

NUTRITIONAL PROFILE OF INSTITUTIONAL ELDERLY AND FEASIBILITY IN USE OF RED PALM OIL IN THEIR DIETS

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ABSTRACT

Objective: The nutritional status of institutionalized elderly, their health behavior and related socio economic factors affecting their nutrition and feasibility of using red palm oil in the diets of inmates was investigated in present study. **Methods:** The sample comprised of 100 elderly from St. Mary's Home Arya Mahila Ashram and Sandhya Home, New Delhi. The subjects were divided into 2 age groups namely 60-69 years and ≥ 70 years. The nutritional status was assessed using interview and observation method. The techniques employed were dietary survey, anthropometry, clinical examination, blood pressure, and hemoglobin and blood glucose measurement. The feasibility of using red palm oil was determined by sensory evaluation method. **Results:** The subjects had very strong food preferences and beliefs which affected their dietary intake. The mean daily of energy and other nutrients except iron and Vitamin 'A' was adequate. Protein and retinol intakes were significantly different among residents of three institutions. The mean weight, height, mid upper arm circumference and total arm length for 60-69 years and ≥ 70 years men were 62.0kg, 156.8cm, 24.3cm, 63cm, 50.7cm and 63.1kg, 157.5cm, 25.3cm, 74.9cm and 52.3cm respectively. The corresponding values for woman were 61.8kg, 154.8cm, 25.7 cm, 81.3cm, 53cm and 56.4kg, 152.7cm, 24.2cm, 78.6cm, 51.4cm respectively. A significant correlation between the total arm length and height was observed. Six percent of the population was hypertensive 70% anemic and 49% had high blood glucose level. Red palm oil was well accepted by the inmates of St Mary Home when used in 'dhal' vegetable preparation, "parantha" and suji halwa. **Conclusion:** The state of institutionalized elderly in the present study was good as institutions were taking care of at least their basic needs of food, clothing and shelter. A variety of programs like cultural, informative and interactive should be planned to keep them mentally and socially occupied. Since the elderly in the old age homes were having inadequate beta carotene, inclusion of foods like red palm oil by the management may be good idea.

Key Words: Elderly, Female, Institutionalized, Nutritional Status,

INTRODUCTION

Since time immemorial older people have been accorded a place of honour and importance in the family and community, all round the world especially in India. The elderly was defined by United Nation's as the population aged 60 and over (United Nation. 1991). As per the 1991 census the estimated population of persons above 60 years in India was 55 million representing 6.54% of total population.

The major ailment reported in rural Indian elderly are visual impairment arthritis, nervous disorder (Parkinson's disease), dysentery, hearing impairment, diabetes mellitus heart disease, hypertension, skin disease, cataract and asthma. Apart from these cough, cold, fever and abdominal problems were common illnesses reported by elderly. Adequate dietary intake is fundamental for good health and a good quality of life. Inadequate nutrition as one of the major problems of old age. Since production of vegetable oils in India is not sufficient to meet the growing demands of population, Government of India is promoting palm oil production through palm oil cultivation. Red palm oil is a boon for elderly because of its nutritional benefits. It contains an equal proportion of saturated unsaturated fatty acids. Palm oil is also a rich source of Vitamin E- the tocopherols and tocotrienols.

The specific objectives of the study were:

1. To assess the dietary behavior of institutionalized elderly.
2. To assess the nutritional status of institutionalized elderly.
3. To determine the feasibility of red palm oil by incorporating it in different food preparations

METHODOLOGY

The research design had two components

- (i) Assessment of nutritional status of institutionalized elderly
- (ii) Feasibility of red palm oils the dietaries of institutionalized elderly.

Operational Definition

The term elderly is defined as the population aged 60 and over (United Nation, 1991)

Institutionalized elderly are those groups of elderly who spent their last years of life in old age homes apart from their families.

