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RESEARCH PAPER**OPEN ACCESS**

MANAGEMENT OF OSTEOARTHRITIS IN FEMALES BY USING MEDICINAL PLANTS

AMRITPAL KAUR¹, ANITA KOCHHAR², VANDANA KOCHHAR³Corresponding Author: AMRITPAL KAUR⁴**ABSTRACT**

Across the world there are 350 million people suffering from the chronic joint inflammation of arthritis. Osteoarthritis (OA) is known as degenerative joint disease. It is the most common form of arthritis. Women usually develop osteoarthritis after age 40. To study the management of osteoarthritis in females by using medicinal plants 60 female patients suffering from osteoarthritis in the age group of 40-60 years were selected from two hospitals of Ludhiana city. The subjects were divided into two groups viz. experimental (E) and control (C) group. Pretesting of the knowledge of the subjects regarding osteoarthritis and importance of medicinal plants was done by Knowledge testing questionnaire. Knowledge regarding disease and role of medicinal plants of the subjects was quite poor as the knowledge scores obtained in both the groups were quite low. In group E, nutrition counseling was imparted regarding osteoarthritis and role of medicinal plants in the management of osteoarthritis for three months at 15 days interval by individual and group contacts whereas no nutrition counseling was given in group C. After nutrition counseling significant improvement in knowledge of patients was seen regarding importance of medicinal plants like ginger (26.7 to 86.7%), garlic (33.3 to 80%), aloe vera (6.7 to 66.6%), turmeric (40 to 93.3%) and black seasam seed (3.3 to 50%) in group E. After nutrition counseling the mean KAP (Knowledge, Attitude, Practice) Score obtained by the subjects increased from 5.72 to 14.75 in group E whereas non significant improvement in KAP score was observed in group C. Therefore, it can be reported from the results that nutrition counseling is an important measure of improving knowledge regarding disease and role of medicinal plants in the management of disease in the patients suffering from the osteoarthritis.

KEY WORDS:**Arthritis, nutrition counseling, Sign & symptoms, KAP score.**

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INTRODUCTION

Across the world there are 350 million people suffering from the chronic joint inflammation of arthritis. According to the National Institutes of Health, arthritis affects about one in every five people in the United States. With the aging of the U.S. population, the prevalence of doctor-diagnosed arthritis is expected to increase in the coming decades. By the year 2030, an estimated 67 million adults aged 18 years and older will have doctor-diagnosed arthritis; compared with the 46 million adults in 2003–2005 two-thirds of those with arthritis will be women. Also by 2030 an estimated 25 million adults will report arthritis- attributable activity limitations. These estimates may be conservative as they do not account for the current trends in obesity, which may contribute to future cases of osteoarthritis. In India, approximately 10 million people are affected by arthritis (Hootman and Helmick 2006, Markus 2007 and Anon 2009).

Although osteoarthritis (OA) is more common in older people, younger people can develop it - usually as the result of a joint injury, a joint malformation, or a genetic defect in joint cartilage. Both men and women are equally prone before the age of 45, more men than women has osteoarthritis; after the age of 45, it is more common in women. It is also more likely to occur in people who are overweight and in those with jobs that stress particular joints. Osteoarthritis mostly affects cartilage the hard but slippery tissue that covers the ends of bones where they meet to form a joint. Healthy cartilage allows bones to glide over one another. It also absorbs energy

from the shock of physical movement. In osteoarthritis, the surface layer of cartilage breaks down and wears away. This allows bones under the cartilage to rub together, causing pain, swelling, and loss of motion of the joint. Over time, the joint may lose its normal shape. Also, small deposits of bone - called osteophytes or bone spurs - may grow on the edges of the joint. Bits of bone or cartilage can break off and float inside the joint space. This causes more pain and damage. Osteoarthritis can involve knees, hips and fingers (Anon 2007).

