STUDY OF THE NUTRITIONAL STATUS OF PATIENTS SUFFERING FROM RHEUMATOID ARTHRITIS (RA) VISITING A SELECTED HOSPITAL OF ALLAHABAD DISTRICT

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Received July31, 2022 and Accepted August, 25, 2022

ABSTRACT: The aim of the study was to assess the overall nutritional status of the 60 randomly selected patients in the selected hospital of Allahabad district. Nutritional status of these patients was assessed with anthropometric parameters, biochemical parameters, dietary parameters (3 day 24 hour recall method). It was observed that intake of food consumed by the respondents relating to cereals, Pulses is below the recommended ICMR Standards where as the amounts of vegetables, fruits, sugar & milk consumed are above the ICMR standards in each group. This will influence the intake of the nutrients per day by the respondents. The respondents of above 60 years age group consume fruits, milk, fat, meat and fish in low amounts than the ICMR standards and in 10 to 20 years age group respondents consumed cereals, meat, sugar in high amounts than the ICMR Standard. The survey revealed that disease is more prevalent in women than in men. Among the female subjects suffering from Rheumatoid Arthritis 41.30% were house wives and 28.26% were in service. only 4.34% were in business. Nutrition and health counseling is one of the most effective tool of changing the food habits of the people without affecting their sentiments.

Key words: Nutrient, intake, patient arthritis, suffering, status

Rheumatoid arthritis is a chronic inflammatory anthropopathy of unknown cause that can affect most joints. The first convincing clinical descriptions of the disease are as recent as the early nineteenth century, and unlike gout, for example, it cannot be clearly identified in old art or literature. It may be a disease of modern origin. Rheumatoid arthritis comes under an autoimmune disorder, when our immune system mistakenly attacks our own body's tissues.

Criteria for the Diagnosis of Rheumatoid Arthritis -

1- Morning stiffness.
2- Pain on motion or tenderness in at least one joint.
3- Swelling of one joint representing soft tissue or fluid.
4- Swelling of at least one other joint.
5- Symmetric joint swelling.
6- Subcutaneous nodules.
7- Positive test for rheumatoid factor in serum.
8- Poor cumin precipitates from synovial fluid.
9- Characteristic histologic changes in synovial membrane.
10- Characteristic histopathology of rheumatoid nodules.

PRAVALENCE

Rheumatoid arthritis (RA) prevalence increases with age in both sexes and in most populations studied, is most common in the most elderly group studied (often 65 years and over or 70 years and over) In all populations studied, women have a higher prevalence of disease than men, and in younger men, Rheumatoid arthritis is uncommon (ranging from 0 to 0.5% prevalence, depending on the population studied and criteria used). Rheumatoid arthritis occurs in all races and in all parts of the world. No differences in disease prevalence have been found across different latitudes, longitudes, or climates.

Genetic Factors

Family studies of Rheumatoid arthritis patients suggest that first degree relatives have a three to four times higher risk of disease than unrelated individuals. Disease concordance among twins may be higher, however, in the most severe cases. These twin and family studies suggest a prominent inherited component of Rheumatoid arthritis, but most individuals closely related to someone with the disease do not get it. Therefore, the penetrance of disease is relatively low, and environmental factors may be important in disease expression.

ARTHRITIS FOOD ALLERGY, DIETS AND NUTRITION

Rosenberg remarked that "it is almost universally acknowledged that Rheumatoid arthritis cannot be overcome by any dietary manipulations which have thus for been proposed. The Arthritis Foundation in its 1981 Publication", "The Truth About diet and Arthritis", Summarized as follows, "The possible relationship between diet and arthritis has been thoroughly and scientifically studied. The simple proven fact is no food has anything

to do with causing arthritis and no food is effective in treating or curing it."

POSSIBLE RELATIONSHIP BETWEEN NUTRITION AND RHEUMATIC DISEASES

A relationship between nutrition and rheumatic disease could occur through two possible mechanisms. First, nutritional factors might alter immune or inflammatory responses or both, thus modifying rheumatic symptoms second, food antigens might provoke hypersensitivity responses leading to such symptoms. Keeping this in view the present investigation was planned and conducted to determine the nutritional status of selected respondent of Allahabad district with the following objectives.

i) To study the food and nutrient intake of the subjects.

ii) To compare the dietary intake of the subjects with the standards.

