


Knowledge, attitudes, beliefs and practices of rheumatologists in South Africa, with regard to their patients' diet, nutritional supplements and lifestyle

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Abstract

Aim: To determine the knowledge, attitudes, beliefs and practices of rheumatologists in South Africa, with regard to their patients' diet, nutritional supplements and lifestyle.

All South African Rheumatism and Arthritis Association (SARAA)-registered rheumatologists (n=43) were included in this cross-sectional, descriptive pilot study. A self-administered questionnaire was developed for data collection.

A satisfactory response rate (51%; n=22) was obtained. Although 59% of the rheumatologists agreed that a healthy balanced diet improves the symptoms of rheumatoid arthritis (RA), more than two-thirds (68%) refer less than 10% of their patients to a dietician. Despite the fact that no specific food group has been clinically proven to affect RA symptoms, 64% of rheumatologists stated that certain foods, mainly red meat, refined carbohydrates and sugar, should be avoided or reduced. Although 73% of rheumatologists described supplements to be beneficial in improving the symptoms of RA, only 64% prescribed supplements. Most of these rheumatologists (71%) prescribed omega-3 fatty acids. Only 64% of rheumatologists indicated that drug-nutrient interactions could have an impact on nutritional status.

The majority of SA rheumatologists realise the benefits of diet and some supplements in the treatment of RA. However, a large proportion does not prescribe these or refer their patients to dieticians.
Introduction

Rheumatoid arthritis (RA) is a "chronic, inflammatory, autoimmune disorder" resulting in inflammation of the joints and surrounding tissue causing pain, swelling and stiffness; if left untreated it may eventually result in destruction of the joints and permanent disability. In 2003, there were 408,533 persons affected by RA in South Africa. RA is an idiopathic disease and research suggests that hormones, cytokines, viruses, infection, environmental factors, particular inherited genes and a Body Mass Index (BMI) of >25 may increase the tendency for a person to develop RA. It has been shown that persons with RA tend to have a poor nutritional status, reduced energy intake from carbohydrates, a high intake of saturated fatty acids (FA) and a poor micronutrient intake. A few factors which may contribute to a poor nutritional status is an inadequate dietary intake, protein energy malnutrition (which increases the metabolic rate) and drug-nutrient interactions.

Pharmacologic treatment of RA involves the use of various medications such as non-steroidal anti-inflammatory drugs (NSAIDs), disease modifying anti-rheumatic drugs (DMARDs), and biologic agents. Drug-nutrient interactions may result in increased nutrient requirements, decreased absorption of nutrients, gastro-intestinal discomfort and other side effects.

Studies suggest that aspects of the diet may alleviate symptoms and decrease the risk of complications. RA patients are encouraged to exercise regularly, eat healthy, balanced diets and manage their weight. It has been shown in many studies that supplementation with fish oil, rich in omega-3 FA, reduces inflammatory markers and decreases the need for NSAIDs and DMARDs. Anti-inflammatory doses range between 2.6 g/day to 7.1 g/day with an average of 3.5 g/day of omega-3 FA supplements in the form of eicosapentaenoic acid and docosahexaenoic acid. Alternatively, 10-15 ml of unencapsulated fish oil can be administered in food or drinks twice daily, or alternated by eating oily fish, to aid dosing and reduce costs.

Methodology

This pilot study followed a descriptive, cross-sectional design. The study population consisted of all registered rheumatologists who were listed in the South African Rheumatism and Arthritis Association (SARAA) database (n=46), representing 92% of the registered rheumatologists in South Africa according to the Health Professionals Council of South Africa at the time of the study. At the commencement of the study, SARAA was the only available database with contact details for the rheumatologists. Convenience sampling was therefore used due to technical and administrative challenges. Those who were included in the study were all SARAA registered rheumatologists, of any age and gender, practising in South Africa, who, by completing the questionnaire, subsequently gave their consent to participate. The SARAA database of all registered rheumatologists was used to obtain contact details.
The investigators contacted each rheumatologist via email to explain the aim and context of the study and to encourage their participation. A self-administered questionnaire was developed and used as the method of data collection. The questionnaire was limited to 15 questions due to the anticipated time constraints of the rheumatologists in an attempt to ensure a satisfactory response rate. These 15 questions were sufficient for a baseline study according to the aims and objectives. The questionnaire contained one open-ended question and the rest were structured questions. The structured questions were divided into four sections, namely general, diet, nutritional supplements and exercise. The questionnaire consisted of seven knowledge questions. Each of the rheumatologists was given a score out of 7 according to the correctness of their answers in relation to the current literature. A score of 5 or more out of 7 was considered acceptable as only basic knowledge was tested.