Osteoarthritis is a truly universal disorder. Everyone will get it somewhere if they live long enough. Usually only one or two joints are symptomatic, though others may show minor changes; a common variant is the generalized osteoarthritis of postmenopausal women affecting the terminal joints of the fingers as well as the knees. The most obvious thing about osteoarthritis is that it increases in frequency with age. This does not mean that it is an expression of senescence (to grow old); it simply shows that osteoarthritis takes many years to develop. There is no single cause of osteoarthritis; it results from a disparity between the stress applied to articular cartilage and the ability of the cartilage to withstand that stress. This may be due to increased stress, weak cartilage or abnormal support by subchondral bone (Apley and Solomon 1998).

Nutritional therapies may be especially useful in the treatment of osteoarthritis because they can provide the substrate for cartilage regeneration and demonstrated efficacy in controlling pain and inflammation.

Keeping in view importance of nutrition counseling in the management of osteoarthritis the present study was designed to study the impact of nutrition counseling regarding use of medicinal plants in management of osteoarthritis in females.

MATERIALS AND METHODS

SELECTION OF THE SUBJECTS

A statistically adequate sample of 60 females suffering from arthritis in the age group of 40-60 years were selected and divided into two groups viz. Experimental (E) and Control (C). Nutrition counseling was imparted to group E, while group C was not be given any nutrition counseling.

COLLECTION OF DATA

A questionnaire was developed to collect the general information, medical history, family history and signs and symptoms of the patients suffering from arthritis. Pre and post testing of the knowledge of the subjects regarding osteoarthritis and importance of medicinal plants was done by Knowledge testing questionnaire.

NUTRITION COUNSELING

After the pre testing, in group E nutrition counseling was imparted for the period of 3 months at 15 days interval. The topics selected for nutrition counseling were arthritis, its types, signs, symptoms, complications and role of medicinal plants like ginger, garlic, turmeric and aloe vera in the management of arthritis.

The educational material was divided in to eight lectures. Counseling was carried out through lectures and demonstrations. Visual aids like charts, posters and slides were also used. The lectures were repeated twice for better retention. Personal contacts with respondents were also maintained throughout the study period to know whether they are incorporating the suggested modifications in the daily routine or not. A booklet containing all the information regarding arthritis and its management and a sample menu of 7 days were distributed to the subjects.

GAIN IN KNOWLEDGE

Gain in knowledge was calculated using the following equation:

$$\text{Gain in knowledge} = \text{score of post-test} - \text{score of pre-test}$$

$$\text{Quantum of improvement} = \frac{\text{Post test score} - \text{Pre test score}}{\text{Pre test score}}$$

STATISTICAL ANALYSIS

The data was analyzed statistically by using appropriate statistical tools such as mean, standard error and percentage. To test the significance student's t-test was applied on all the parameters (Cheema and Sidhu 2007).

RESULTS AND DISCUSSION

The study was conducted on 60 females aged between 40-60 years suffering from osteoarthritis were selected randomly and divided equally into two groups viz. experimental (E) and control (C). It

was observed that 26.7 & 40 percent of the subjects were in the age group of 40-50 years, while 73.3 & 60 percent of the subjects were in the age group of 50-60 years in group E and C the respectively, majority of subjects belonged to Sikh. Percentage of subjects who belonged to joint families was 46.6 and 16.7 percent in group E and C respectively. It was observed that majority of the subjects i.e. 43.4 and 53.4 percent had per capita income more than 3500, 23.3 and 13.3 percent of the subjects had per capita income of 1500 - 2500 and 33.3 and 33.3 percent had per capita income of 2500-3500 in group E and C respectively. It was reported that per capita income of Indians grew by 17.3 per cent to 54,527 in 2010-11 from 46,492 in the 2009-10, as per the revised data released by the Government of India. However, the increase in per capita income would be only 6.7 per cent in 2010-11 (Anonymous 2011a). However, the per capita income of Punjab is estimated to 70072 in 2010-11 showing an increase of 12.74% (Anonymous 2011b).