METHODOLOGY

To accomplish the objectives of the study a total of 60 respondents of both sexes were selected randomly spread over in all the one selected nursing homes and pathological laboratories. They were personally interviewed and necessary information was collected using a pretested schedule.

Nutritional Status

It may be defined as the condition of health as it is influenced by the intake and utilization of nutrients[2]. For assessment of nutritional status affords was made to calculate the nutrient intake of the selected respondents.

Nutrient Intake

Food intake survey was conducted to assess the nutritional status. Information regarding the intake of food actually consumed by the individual was noted for three consecutive days by using 24 hours recall method. Their households would be visited in order to know the quantities of food consumed in ordinary serving. Standard measure including Katories, spoons and glasses of standard sizes were shown to the respondents for estimating the amounts of food. Food intake would be recorded in terms of standard size utensils and detailed information about the ingredients used and the method of cooking would also be recorded. The amount of cooked food consumed was converted into raw ingredients and nutrient intake was calculated using food composition table[1] and compared with recommended dietary allowance[3]. The per cent of recommended dietary allowances (RDA) was calculated using the following formula:

$$\text{Percent RDA} = \frac{Intake\ of\ nutrients}{RDA} \times 100$$

Nutrient intake of 3 consecutive days will be added and mean values of these were used for further analysis.

Field Procedure and Data Collection

The data was collected using personal interview method by paying repeated visits to the study area. In the initial stage, friendly discussions were held to build up rapport with the respondents.

STATISTICAL ANALYSIS

The test undertaking for interpreting the data were

a) Student t test
b) Chi-Square

RESULTS AND DISCUSSION

It is clear from the table that the amounts of food consumed by the respondents relating to pulses, green leafy vegetables, fruits, & Meat are above the recommended ICMR standards whereas the respondents of 10-40 year age group consumed cereals in more amount than the recommended values. The respondents belonging to 40-70 years age group have low intake of milk than the recommended amount.

Table-1 a: Food intake by male subjects

Age Group in yrs	No. of patients	Tools	Cereals (gm)	Pulses (gm)	Green Leafy veg (gm)	root & tubers (gm)	Fruits (gm)	milk (ml)	fat & oils (gm)	meat fish egg(gm)	Sugar & Jiggery (gm)	Peanut (gm)
7-9	1	Mean	200	65	30	70	78	400	40	40	30	-
		RDA	220	70	75	50	100	600	30	60	30	-
		Difference	-20	-5	-45	+20	22	-200	10	-20	-	-
			90	60	150	200	100	500	50	-	40	-
10-20	01	Mean	420	70	100	175	100	600	40	-	30	50
		RDA	-70	-10	+50	+25	-	-100	+10	-	+10	-
		Difference	450	75	200	80	70	400	40	60	30	-
			400	70	100	75	30	200	35	60	30	-
20-20	4	Mean	+50	+5	+100	+5	+40	-200	+5	-	-	-

		RDA	500	60	200	80	100	500	40	90	30	-
		Differ	400	70	100	75	30	200	35	60	30	-
		ence	100	-10	+100	+5	+70	+300	+5	+30	-	-
30-40	3	Mean	300	60	200	80	80	500	40	-	40	-
		RDA	400	70	100	75	30	200	35	-	30	-
		Differ	-100	-10	+100	+5	+50	+300	+5	-	+10	-
		ence	200	80	200	70	50	100	25	-	35	-
40-60	2	Mean	400	70	100	75	30	200	35	-	30	-
		RDA	-200	+10	+100	-5	+20	-100	-10	-	+5	-
		Differ										
		ence										
60-70	3	Mean										
		RDA										
		Differ										
		ence										