Design of the study: Three old age homes were selected for the study viz:

- St Many's Home for Aged Woman, Rajpur Road New Delhi
- Arya Mahila Ashram, New Rajender Nagar, New Delhi
- Sandhya Home for Senior Citizens, Netaji Nagar, New Delhi

Of these the first two are run by voluntary organizations and do not receive any government aid. Sandhya Home has entirely different functioning and comes under New Delhi Municipal Council.

Selection and size of sample: Arya Mahila Ashram has the largest number of inmates (100), followed by Sandhya Home (47) and St. Mary's Home (22) Purposive sampling techniques were used for the selection of the sample. The following criterion was adopted for the selection of the sample:

- The subject should be in the age group of 60 years and above.
- A minimum period of 3 months of institutionalization.
- The subjects should be cooperative, mentally receptive and articulate.

The final sample consisted of 100 inmates out of these 18 was from St. Mary's Home, 40 from Sandhya Home and 42 from ARYA Mahila Ashram. Three subjects should be excluded from the study as they suffered from senile dementia or they had severe problem of hearing which made the conversation extremely difficult or they were not cooperative.

Methods Used for Data Collection

I. Nutritional status assessment: Interview and observation technique was used for data collection. The information obtained through the interview was supplemented by observation. The techniques used in the assessment of nutritional status of elderly were: Dietary survey, Anthropometric measurements, Clinical, Blood pressure measurements, Hemoglobin estimation, and Blood sugar measurements

- (i) **Dietary Survey:** Quantitative dietary assessment of the elderly can be done using recalls, diet records and histories, observation of actual food consumed and analysis of diet replicates, 24 hour recall method was selected for dietary assessment. For determining the change in the dietary behavior over a period of time diet history method was used.
- (ii) **Anthropometric measurements:** The various anthropometric measurements performed in the present were weight, height, mid upper arm circumference (MUAC), abdominal circumference and total arm length.
- (iii) **Clinical Examination:** The clinical assessment included examination of eyes, mouth, face, nails, and skin for signs of anemia, deficiency of Vitamin A, B- complex and Vitamin C.
- (iv) **Blood Pressure Measurement:** Along with other clinical examinations blood pressure measurement was also done, as hypertension is an important predisposing cause of several chronic diseases affecting the elderly.
- (v) **Hemoglobin Estimation:** In the present study the hemoglobin level of subjects was estimated by cyanmethemoglobin method developed by Russia and Sood (1985).
- (vi) **Blood sugar estimation:** It is done on random blood sample using AMES Glucometer.

II. Feasibility of Red Palm Oil

Sensory Evaluation: Sensory evaluation of foods prepared using RPO were done, evaluations were provided score cards on which they were open to give their remarks.

III. Statistical Analysis: All parameters were statistically analyzed on SPSS/ PC + (SPSS, Inc., Chicago)

RESULTS

The mean age across the three homes for women in the age group 60-69 years was 65 years and of men 63 years. In the age group ≥ 70 years mean age was 78.5 years for women and for men it was 77 years – the majority of elderly were widower / widows and educated except eight who were illiterate (Table 1). The inmates joined old age homes because of loneliness family reasons, and desire to live independent by preserving their self esteem. It was observed that family members visited the inmates more regularly as compared to inmates going to their children's houses. Postal or telephone services were the mode of communication used frequently. Ninety eight percent of the respondents were able to perform activities of daily life. Instrumental activities were also performed by the majority and 40% of the inmates kept past time maid servants especially to do laundry, housework and handiwork. Similar pattern of daily routine was observed across the three homes like walking up early morning performing religious activities, daily chores, etc. Only in Arya Mahila Ashram inmates were assigned specific duties by the management.