The questionnaire was tested for face and content validity, the latter by an academic expert in the field of rheumatology. A sample group of three rheumatologists, registered with the SARAA, was used to test the face validity of the questionnaire. The sample group was selected by means of non-random, judgement sampling, where the investigators chose the first three individuals on the list of registered rheumatologists from the SARAA. These three rheumatologists were excluded from the final study population (n-43). Adaptations to the questionnaire were made as required.

The participants were given the option of the route of return of the questionnaire (i.e. post, facsimile or email). The questionnaires were faxed or emailed to the participants and they were requested to complete the questionnaire and post/fax/email it back to the investigators. The questionnaire took approximately 10 minutes to complete. Follow-ups were done telephonically to ensure an optimal response rate.

The data was processed using coding sheets in Microsoft Excel XP, after which the information was converted into numbers and categories to be described. The frequencies were tallied for closed-ended questions, and the open-ended questions were grouped according to similar answers. Each variable had a set code.

Ethics approval was granted by the Committee for Human Research, Faculty of Health Sciences, Stellenbosch University (approval number: N06/12/235). By completing the questionnaire, the individuals subsequently gave their consent to participate in the study. The individuals' confidentiality and anonymity were ensured through a coding system, and participation was completely voluntary.

Results

A response rate of 51% (n=22) was achieved. The study population ranged between the ages of 34 and 73 years (mean age: 49 yr; SD: ±10.5 yr). The responding rheumatologists practiced mainly in the Western Cape (50%; n=11) and Gauteng (36%; n=8). The majority of the rheumatologists (n=14) have been practising for more than 10 years and all of the rheumatologists (n=22) consult more than 40 patients per year.

Ninety-five per cent (n=21) of the rheumatologists stated that medication improves the symptoms of RA, 95% (n=21) said exercise, 59% (n=13) said a healthy balanced diet and 23% (n=5) said complementary and alternative medicine (CAM) practices improve the symptoms of RA. Sixty-eight per cent (n=15) of rheumatologists refer less than 10% of their patients to a dietician, 27% (n=6) refer 10-30% of their patients and 5% (n=1) refer 30 to 50% of their patients.

Sixty-eight per cent (n=15) of the rheumatologists said that their patients were generally of normal weight and 32% (n=7) said their patients were overweight. Ninety-five per cent of the rheumatologists (n=21) stated that a body mass index (BMI) of more than 25 kg/m² (i.e. overweight) is not a risk factor for the development of RA. Eighteen per cent (n=4) of rheumatologists said that an unhealthy diet (i.e. high fat, sugar and refined carbohydrates and low fibre, low fruit and vegetable intake) was a risk factor for the development of RA, 77% (n=17) said that it was not a risk factor and 5% (n=1) said they were uncertain.
Twenty-seven per cent (n=6) of the rheumatologists said that a balanced diet [55% carbohydrate, 15% protein and 30% fat] improves the symptoms of RA, 59% (n=13) said that it does not improve the symptoms, 5% (n=1) were uncertain and one rheumatologist even indicated that a balanced diet is not recommended. Sixty-eight per cent (n=14) of the rheumatologists said that there are certain foods which should be avoided or reduced, 32% (n=7) said that they did not recommend that any foods be avoided or reduced and 5% (n=1) said it is individualised. The foods that the rheumatologists (68%; n=15) recommended to be avoided or reduced are: red meat (79%; n=11), refined carbohydrates (43%; n=6), sugar (36% n=5), dairy (21%; n=3), caffeine (21%; n=3), preservatives (7%; n=1), high saturated fat foods (7%; n=1), foods that have been rechallenged (or reintroduced after a period of avoidance that proved to worsen symptoms) (7%; n=1) and acidic foods (7%; n=1) (Figure 1).