Table-1 b: Food intake by female subjects

Age Group in yrs	No. of patients	Tools	Cereals (gm)	Pulses (gm)	Green Leafy veg (gm)	root & tubers (gm)	Fruits (gm)	milk (ml)	fat & oils (gm)	meat fish egg(gm)	Sugar & Jaggary (gm)	Peanut (gm)
0-10	0	-	-	-	-	-	-	-	-	-	-	-
10-20	5	Mean	400	60	200	180	150	400	30	90	40	20
		Std	320	50	150	150	100	600	30	80	30	30
		Difference	+80	+10	+50	+30	+50	-200	-	+10	+10	-10
			280	50	200	100	100	400	30	-	30	-
20-30	7	Mean	300	60	125	75	30	200	30	30	30	-
		Std	-20	-10	+75	+25	+70	+200	-	-	-	-
		Difference	300	90	100	100	80	250	45	40	40	20
			300	60	125	75	30	200	30	30	30	30
30-40	3	Mean	-	-10	-25	+25	+50	+50	+5	+10	+10	-10
		Std	300	60	200	120	90	400	45	40	40	10
		Difference	300	60	125	75	30	200	30	30	30	30
			-	-	+75	+45	+69	+200	+15	+10	+10	-20
40-60	20	Mean	290	55	200	70	25	150	25	-	25	-
		Std	300	60	125	75	30	200	30	30	30	30
		Difference	-10	-5	+75	+5	+5	+50	-5	-	-5	-
			260	50	200	60	40	100	25	-	35	-
60-70	10	Mean	300	60	125	75	30	200	30	30	30	30
		Std	-20	-10	+75	-15	+10	-100	-5	-	+5	-
		Difference										
70>	1	Mean										
		Std										
		Difference										

It is clear from table -1b that the amount of food consumed by the respondents relating to cereals, Pulses is below the recommended ICMR standards whereas the amounts of vegetables, fruits, sugar & milk consumed are above the ICMR std in each group. This will influence the intake of the nutrients per day by the respondents. The respondents of 60 to > 70 years age group consume fruit, milk, fat, meat and fish in low amounts than the ICMR std. and in 10-20 years age group respondents consumed cereals, Meat, sugar in high amounts than the ICMR std.

On statistical analysis of tables 1 a and 1 b, applying student - t test it is seen that the null hypothesis "there is no significant difference in the amounts of cereals consumed by males and females per day". Stands selected as t calculated value - 2.24 at 5 d.f. and 5% level of significance is less than table value=2.571.

Also the null hypothesis that there is no significant difference in the amounts of Pulses consumed by males and female per day" stands selected as t calculated value 2.14 at 5 d.f. and 5% level of significance is less than table value = 2.571.

Also the null hypothesis that there is no significant difference in the amounts of green leafy vegetables, root and tubers, fruits, milk, fats and oil, meat and fish and egg and sugar and Jiggery consumed by males and females as t calculated values 2.10, 2.24, 2.17, 2.19, 2.23, 2.35, 2.41 at 5 d.f. and 5% level of significance are less than table values.

Table - 2 a: Nutrient intake by male subjects

Age Group in yrs	No. of patients	Tools	Calorie (k cal)	Protein (gm)	Fats & oil (gm)	Ca (mg)	Fe (gm)	B Carotene (micro gm)	Thiamine (mg)	Riboflavin (micro gm)	Niacin (micro gm)	Ascorbic acid (mg)
7-9	01	Mean	2000	50	30	600	30	3000	1.1	1.1	14	400
		Std	1950	41	25	400	26	2400	1.6	1.2	13	40
		Difference	50	+2	+5	+200	+4	+600	+.1	-	+1	+360
10-20	01	Mean	2000	58	35	800	32	2500	1.0	1.2	14	600
		Std	2190	54	22	600	34	2400	1.1	1.3	15	40
		Difference	+190	+4	+13	+200	+2	+100	-.1	-.1	-1	-560
20-30	3	Mean	2430	70	40	900	20	2600	.1	1.2	18	500
		Std	2425	60	20	400	28	2400	1.2	1.4	16	40
		Difference	+5	+10	+20	+500	-8	+200	-1.1	-.2	+2	+460
30-40	3	Mean	3000	60	40	600	25	2500	1.2	1.1	13	700
		Std	2875	60	20	400	28	2400	1.4	1.3	18	40
		Difference	+125	-	+20	+200	-3	+100	-4	-.2	-5	+660
40-60	2	Mean	2500	50	30	500	20	2600	1.0	1.2	12	700
		Std	2425	60	20	400	28	2400	1.2	1.4	16	40
		Difference	-75	-10	+10	+100	-8	+200	-.2	-.2	-4	+660
60-70	3	Mean	2100	50	30	700	25	2600	1.1	1.2	14	400
		Std	2425	60	20	400	28	2400	1.2	1.4	16	40
		Difference	-325	-10	-10	+300	-3	+200	-.1	-.2	-2	-360
70>												

It is clear from the table-2a that the amount of nutrients intake by the respondents relating to calorie, fat, calcium and ascorbic acid are above the recommended ICMR standards where as the amounts of Iron, Thiamine intake are below the ICMR standard. The intake of the respondent of 40 - 70 years age group with reference to Protein, Niacin and Iron is lower than the ICMR stds. In 7-9 years age group and 10-20 years age groups the intake of Iron and Niacin is more than RDA.