Table 1: General profile of the elderly respondents

Characteristics	Women		Men	
	60-69 years	≥ 70 years	60-69 years	≥ 70 years
	n=19	n=58	n=3	n=20
Marital Status				
Unmarried	6	6	0	4
Married	0	4	0	4
Widow/Widower	10	43	3	6
Seperated	3	5	0	6
Level of Education				
Illiterate	0	8	0	0
Up to middle school	6	8	0	3
Secondary school	13	24	0	3
Professionally qualified	0	18	3	14
Economic Status				
Pension	15	40	3	14
Saving	1	15	0	6
Pension+ Saving	0	1	0	0
Family Support	3	0	0	0
Honorarium	0	2	0	0

The three institutions provided different kinds of meal service with Arya Mahila Ashram having facility only for lunch and other two homes giving all the three meals. Vegetarianism was practiced in Arya Mahila Ashram; Non vegetarian food was occasionally cooked at St. Mary's Home and Sandhya Home. The inmates normally supplemented the institutional food. Very strong food preference were observed in the elderly population, which affected their food choices and dietary intakes – Whole wheat food products were preferred than rice bread and refined flour as these were believed to cause arthritic problems, and constipation. The food like whole pulses (rajmah, black gram dhal green leafy vegetables (spinach, mustard and radish leaves) and seasonal vegetables (brinjal and cauliflower) were avoided by many elderly because of the gastric discomfort caused by them. Food selection was made on the basis of seasonal availability, concept of cold and hot foods and illness. About 75% of the population was aware of the nutritive strength of different food. Changes in dietary habit from adult life were reported by one fourth of the population – Around one fifth of the inmates missed their past dietary habit. Use of nutritional supplements for strength and warmth like health drinks "Bournvita", "Horlicks" and "Complan") Chyawanprash, honey and multivitamin tablets was observed as usual practice in inmates of Arya Mahila Ashram and Sandhya Home. The dietary intake pattern showed great variation. Low protein adequacy was observed in St. Mary's Home and Arya Mahila Ashram's inmates. This is mainly attributed to low consumption of pulses. Calcium needs were met across all the three homes Iron intake was poor and hardly met 50% of the RDA – The main source of iron was non heme sources like green leafy vegetables. Vitamin A was poor in the elderly respondents except for nine women of Sandhya Home of age group more than 70 years. In the later case it was because of increased consumption of milk. Thiamin, Riboflavin and Vitamin C requirements are being met adequately as vegetables and fruits are consumed daily. Protein and retinol intakes were significantly different ($f 6.4, P \leq 0.5$; $f 5.2, P \leq 4.2$) across the three institutions. (Table 2)

The mean daily food and nutrient intake of elderly men and women was compared against data reported on Indian institutionalized elderly by Jhingan et al (1992), it was evident that the consumption of cereals and other vegetables was similar.

Table 2: Mean daily nutrient intake of elderly women

Women				
60-69 years (n = 19)				
Nutrient	Arya Mahila Ashram	St. Marys Home	Sandhya Home	F-value
	(N=5)	(N=6)	(N=8)	
Calories(kcal)	-	1696±386	1913±367.5	2.61
Protein(g)	43±8.5	25.9±10	56.4±9.7	1.9
Calcium(mg)	909.4±695	513.7±271	712.3±276.4	1.7

Nutrient	Arya Mahila Ashram	St. Marys Home	Sandhya Home	F-value
Iron(mg)	21.1±8.7	20±8	20.2±7.3	6.4
β Carotene(μg)	1526.2±1447	1002.4±836	1107.1±1072.6	0.8
Retinol (IU)	615±389	689.1±501	735.2±356.4	13.2
≥ 70 years (n=58)				
	(N=95)	(N=16)	(N=16)	
Calories(kcal)	1648±486	1307±323	1993.6±123.4	2.28
Protein(g)	45.1±8.6	43.9±9.3	57.13±3.27	2.4
Calcium(mg)	677±264	522.1±279	716.5±135	1.2
Iron(mg)	15.4±4.5	13.5±3.7	21.3±6.8	5.2
β Carotene(μg)	1522.9±2558	667.8±985	1975±165.9	0.4
Retinol (IU)	457.5±183	315.4±167	621.8±575.1	14

