

Nutrition and quality of life referring to physical abilities – a comparative analysis of a questionnaire study of patients with rheumatoid arthritis and osteoarthritis

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Abstract

Objectives: A comparative analysis of opinions on diet and nutrition of patients suffering from rheumatoid arthritis (RA) and osteoarthritis (OA), and quality of life limited to physical abilities in both study groups.

Material and methods: In the period from August to December 2012 an anonymous questionnaire survey was carried out among the patients of the Institute of Rheumatology. The respondents were asked to define their dietary preferences, dietary supplementation, and the level of physical limitations by completing the Health Assessment Questionnaire (HAQ). The study was carried out with the consent of the Bioethics Committee.

Results: A total of 397 questionnaires were obtained. The majority of respondents were women (77%). 62% of RA patients (165 respondents) had been treated for over 10 years as opposed to OA patients (80 respondents), where the largest group (33%) were patients during their first year. There is a significant difference in the disability level of patients in both compared groups. The average HAQ of RA patients was 1.09 and OA patients – 0.46. A change of dietary habits was declared by 32% of RA patients and by 17% of OA patients ($p = 0.049$) mostly without consulting a specialist – it concerned mainly limiting the consumption of sweets (30% vs. 21%), a meatless diet: 19% vs. 14%, and a non-dairy diet: 9% vs. 14%.

Conclusions: Regardless of their diagnosis, the respondents believe that the way of eating affects their health. There are visible differences between diet and dietary supplementation, depending on the diagnosis of the disease. Differences were also observed in physical limitations of both patient groups – a higher level of disability was noted among RA patients. It is necessary to continue the topic at the level of clinical trials and medical experiments within the scope of the impact of diet as a supportive element in the treatment of rheumatic diseases.

Key words: osteoarthritis, quality of life, rheumatoid arthritis, nutrition.

Introduction

Rheumatic diseases, which have a progressive course and lower the quality of life, require appropriate therapy-supporting nutrition of patients. Due to the different aetiology of rheumatic diseases and their different

impact on the quality of life, supporting the treatment through appropriate patient diet should be different.

Rheumatoid arthritis (RA) occurs most commonly among the inflammatory autoimmune diseases. The characteristic features of this disease include: arthritis usually occurring symmetrically, extra-articular changes,

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and systemic complications. This disease has a progressive course, leading to disability and premature death [1]. In developed countries, RA affects 0.5 to 1.0% of the population [2]. It is estimated that the prevalence of rheumatoid arthritis in Poland is approximately 0.45% of the population aged over 19 years of age, i.e. approx. 131,500 patients [3].

Osteoarthritis (OA) occurs more commonly in the population than RA, and it is usually connected with the ageing process of the body, as well as with changes resulting from a gradual destruction of particular joint components. This is a group of different overlapping diseases, leading to similar health consequences [4]. It is estimated that over a lifetime the risk of osteoarthritis, e.g. of the knee joint, is almost 45% [5].

In inflammatory rheumatic diseases, such as RA, diet should reduce inflammation and limit pain. In the case of OA, where the overloading of joints is usually caused by overweight and obesity, the task of the diet is to maintain proper body weight [1, 4].

Research has been conducted for a number of years in different centres to determine the proper diet in rheumatic diseases. Due to the applied research methods and various sample sizes, the results are not equivalent. So far, a study was conducted on the influence of different types of eliminating diets (mainly types of vegetarian diets) and the Mediterranean diet on the course of the disease. Despite the ambiguity of the obtained results, it was noted that some food products alleviated and others exacerbated them, especially in patients with inflammatory rheumatic diseases [4–11]. The studies conducted by Nowak et al. [12] concerning food rations of women suffering from RA have shown that the nutrition of this group of patients is not appropriate.

In the research attention is drawn to the difference in ailments particularly limiting the quality of life depending on the disease. In RA the predominant symptom is pain, whereas in OA – a limited range of motion [1–3]. A properly selected diet should reduce the inflammation and pain [13–17].

The objective of the study was to examine the diet and the quality of life of patients suffering from rheumatic diseases. The specific objective was to compare the nutrition and the quality of life of patients suffering from rheumatoid arthritis and osteoarthritis.

Material and methods

Methods

The study concerning the quality of life referring to correlations between disability and nutrition was conducted among the RA and OA patients visiting specialist outpatient clinics of the Institute of Rheumatology

from August to December 2012. The study was carried out with the consent of the Bioethics Committee (of 28th June 2012) and was based on questionnaires.