Table-2 b: Nutrient intake by female subjects

Age Group in yrs	No. of patients	Tools	Calorie (k cal)	Protein (gm)	Fats & oil (gm)	Ca (mg)	Fe (gm)	B Carotene (micro gm)	Thiamine (mg)	Riboflavin (micro gm)	Niacin (micro gm)	Ascorbic acid (mg)
10-20	5	Mean	2000	65	25	450	31	2200	0.5	1.1	14	400
		Std	2060	63	22	500	30	2400	1.0	1.2	14	40
		Difference	-60	+2	+3	+50	+1	-200	-5	-0.1	-	+360
20-30	7	Mean	1870	60	20	720	33	2000	1.0	1.0	10	200
		Std	1875	50	20	400	30	2400	0.9	1.1	12	40
		Difference	-5	+10	-	+320	+2	-400	-.1	-0.1	-2	-160
30-40	3	Mean	2000	78	26.5	600	29	2300	1.3	1.0	10	500
		Std	1875	50	22.0	400	30	2400	0.9	1.1	12	40
		Difference	+125	+28	+6.5	+200	-1	-100	+0.4	-.1	-2	-460
40-60	2	Mean	1900	55	21.0	530	22	2500	1.1	1.3	11	400
		Std	1875	50	22	400	30	2400	0.9	1.1	12	40
		Difference	+25	+5	-1	+130	-8	+100	+0.2	+2	-1	+360
60-70	10	Mean	1895	56	21.0	560	28	2600	1.1	1.0	21	400
		Std	1875	50	21.0	400	30	2400	.9	1.1	12	40

		Difference	+20	+6	-1	+160	-2	+200	-.2	-.1	+9	+360
70>	1	Mean	1925	70	25.0	600	25	2700	1.1	1.0	14	800
		Std	1875	50	25.0	400	30	2400	0.9	1.1	12	400
		Difference	+50	+20	+3	+200	+5	+300	+2	-0.1	+2	+400

It is clear from table-2b that the amount of nutrients intake by the respondents relating to calorie, protein, fat, calcium and Ascorbic acid are above the recommended ICMR standards whereas the amounts of iron, B carotene intake are below the ICMR Standard. The intake of B Carotene and Thiamine in the respondents of 30 to > 70 yrs age group is in high amounts than the ICMR stds. In (10-20) yrs, (20 - 30 yrs and (30-40) yrs age groups the intake of Niacin, Iron, Riboflavin is lower than the ICMR stds. In 10 to 20 yrs age group the intake of Thiamine is lower than the ICMR standards. On statistical analysis of table 2 a and table 2 b i.e. on applying Student test it is seen that the null hypothesis "there is no significant difference in the amounts of caloric consumed by males and female per day" stands selected as t calculated value - 2.51 at 5 d.f. and 5% level of significance is less than table value = 2.571.

Null hypothesis that there is no significant difference in the amounts of protein and fat consumed by males and females per day stands selected as t calculated value 2.21 and 2.35 at 5 d.f. and 5% level of significance is less than table value 2.57. There is no significant difference in the amounts of Calcium, Iron, B Carotene, Thiamine, Riboflavin, Niacin and Ascorbic acid intake by males and females per day stands selected as t calculated values 2.45, 2.51, 2.14, 2.23, 2.15, 2.43, and 2.25 at 5 d.f. and 5% level of significance is less than table values.

CONCLUSION

From the finding it is concluded that no significant difference in food intake of patient on the basis of sex. People in higher income groups and those consuming rich purine non vegetarian diets were more susceptible to Rheumatoid Arthritis as has been observed after during various appropriate significance test. It was further revealed the nutrition education was responsible for fall in the serum uric acid levels in majority of the cases.

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