Seventy-three per cent (n=16) of the rheumatologists agreed that nutritional supplements improve the symptoms of patients with RA. Nine per cent (n=2) said that supplements might improve the nutritional status of patients, while a further 9% (n=2) disagreed with the statement, and 5% (n=1) were uncertain. The supplements that the rheumatologists indicated to improve the symptoms of RA (Figure 2) were omega-3 FA (73%; n=16), selenium, calcium, zinc and vitamin E each 9% (n=2) and β-carotene, vitamin C and vitamin B complex each 5% (n=1).

Sixty-four per cent (n=14) of the rheumatologists indicated that they prescribe supplements. The three most common supplements that rheumatologists (n=14) prescribe are omega-3 FA (71%; n=10), calcium (57%; n=8) and vitamin B complex (29%; n=4) (Figure 3). Thirty-two per cent of rheumatologists do not prescribe the supplements which they had described as beneficial in improving the symptoms of RA. The majority of rheumatologists believe that their patients spend between R101 and R200/month on supplements.
Figure 2: Supplements SA rheumatologists believe to improve the symptoms of RA

Figure 3: Supplements prescribed by SA rheumatologists
The perceived effects of omega-3 FA supplementation on RA in the open-ended question were grouped together as follows: 45% (n=10) said that it decreases inflammation, 18% (n=4) of rheumatologists said that it improves the symptoms of RA, 14% (n=3) said that it decreases the use of RA medication, 14% (n=3) said that it is an antioxidant and 9% (n=2) said that it has a positive effect on RA-associated cardiovascular disease. Other statements made included that omega-3 FA supplementation improves the immune system (5%; n=1), that there is no evidence in paediatric RA (5%; n=1), that the effect is unknown (5%; n=1), that the effect is minimal (5%; n=1) and that they did not know what the effect was (5%; n=1). Forty-five per cent (n=10) of the rheumatologists agreed that RA medication (such as NSAIDs, DMARDs and corticosteroids) resulted in major drug-nutrient interactions. Methotrexate and folate interaction was informally mentioned numerous times. Sixty-four per cent (n=14) of rheumatologists said that drug-nutrient interactions altered nutritional status, while 32% (n=7) said that drug-nutrient interactions do not alter nutritional status, and 5% (n=1) did not know.

Ninety-five per cent (n=21) of the rheumatologists stated that exercise improves the symptoms of RA, while 5% (n=1) said that exercise ‘does not worsen’ the symptoms of RA. One hundred per cent of the sample recommended that their patients do exercise. A few (14%; n=3) rheumatologists did not recommend exercise during active inflammatory stages of the disease. Walking (100%; n=22), swimming (91%; n=20) and cycling (68%; n=15) were the most frequently mentioned types of exercise recommended. Frequency of exercise was recommended to be every day (32%; n=7), three times per week (41%; n=9) and more than three times per week (18%; n=4).
Referring to the knowledge scores that the rheumatologists were given out of 7, only 50% of the rheumatologists achieved a score of 5 or more. In terms of the knowledge questions, only 5% correctly indicated that a BMI of >25 is a risk factor for the development of RA, 41% knew that RA medication has drug-nutrient interactions and 59% said that drug-nutrient interactions alter nutritional status. Knowledge scores for each knowledge question are reported in Figure 4.