The questionnaires contained questions regarding the following areas:

- 1) disease and rheumatological care,
- 2) way of eating,
- 3) dietary supplementation,
- 4) degree of disability measured with HAQ,
- 5) patient characteristics (gender, age, education, social status, BMI).

These were closed questions with the following selection options: single (13 questions), multiple (six questions), with the possibility of scaling (two questions), and to complete the information (three questions: birth year, height, and weight).

In the questions concerning nutrition, the respondents were asked to evaluate their diet, the changes in the way of eating caused by the illness, and the impact of selected food products on their health. The products to be evaluated were selected from a publication on healthy diet and diet in rheumatic diseases [13–19].

In order to determine the level of functional limitations in performing daily activities (self-care, walking, cleaning, shopping) the Health Assessment Questionnaire (HAQ) was used. This is a simple tool used in many studies assessing the quality of life among people suffering from rheumatic diseases. The questionnaire includes 20 questions divided into eight areas of daily activity. The respondents answer the questions scaling the level of performance difficulty from 0 to 3. Then the largest value in the activity groups assigned is adapted as the assessment [20].

It is assumed that HAQ of at least 1 indicates clinical disability, and above 2.25 – total disability and full dependence on third parties [21].

The Health Assessment Questionnaire was used to assess fitness as a tool applied in rheumatology and in 20 questions with an option to select: “without any problem”, “with slight difficulty”, “with great difficulty”, or “non-doable”, including basic daily activities connected with self-care (bathing, dressing, eating, moving (at home, outdoors), and performing household-related activities (shopping, cleaning) [22].

Characteristics of the study group

The study group included patients waiting for a visit to a doctor, who completed the questionnaires individually. The surveys were anonymous. The completed questionnaires were left by the respondents in boxes set up specially for this purpose, access to which was granted only to the researcher. As part of the study, 500 questionnaires were distributed to be filled in and

Table I. Characteristics of the study group

	RA (n = 165)		OA (n = 80)		p
	number	%	number	%	
Gender – females	143	86.7	70	87.50	0.856
Age – median		59.0		61.0	0.026*
Body mass index (BMI) – median		24.8		28.7	< 0.001*
Education:					
higher	59	35.8	26	32.5	0.509
secondary	78	47.3	36	45.0	
elementary	25	15.1	14	17.5	
no answer	3	1.8	4	5.0	

* statistically significant differences

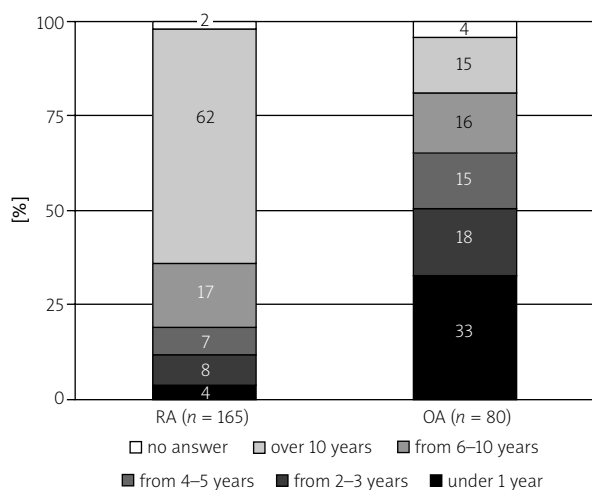


Fig. 1. Respondents by the period of being under the care of a rheumatologist.

left in labelled containers. Out of all 500 questionnaires, 397 were complete and were further analyzed (response rate = 79%).

Among 397 respondents, 165 indicated that they suffered from RA, and 107 from osteoarthritis. In the case of co-occurrence of RA and OA, the respondent was included in the group of RA patients. In the case of co-occurrence of OA with other rheumatic inflammatory diseases the patient was excluded. Finally, the two groups were obtained: the RA group (n = 165) and OA group (n = 80).

The characteristics of the study group are presented in Table I.

Most RA patients (62%) and 15% of OA patients were treated by a rheumatologist for over 10 years. The largest group of patients suffering from osteoarthritis (33%) was treated by a rheumatologist for less than one year – 4% of RA patients were treated for less than one year (Fig. 1).

The two groups were also compared in terms of demographics, taking into account gender, age, and occupational activity. The average body mass index (BMI)

was also assessed in terms of both diseases. The adopted borderline points were 25.0 for overweight and 30.0 for obesity. Two groups were identified for the purposes of an in-depth analysis: up to 60 years of age and over 60 years of age, assuming the retirement age of women as the borderline value (87% of the respondents), thus changing the form of life activity and income levels.

