J, Campbell R. Redefined by illness: meta-ethnography of qualitative studies on the experience of rheumatoid arthritis. Disability and rehabilitation. 2014 Jun 1;36(13):1061-71.

[48] Coty MB, Wishnia G. Adjusting to recent onset of rheumatoid arthritis: a qualitative study. Journal of Research in Nursing. 2013 Sep;18(6):504-17.

[49] Prior L. Belief, knowledge and expertise: the emergence of the lay expert in medical sociology. Sociology of health & illness. 2003 Apr;25(3):41-57.

[50] Durie M. Understanding health and illness: research at the interface between science and indigenous knowledge. International journal of epidemiology. 2004 Jun 24;33(5):1138-43.

[51] Meessen B, Bigdeli M, Chheng K, Decoster K, Ir P, Men C, Van Damme W. Composition of pluralistic health systems: how much can we learn from household surveys? An exploration in Cambodia. Health Policy and Planning. 2011 Jul 1;26(suppl_1):i30-44.

[52] Cheraghi-Sohi S, Bower P, Kennedy A, Morden A, Rogers A, Richardson J, Sanders T, Stevenson F, Ong BN. Patient priorities in osteoarthritis and comorbid conditions: a secondary analysis of qualitative data. Arthritis care & research. 2013 Jun;65 (6):920-7.

[53] Burgess CP, Johnston FH, Bowman DM, Whitehead PJ. Healthy country: healthy people? Exploring the health benefits of Indigenous natural resource management. Australian and New Zealand Journal of Public Health. 2005 Apr;29(2):117-22.

[54] Rudra S, Kalra A, Kumar A, Joe W. Utilization of alternative systems of medicine as health care services in India: Evidence on AYUSH care from NSS 2014. PloS one. 2017 May 4;12(5): e0176916.

[55] Kristiansen TM, Primdahl J, Antoft R, Hørslev-Petersen K. Everyday life with rheumatoid arthritis and implications for patient education and clinical practice: a focus group study. Musculoskeletal care. 2012 Mar;10(1):29-38.

[56] Pettigrew LM, De Maeseneer J, Anderson MI, Essuman A, Kidd MR, Haines A. Primary health care and the Sustainable Development Goals. The Lancet. 2015 Nov 28;386(10009):2119-21.