Discussion

Studies suggest that diet may have a role to play in alleviating symptoms and decreasing the risk of complications in patients with RA. A survey in America found that about two-thirds of RA patients used some form of complementary or alternative therapy such as chiropractic, acupuncture, supplements and special diets. It has been reported that 33% to 75% of RA patients believe that food plays an important role in the severity of their symptoms and 20% to 50% have tried to manipulate their diet in order to relieve their symptoms. The scientific basis for a role of dietary therapy in RA has grown in the last few years although there is still no consensus on the optimum diet. The abnormal regulation of the cytokines tumour necrosis factor (TNF) and interleukin-1 (IL-1) have been identified as primary factors in the pathogenesis of RA and this has sparked the debate for the use of the controversial so-called anti-inflammatory diet.

Although more than half of the rheumatologists indicated that a healthy balanced diet improves the symptoms of RA, it is interesting to note that almost two thirds refer less than 10% of their patients to a dietician. This is important to note as rheumatologists often have significant time constraints and dieticians could therefore help to lift the burden by providing expert dietary advice to a group of patients that can clearly benefit from specialised nutrition support. RA is a debilitating disease and patients stand to benefit from as much care as they can receive, and diet as well as education on how to improve their symptoms is important, especially in the rural areas where patients do not have as much access to a rheumatologist as in the urban areas. Almost one third of rheumatologists indicated that their patients were generally overweight. It is known that it is important to avoid being overweight as this puts extra stress on the joints and worsens the symptoms of RA. The majority of the rheumatologists recommended that specific food types be reduced or avoided. Current literature states that no specific food group has been proven to reduce or increase symptoms of RA as the evidence is inconclusive. A diet high in red meat, dairy, cereals, citrus, chocolate, alcohol and spices has been said to have adverse effects for RA sufferers, but as of yet, there is no solid evidence proving this statement correct. This subject is however controversial as patients’ reactions to specific foods are highly individualised. Food allergies or intolerances to various food items such as dairy products and cereals have been reported in several RA case studies; in all reports the removal of the specific food type resulted in a favourable response and on reintroduction of the food into the diet, developed symptoms again. A study by Karatay et al. linked food allergy testing and cytokines and found that 13 out of 20 RA patients with a positive skin prick test experienced disease exacerbations in clinical symptoms and experienced increased levels of TNF, IL-1, and C-reactive protein with food allergen challenges. The authors therefore put forward that food allergy triggers, rather than acts, as a causative agent. It has been recommended that if a patient feels he/she has a reaction to a specific food, or that food seems to worsen or alleviate symptoms of RA, then the patient should avoid or increase (in moderation) consumption, respectively, of that particular food group. Considering these above-mentioned discussion points, it is clear that dieticians can contribute valuable expertise in the nutritional aspects of RA treatment.
Some nutritional supplements have been proven to be beneficial in the treatment of RA signs and symptoms. Almost a third (32%) of rheumatologists do not prescribe the supplements which they had described as beneficial in improving the symptoms of RA. It has been shown that omega-3 FA supplementation is proven to reduce inflammation, morning stiffness, joint pain intensity, onset of fatigue and right and left hand grip strength in persons with RA [10,11,12]. A meta-analysis of 17 randomised, controlled trials reported that supplementation with omega-3 FA for 3 to 4 months reduces joint pain intensity, duration of morning stiffness and number of painful and/or tender joints [10]. Periarticular osteoporosis has been found to be associated with the natural course of RA, and develops routinely, and RA increases complications for cardiovascular disease. [10]. Omega-3 FA supplementation also has potential positive effects on osteoporosis and general bone health and decreases the risk of myocardial infarction and other cardiovascular complications [10,12]. A study done by Cleland et al. [20,22] found that the index of arachidonic acid (AA) availability for eicosanoid synthesis was 30% lower in platelets and 40% lower in peripheral blood mononuclear cells of the group who received fish oil supplementation compared to the no fish oil group. A 35% decrease in platelet thromboxane B2 production and a 41% decrease in lipopolysaccharide-stimulated whole-blood prostaglandin E2 were also seen in the fish oil group. The authors came to the conclusion that fish oil supplementation in RA reduces the risk for cardiovascular complications through a number of mechanisms [22].