The majority of respondents were women (87%). The proportion of women was the same in the group of RA patients and OA patients. The average age of a respondent in the group of RA patients was 56.5 years (median 59 years), and in the group of OA patients – 61 years (median 61 years). The majority of respondents in both groups were retired – 43% among RA patients and 59% among OA patients. In the group of RA patients, 29% of respondents obtained a disability pension, and 11% in the OA group. Occupationally active patients comprised 24% of RA patients and 31% of OA patients.

General results of the study are presented in the article entitled: “Current nutritional status of patients with rheumatic diseases in the population of Poland” [23].

Statistical analysis

The analysis was conducted with the use of the following tests: χ^2 test, χ^2 test with Yates correction, and the Mann-Whitney U test. The level $p < 0.05$ was assumed to be statistically significant.

Results

Overweight and obesity

Among the respondents suffering from RA, 49.7% had a body mass index above the standard (BMI ≥ 25), including 11.5% suffering from obesity (BMI ≥ 30). In the case of OA patients, these indicators were at the level of 72.2% and 43.0%, respectively ($p < 0.001$). At the age of no more than 60 years, the BMI above standard among RA patients was present in 35.2% (including 15.4% of

obese people), in the case of OA patients in the younger age group, 64.7% had BMI above the norm (including 44.1% of obese patients) ($p = 0.003$). In the age group of over 60 years, the BMI exceeding the norm was higher and amounted to 64.4% (including 19.2% of obese patients) for RA patients and 75.0% and 43.2% for OA patients, respectively ($p = 0.041$).

Way of eating

Up to 61% of RA patients and 75% of OA patients declared that the way of eating affected their health ($p = 0.033$). Therefore, 62% of RA patients and 50% of OA patients claimed that they had an appropriate diet ($p = 0.105$) but only 5% from the RA group and 4% from the OA group consulted their diet with a dietitian after diagnosing the disease ($p = 0.329$). A change of dietary habits after the diagnosis was declared by 32% ($n = 53$) of RA patients and by 17% ($n = 14$) of OA patients ($p = 0.049$). In the group of the respondents who changed their diet, it concerned mainly limiting the consumption of sweets (30% and 21%, respectively, followed by: a meatless diet: 19% and 14%, and non-dairy diet: 9% and 14%, respectively). All of the opinions of the respondents are presented in Table II.

The effect of consumed food on health

As part of the nutritional assessment, the respondents were asked to comment on the impact of individual products on their health. The assessment included: broccoli, tomatoes, cereals, white bread, dairy products, eggs, meat, fatty fish, and alcohol. From 26 to 49 RA patients noted a difference in their health after consuming the

product (18–31% of answers), and in the case of OA – 16–31 persons (22–41%), depending on the assessed product.

As the products most favourable to health, RA patients indicated cereal products (98% of respondents noticing a change), eggs (88%), fatty fish (79%), broccoli (75%), and among OA patients – cereal products (100%), broccoli (77%), fatty fish, and tomatoes (74% each).

In accordance with their experience, RA patients indicated the following products as harmful to health: white bread (72%), alcohol (69%), and meat products (64%), whereas OA patients indicated: alcohol (100%), white bread (56%), and dairy products (54%).

Dietary supplementation

As far as dietary supplementation is concerned, 66% ($n = 108$) of RA patients and 63% ($n = 50$) of OA patients declared the use of supplements. In the group of RA patients taking supplements (55.6%; $n = 60$) took calcium preparations. Similarly, intake of calcium preparations declined in the OA group (46%; $n = 2$) $p = 0.263$. In both groups, every fifth patient using supplements applied multicomponent preparations. A significant difference was observed in the application of typical dietary supplements against arthritis: glucosamine with/or chondroitin was used by 40% of OA patients using supplements (vs. 12% of RA patients, $p = 0.008$). Collagen was taken by 14% of OA patients and only 7% of RA patients in the groups applying supplementation ($p = 0.306$). It is worth noting that in the case of applying dietary supplements in both groups, the behaviour of individuals was similar: 44% of RA patients and 42% of OA patients took supplements without a doctor's recommendation. Detailed information on supplementation is provided in Table III.