FAMILY HISTORY OF THE SUBJECTS

Family history of the subjects suffering from arthritis is presented in Table 1. Majority of the subjects i.e. 73.3 and 86.7 percent had no family history of arthritis, only 26.7 and 13.3 percent of the subjects had family history of arthritis in group E and C respectively. Twenty and 10 percent of the subjects whose mother was suffering from arthritis, whereas only 6.7 and 3.3 percent of the subjects whose father was suffering from arthritis in group E and C respectively. The data revealed that in 50 and 46.7 percent of the subjects disease

was diagnosed less than 1 year, in 43.3 and 40 percent of the subjects between 1- 3 years and only 6.7 and 13.3 percent of the subjects between 3-5 years in group E and C respectively. It was seen that majority of the subjects i.e. 100 and 86.7 percent preferred routine diet whereas none of the subject and 13.3 percent of the subjects preferred prescribed diet in group E and C. Further, it was observed that 100 and 96.6 percent of the subjects were taking allopathic medicine and none of the subjects and 3.3 percent of the subjects were taking ayurvedic medicine in group E and C respectively.

SIGN AND SYMPTOMS OF THE SUBJECTS

The signs and symptoms of the subjects suffering from arthritis are given in the Table 2. The most common symptoms observed were joint stiffness (90 & 33.3 and 73.3 & 73.3 %), swelling (83.3 & 30 and 46.7 & 56.7%) and redness (33.3 & 16.7 and 26.7 & 33.3%) in group E and C respectively. Other less experienced symptoms were rash or itch (13.3 & 6.7 and 16.7 & 16.7 %), feeling unwell (10 & 3.3 and 26.7 & 26.7 %) and fatigue (16.7 & 3.3 and 13.3 & 13.3 %) before and after nutrition counseling in group E and C respectively. Altman and Marcussen (2001) stated that highly purified and standardized ginger extract had a statistically significant effect on reducing symptoms of osteoarthritis of the knee. Suzanna (2010) reported that 20-25 ml oral ingestion of aloe vera drinking gel twice a day for 2-3 months will provide faster healing for osteoarthritis and to produce beneficial effect. After the study it was observed that there was decrease in

the symptoms experienced by the subjects in group E.

IMPACT OF NUTRITION COUNSELING ON KNOWLEDGE, ATTITUDE AND PRACTICES OF THE SUBJECTS (KAP)

It was observed that majority of the subjects i.e. 70 percent obtained knowledge scores <10, followed by 30 percent who obtained 10-20 before (pre -test) nutrition counseling in group E. After nutrition (post-test) counseling all the subjects obtained knowledge score between 20-30 in group E. However, negligible change was observed in group C before and after nutrition counseling. Regarding the attitude scores, it was found that 66.7 and 33.3 percent of the subjects obtained scores between 0-5 and 5-10 in group E before nutrition counseling . After nutrition counseling all the subjects obtained scores between 5-10 in group E, while in group C, the corresponding values being 70 and 30 percent and 63.3 and 36.70 percent which indicated higher improvement in group E than group C. The present study indicated that 46.7 & none of the subject and 36.7 & 33.7 percent of subjects obtained scored between the range of 0-5, 53.3 & 36.7 and 63.3 & 66.7 percent of the subjects were obtained score between 5-10 before and after nutrition counseling in group E and C respectively. 63.3 percent of the subjects were obtained score more than 10 in group E after nutrition counseling.

Table depicted that the mean knowledge scores of pre and post nutrition counseling were 8.47+ 2.92 & 8.67+2.80 and 25.90 + 1.81 & 9.10 + 2.52 in group E and C

respectively .Regarding the attitude scores , mean scores of pre and post nutrition counseling were 4.13 + 0.97 & 3.97 + 0.89 and 8.63 + 0.89 & 4.10 + 0.88 in group E & C respectively .The mean practices scores were 4.57+ 0.68 & 4.77 + 0.73 and 9.73+ 0.64 & 4.83 + 0.75 in group E and C respectively before and after nutrition counseling.

CONCLUSION

The present study was carried out on 60 females in the age group of 40-60 years visiting Swami Vivekanand Hospital, Model Town Ext and Punjab Agricultural University Hospital of Ludhiana. They were equally divided into two groups viz. Experimental (E) and Control (C). The objective of the present study was to impart the nutrition counseling to the selected females regarding the arthritis and its types, sign & symptoms and role of medicinal plants in the management of arthritis.