Additionally it is known that omega-3 FA reduce dependency on RA drugs such as NSAIDs and DMARDs and can thus reduce the need for these drugs [12,13,14]. The meta-analysis as described earlier also found that supplementation with omega-3 FA for 3 to 4 months reduced NSAID consumption [10]. One study recruiting 31 patients over a three-year period showed NSAID use decreased by 75% from baseline in the group that received fish oil supplementation [10]. Omega-3 FA supplementation also has the advantage of being relatively well tolerated. Aside from the occasional nausea, fish oil has virtually no major side effects and has not been associated with upper gastrointestinal (GI) complications that are commonly seen with NSAIDs [1]. A double-blind placebo-controlled randomised study showed a statistically significant difference of 19 out of 49 patients (39%) in the group that received cod liver oil (containing omega-3 FA) that were able to reduce their NSAID requirement by >30% compared to the S out of 48 patients (10%) in the placebo group. From a nutritional point of view, this could be important due to the fact that NSAIDs are proven to have drug-nutrient interactions [9,14]. Despite the strong evidence of the benefits of omega-3 FA supplementation, only half of the rheumatologists prescribed it. It is interesting to note that 27% of rheumatologists who acknowledged the benefits of omega-3 FA supplementation did not prescribe the supplement. Drug-nutrient interactions are a commonly overlooked aspect of the prescribing practices of physicians [22] which is reflected by the fact that only 64% of rheumatologists indicated that drug-nutrient interactions could have an impact on nutritional status. NSAIDs such as aspirin and ibuprofen have serious GI side effects such as nausea, vomiting, diarrhea, GI bleeding and peptic ulcers [24,25]. Peptic ulcers may cause malabsorption of certain nutrients and with large doses of aspirin, folic acid and vitamin C levels decrease and iron levels may also drop due to chronic blood loss which may lead to an iron deficiency. Methotrexate is a drug which affects the lining of the GI wall and may cause malabsorption of vitamin B12 and β-carotene and is proven to be a folate antagonist [4,26]. Corticosteroids impair calcium absorption and increase protein losses. These above-mentioned interactions are very serious and could alter a patient's nutritional status, again underscoring the importance of appropriate nutritional support. Regular aerobic and resistance activity does not decrease inflammation in RA, but has been shown to improve range of joint movement and strength and endurance [15]. It also helps to preserve bone mass and lean body mass, prevents fatigue and depression and improves the distribution of forces of muscle contraction more evenly over the joint surfaces [19].
In accordance with the literature, the vast majority of rheumatologists (96%) agreed that exercise does in fact improve the symptoms of RA and one hundred per cent of the rheumatologists recommend exercise.

The limitations of this study were that there was a limited amount of research and literature pertaining to the topic of this paper and this meant that there were very few references to use in the development of the questionnaire. Although a satisfactory response rate was achieved, the study population was still small.

Conclusion and recommendations

In conclusion, the majority of SA rheumatologists do seem to realise the benefits of diet and some supplements in the treatment of RA. However, a large proportion does not prescribe these supplements or refer their patients to dieticians. Dieticians can contribute valuable expertise regarding the nutritional aspects of treatment of RA and should be an important part of the interdisciplinary team.

Recommendations for future studies include exploring implementation research on RA patients' dietary interventions and how it affects their symptoms as well as obtaining data of the practices of the patients regarding the use of supplements, complementary and alternative therapies and exercise in the treatment of their disease. No such data exists in South Africa and it would be very interesting to explore this field in further studies. Studies regarding the use of allergy testing, followed by an elimination diet and the reintroduction of the foods which the patients tested positive for allergies and the effect that it has on their symptoms would be very useful in developing a dietary approach for the treatment of RA. A further recommendation would be for dieticians to take up the challenge in creating awareness of the importance of diet and the valuable role of the dietician in the management of this disease. This can be achieved by appropriate marketing of dieticians to rheumatologists and improved training at higher education institutions on the role of dieticians, the interdisciplinary team and the importance of a referral system. As this is the first study of its kind in South Africa, to our knowledge, the stage has been set for future studies in this field.

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