Table II. Diet and diagnosis – behaviour and opinions of the respondents

	RA ($n = 165$)		OA ($n = 80$)		p
	number of answers	%	number of answers	%	
Has your diet been consulted with a doctor or dietitian?					
yes	27	16.4	18	22.5	0.329
no	129	78.2	60	75.0	
no answer	9	5.4	2	2.5	
Do you think that your diet affects your health in rheumatic diseases?					
definitely yes/rather yes	101	61.2	60	75.0	0.033*
other answers	64	38.8	20	25.0	
Do you regard your diet as appropriate?					
definitely yes/and rather yes	102	61.8	40	50.0	0.105
other answers	63	38.2	40	50.0	

*statistically significant differences

Table III. Supplements taken by the respondents and the diagnosis

Supplements	RA (n = 108)		OA (n = 50)		p
	number	%	number	%	
Vitamins	63	58.3	19	38.0	0.017*
Multicomponent preparations	22	20.4	10	20.0	0.957
Calcium preparations	60	55.6	23	46.0	0.263
Fatty acids	32	29.6	19	38.0	0.295
Glucosamine or chondroitin	12	11.1	14	28.0	0.008*
Plant-based preparations	9	8.3	3	6.0	0.848
Collagen	8	7.4	7	14.0	0.306

*statistically significant differences

Physical fitness and limitations concerning everyday activities

There is a significant difference in the disability level of patients in both compared groups ($p < 0.001$). The average HAQ of RA patients amounted to 1.09, i.e. over 1 – of the borderline value indicating clinical disability and in the case of OA patients – 0.46. As many as 92% of osteoarthritis patients and 38% of RA patients had an HAQ of over 1. The most difficult activities for RA patients included: bathing in a bath tub was determined by 18% as a non-doable activity, and taking an item of approx. 2 kg from above their head was determined as a non-doable activity by 17% of the respondents. There was no non-doable activity for OA patients. The easiest activity for RA patients was walking on flat ground outside – 56% of respondents marked the “without any

problem” option, and for OA patients slicing meat on a plate – 94% – only 42% of RA patients did not have any problem with this activity.

The study compared relations between the diagnosis and the level of physical fitness as well as weight. The results show that it is the underweight people diagnosed with RA that suffer the most from physical limitations. In the case of proper weight, overweight, and obese people, greater suffering from physical limitations was indicated by people diagnosed with RA than OA. Responses from both groups are shown in Figure 2.

The study also examined the level of physical fitness (HAQ) in RA and OA groups as well as willingness of patients to change their diet as a result of disease. The RA patients were more willing to change their diet, and the ones who did that had also reported a higher level of physical limitations. Thus, one may suppose that the change of

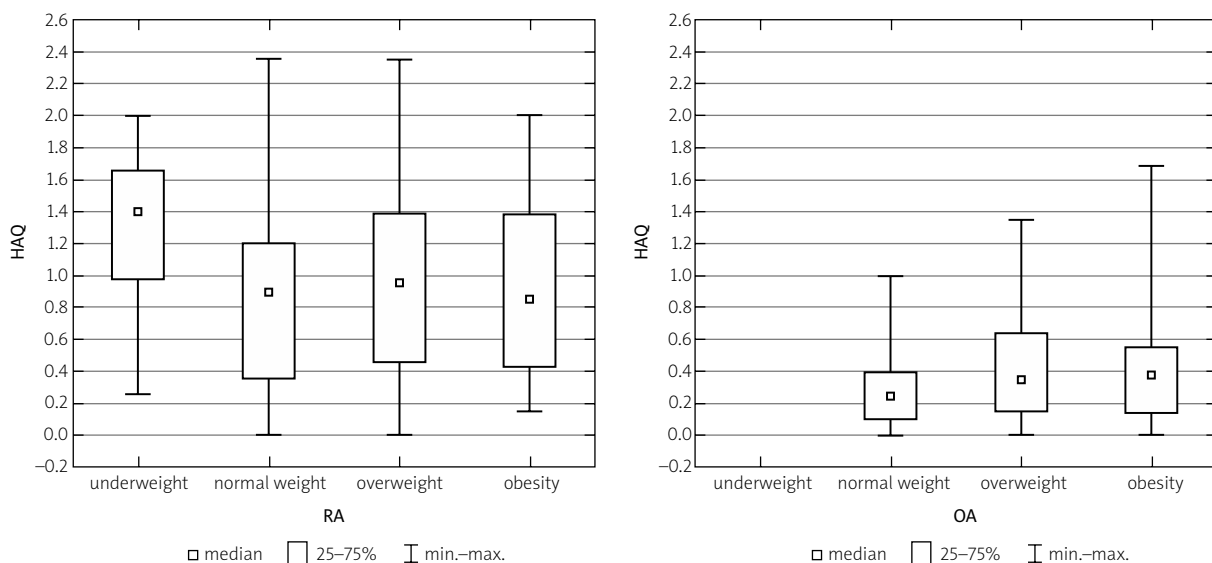


Fig. 2. HAQ and BMI – comparison between patients with rheumatoid arthritis (RA) and patients with osteoarthritis (OA).