Table 3: Mean daily nutrient intake of elderly men

Men		
Sandhya Home (n=23)		
Nutrient	60-69 years (N=3)	≥ 70 years (N=20)
Calories (kcal)	2048.6±348.8	2033.5±347.4
Protein(g)	60.2±7.1	55.2±9.1
Calcium(mg)	782.4±192	614.2±181.5
Iron(mg)	18.7±8.3	18.7±3.8
β Carotene(μg)	1163.6±1576	1052.5±968.1
Retinol (IU)	679±312	568.6±3.3

The mean weight, height, MUAC, abdominal circumference total arm length for women were 59.1kg, 153.75cm, 24.9cm, 79.9 cm and 52.2 cm respectively (Table 4). The corresponding measurements for men were 62.9kg, 167.1cm, 24.8cm, 68.8cm and 51.5cm respectively. Body mass index was approximately within the normal range i.e. 24.4 for women and 25.3 for men. There was no case of undernourishment Sixty three percent women of age group 60-69 years were overweight Percentage overweight cases in men were lower compared to women. The total arm length of the elderly was

positively correlated to their height, "r" value being $+0.5 \leq 0.01$.

Several studies have reported a positive correlation between height and total arm length in elderly population (Jhingan et al, 1992; Gambhir et al, 1993; Ahuja et al, 1995 and Dabas et al 1996).

Table 4: Means of anthropometric measurement

Measurements	Women						Men	
	St Marys Home		Arya Mahila Ashram		Sandhya Home		Sandhya Home	
	60-69 years (N=6)	≥70 years (N=12)	60-69 years (N=22)	≥70 years (N=37)	60-69 years (N=8)	≥70 years (N=9)	60-69 years (N=3)	≥70 years (N=20)
Weight	61.2±0.08	54.3	56.7 ±6.2	56.6± 4.1	56± 18	59.5±0.3	62.0 ±14.3	63.1±12
Height	151.3± 0.17	148.9± 0.24	154.1	148.8 ±27.3	156.6 ±0.17	156.7±0.5	156.8 ±9	157.5±7
MUAC	28	24.7 ±0.4	24.1± 2.4	24.08 ±1	24.9 ±0.28	25.1±0.24	24.3 ±5.17	25.3±3
Abdominal Circumference	89.3 ±0.03	85.7 ±23	67.3	77.2 ±1.8	64.6 ±4	82±0.03	66± 25	74.9±27
Total arm length	53.6± 0.2	45± 0.15	47.7 ±0.15	53.6 ±0.25	54.6± 0.24	50.1± 0.8	50.7±5	52.3±8

Common illnesses observed in the elderly were constipation, flatulence, diarrhea, cough and cold. Major chronic ailments reported were diabetes mellitus hypertension, arthritis and visual impairment. Biochemical examination revealed 70% of the inmates to be anemic and 49% had high glucose levels; Six percent of the population was hypertensive. (Jhingan et al, 1992; Gambhir et al, 1993; Ahuja et al, 1995 and Dabas et al 1996).

Various clinical signs observed was angular stomatitis, gum inflammation, bleeding gums, pale conjunctive, koilonychias, cold extremities, cataract, petechial hemorrhages, and eczema. Clinical signs were observed in elderly typical of nutrient deficiency but lacking specificity with advancing age. Almost 50% of the elderly were using dentures. The practice of using dentures probably contributed to good dietary intake observed in the inmates.

Around 85% population of St. Mary's Home liked the food items prepared using the red palm oil. Significant increase in Vitamin A level was observed by Rukmini (1994) wherein snacks prepared with RPO were served to the population to combat Vitamin A deficiency

CONCLUSION

In the post independence period there has been a consistent increase in the life expectancy of Indian people. By and large these elderly are financially independent and feel inhibitive in living with their families and hence look for an alternative care. Old age homes fulfill their basic need. In addition even the medical care is provided by these homes which are needed of this age. The changing scenario depicts that the need of old age will increase in future. The present study has revealed that these homes provide adequate diet and inmates are physically sound. Only emotional insecurity was prevalent. This can be overcome by involving them in structured programs as religious activities, social service like day care for children. This government of India should make an effort to create more old age homes in order to meet the increasing demands.

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