The result revealed that patients suffering from arthritis had many mis conceptions about diet. Majority of subjects in both the groups suffered from joint stiffness followed by swelling and redness. Nutrition knowledge of the subjects was quite poor as the knowledge scores obtained in both the groups were quite low. Patients were advised to take medicinal plants like ginger, garlic, turmeric, aloe-vera and other antioxidant rich foods to cure arthritis. The mean scores for nutrition knowledge improved significantly in post test from 8.47 to 25.90 in group E, while non- significant (8.67 to 9.10) in group C. There was decreased in symptoms experienced by the subjects

in group E. Nutrition counseling must be imparted to them as it is an important measure of improving their knowledge and help them to live full life despite arthritis.

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Table 1: Medical history of the subject

Particulars	Group E (n=30)	Group C (n=30)
Family History		
Yes	8(26.7)	4(13.3)
No	22(73.3)	26(86.7)
If yes then		
Mother	6(20)	3(10)
Father	2(6.7)	1(3.3)
Siblings	-	-
Grand Parents	-	-
Diagnose of Disease		
< 1 yr	15(50)	14(46.7)
1- 3 yr	13(43.3)	12(40)
3 - 5 yr	2(6.7)	4(13.3)
Preference of Diet		
Routine diet	30(100)	26(86.7)
Prescribed diet	-	4(13.3)
Medicines		
Yes	30(100)	30(100)
No	-	-
If yes then		
Allopathic	30(100)	29(96.6)
Ayurvedic	-	1(3.3)
Homeopathic	-	-
Restricted diet	-	-

Figures in parenthesis indicate percentages
 n = number of subjects in each group

Table 2: Sign and symptoms of the subjects before and after nutrition counseling

Particulars	Group E (n=30)		Group C (n=30)	
	Before	After	Before	After
Joint Stiffness	27(90)	10(33.3)	22(73.3)	22(73.3)
Swelling	25(83.3)	9(30)	14(46.7)	17(56.7)
Redness	10(33.3)	5(16.7)	8(26.7)	10(33.3)
Rash or Itch	4(13.3)	2(6.7)	5(16.7)	5(16.7)
Feeling Unwell	3(10)	1(3.3)	8(26.7)	8(26.7)
Fatigue	5(16.7)	1(3.3)	4(13.3)	4(13.3)

Figures in parenthesis indicate percentages
 n = number of subjects in each group

Table 3: Distribution of KAP score by the subjects before and after nutrition counseling

Parameters	Group E (n=30)		Group C (n=30)	
	Before	After	Before	After
Knowledge				
<10	21(70)	-	21(70)	21(70)
10-20	9(30)	-	9(30)	9(30)
20-30	-	30(100)	-	-
Attitude				
0-5	20(66.7)	-	21(70)	19(63.30)
5-10	10(33.3)	30(100)	9(30)	11(36.7)
Practice				
0-5	14(46.7)	-	11(36.7)	11(36.7)
5-10	16(53.3)	11(36.7)	19(63.3)	19(63.3)
>10	-	19(63.3)	-	-

Figures in parenthesis indicate percentages
 n = number of subjects in each group

Table 4: Gain in KAP scores obtained by subjects before and after nutrition counseling

Particulars	Group E (n=30)					Group C (n=30)				
	Pre test	Post test	Paired t-value	Gain in Score	Quantum of improvement	Pre test	Post test	Paired t-value	Gain in Score	Quantum of improvement
Knowledge	8.47±2.92	25.90±1.81	12.99*	17.43	3.05	8.67±2.80	9.10±2.52	1.35NS	0.43	1.04
Attitude	4.13±0.97	8.63±0.89	14.65*	4.5	2.08	3.97±0.89	4.10±0.88	1.43 NS	0.13	1.03
Practice	4.57±0.68	9.73±0.64	7.98*	5.16	2.12	4.77±0.73	4.83±0.75	1.43 NS	0.06	1.01
Overall Mean ±S.E	5.72±1.52	14.75±1.11	-	9.03	2.57	5.80±1.47	6.01±1.38	-	0.21	1.03

NS: Non significant

*: Significant at 1%

**: Significant at 5%