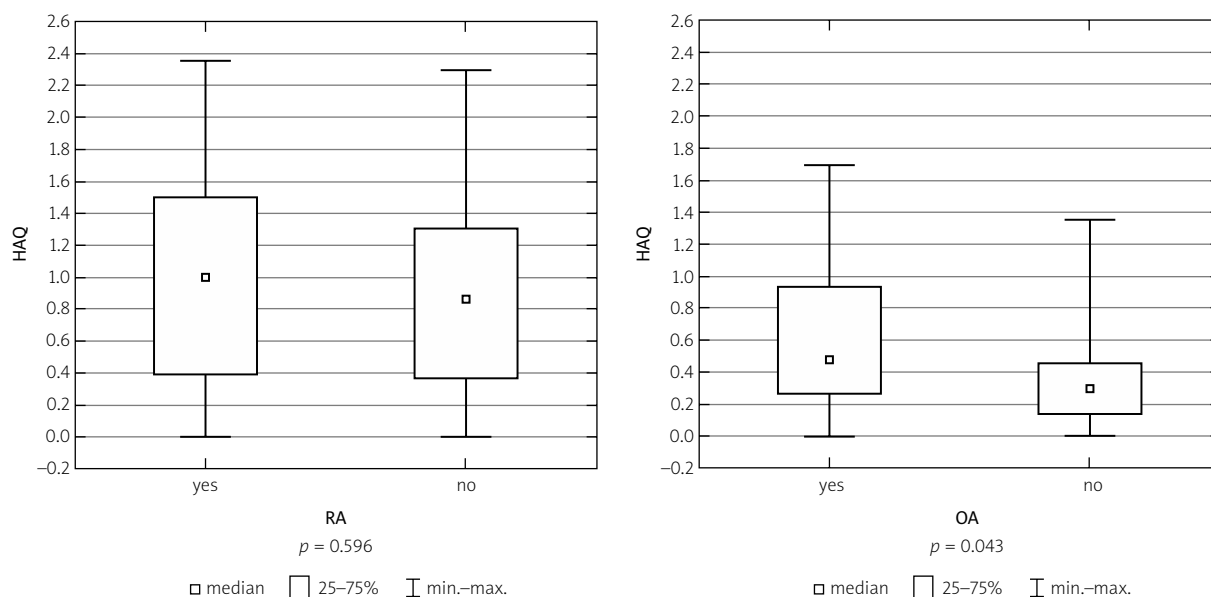


Fig. 3. Diet changes and HAQ in 2 diagnoses: rheumatoid arthritis (RA) vs. osteoarthritis (OA).

diet was caused by a deterioration of physical fitness. The comparison of both groups is shown in Figure 3.

Subjective health assessment

Regardless of the patient group, the most burdensome symptom of the disease was pain in 55% ($n = 33$) of the RA group and 62% ($n = 77$) in the OA group, and physical limitations to a lesser extent (RA – 33%, OA – 23%). For the question concerning the severity of symptoms, the patients could select four options: pain, joint swelling, reduction of physical fitness, or none of the above. Subjective health condition assessment was similar in both groups. There was no significant difference for the study groups between assessment of health condition, which was declared as “good” by 33% of RA patients and 31% of OA patients, and as “bad” by 17% and 14%, respectively, and as “neither good nor bad” by the remaining respondents – 50% RA group and 55% OA group.

Discussion

Limitations of the study

First of all, although it is necessary for each patient to complete the questionnaire individually, there may be some limitations because the declared diagnosis of the disease, physical fitness condition, and the level of difficulty in performing basic activities (HAQ), and weight and height (BMI) were not confirmed empirically. Also some of the questions remained unanswered. The question concerning the impact of particular food products

on health received the most “I cannot see any difference” answers (59–82% depending on the product and the disease). Due to the fact that the respondents had not been prepared to respond to such questions, and therefore did not observe their bodies in this respect, some of the responses may have resulted from the lack of knowledge and not from the lack of impact of a given product on health. For this reason, also the number of people who identified products affecting their health favourably and negatively was small.

Borderline points used to assess the BMI were applied in the assessment of the correct body weight. In light of the scientific research in the case of RA, this may not reflect the actual situation. The studies have shown that in the case of RA patients, the borderline points between the appropriate weight and overweight, and between the appropriate weight and obesity should be reduced by 2, and amount to 23 and 28, respectively, unlike the conventionally adapted 25 and 30 [24].

In this situation, there were 33% of RA patients with normal body weight (in place of 55%), overweight 36% (instead of 22%), and obese 23% (instead of 15%) under the age of 60 years. In the case of RA patients of over 60 years of age, these rates were: 18%, 41%, and 40%, respectively, instead of: 34%, 45%, and 19%. In the case of a change of borderline points for RA patients, the percentage of respondents with normal body weight under the age of 60 years in the case of RA and OA patients was similar and amounted to 33% and 32%, whereas in the group of respondents over 60 years of age, only 18% of RA patients and 23% of OA patients was normal body weight observed.

The co-authors of the report concerning the link between overweight and prognosis at an early RA stage adopt the traditional borderline for overweight and obesity (i.e. BMI amounting to 25 and 30, respectively). Sandberg et al. [25] point out the adverse effects of overweight on the effectiveness of RA treatment at the onset of this disease. The study included 495 people. Women accounted for 79%. Normal weight (BMI < 25) was reported in 48%, overweight in 34%, and obesity in 17% [25].

In the article summarising a 10-year observation of the links between obesity and the course of RA and the co-occurrence of other diseases in Sweden, two borderline points were applied simultaneously to determine obesity: BMI \geq 30 and BMI \geq 28, finding no difference in the assessment of adverse effects on RA patients in the application of both borderline points [26]. In this study, depending on the borderlines, there were 13% obese people with BMI \geq 30 and 27.7% with BMI \geq 28. The results of our own studies indicate that among RA patients without any division into age groups: “up to” and “over 60” the obesity rate was 11.5% and 18.2%, respectively, depending on the adopted borderline.

It is worth noting that similar HAQ values for osteoarthritis patients were obtained in a study concerning the comparative analysis of supplementation with fish oil and green mussel oil, conducted by Szechiński et al. at the In-patient Clinic of the Academic Clinical Hospital in Wrocław. The results of this study were published in 2011 [17]. These values amounted to 0.41 and 0.42, respectively, at the time of the study enrolment, whereas in our study it was 0.46. However, in a study conducted in the years 2007–2008 on a group of 380 patients of the Medical University of Vienna, with diagnosed RA, an average HAQ was obtained at the level of 0.94–1.14 in our study [27]. In a study conducted in France on a group of 370 outpatients suffering from RA, the results of which were published in 2010, the average HAQ was obtained at the level of 1.4, which is higher than in our study [28].

A difference can be noted in the assessment of the impact of nutrition on the respondent, depending on the disease. Surprisingly, none of the respondents suffering from OA felt better after alcohol consumption, whereas an improvement was reported by 31% of respondents with RA, who observed a difference in their health after drinking alcohol. On the basis of the previous studies on the influence of alcohol on the course of RA, it could be expected that the percentage of responses confirming the beneficial effect of alcohol would be higher [18, 19]. However, the type of alcohol, its dose, and frequency of consumption were not specified in the questionnaire.

Cereals, fatty fish, and broccoli were among the food products regarded as healthier in both groups. OA patients assessed the favourable effect of tomatoes as very high (74%), and in the case of RA patients, this percentage was lower (61%). Nocardous vegetables, which include tomatoes, were regarded as vegetables increasing inflammation in the body, which may have been the reason for such an assessment.

Conclusions

Regardless of their diagnosis, the respondents agree that the way of eating affects their health. Despite this belief, they either do not change their dietary habits in spite of their awareness that such a change could alleviate the symptoms of the disease, or they make dietary changes on their own, without consulting a specialist.

Also, dietary supplementation is applied without consulting a specialist. Differences in supplementation can be noted depending on the disease. It may be worrying that only 39% of RA patients declare the intake of single vitamins, when folic acid listed in the questionnaire as an example is recommended with the intake of basic medication modifying the course of the disease.

It is important for the patients to lead a healthy lifestyle, especially to care about maintaining proper weight through proper nutrition and physical activity. The obtained data suggest further research into the importance of diet in inflammatory and non-inflammatory rheumatic diseases, and to undoubtedly broaden patient education in this area.

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