



FOOD AND NUTRITION NEWS

Acharya N.G. Ranga Agricultural University

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Geriatric Nutrition

"Aging is Everybody's Business"



"Coming into eighty I slow my ship down for a safe landing. It has been long voyage through time, travail and triumph. Eighty years of learning what to be and how to become it"

-May Sarton, Paris Review, 1992.

Old age is a significant phase in a person's life. Elderly all over the world are recognised as a distinct group and every help and encouragement is extended to make them pleasant in the

evening of their life. World Health Organization has declared the year 1982 as "The Year of the Aged" and recently October 1st of every year has been designated as "International Day for the

Aged". Once again on 1st October, 1998 the United Nations declared the year 1999 as "The Year of the Aged".

The percentage of elderly in India has risen from 5.6 in 1960 to 6.3 in 1980 and is projected to be 7.2% by 2000 A.D. and 9.5% by 2050 A.D. Among the states, Kerala recorded the highest while the lowest proportion was in West Bengal. Currently, the highest number is found in Uttar Pradesh (8 million) followed by Andhra Pradesh and Tamil Nadu (4 million each) and in Kerala 2.3 million.

Management of the aged in modern society poses many problems. In traditional societies where joint family was the norm, dietary and general care of the elderly has always been easily managed. But in recent years with the emergence of nuclear families, the elderly are left alone and have to provide their own diet. Such a situation tends to render the diets of elderly to be nutritionally unbalanced and food becomes monotonous.

Compelled by the above circumstances, more people are showing interest to seek the safety and security of the old age homes, hence the number of old age homes and occupants of these homes have been steadily increasing in recent years.

Body composition and physiological functions

Just as change in body composition occur from young childhood to late adolescence, so too changes may be anticipated from young adulthood to later adulthood and old age. But the changes are in opposite direction representing a catabolic rather than anabolic change. These changes may be universal but may vary considerably within and between groups of elderly.

- **Cell mass** : Studies have shown that there was a decrease of body weight during 75-81 years in both sexes averaging 7 kg in males and 6 kg in females.
- **Fat** : The body fat seems to increase until beginning of the eighth decade. This is mainly related to lowered physical activity without compensatory reduction in food intake.
- **Water** : Total body water, including both extracellular and intracellular

CHANGES IN OLD AGE

water, decreases with age.

- **Bone mass** : Bone mass also decreases with age, potentially resulting in osteoporosis. Women tend to loose bone mass at an accelerated rate after menopause.
- **Sensory changes** : There is a decline and eventual loss of visual acuity, hearing, smell and taste sensation, which will indirectly affect the nutritional status.
- **Dental health** : Dental health is often poor in elderly because of gum recession, root caries, loss of teeth and gradual change in the shape of mandible. These may result in chewing problems, maldigestion or in monotonous and inadequate diet.
- **Swallowing** : Less saliva is produced and swallowing of food is difficult.
- **Gastric acid production** : In stomach production of acid decreases with aging, which will lead to decreased

absorption of B12, folic acid and iron.

- Reduced motility of small intestine may cause stasis, with abdominal distension and malabsorption.
- Reduced motility of colon will lead to constipation. Prolonged exposure of faeces to absorption and drying of faeces leads to constipation. This may be enhanced by a diet lacking dietary fibre and by poor abdominal muscle tone.
- **Immune system** : The elderly experience a higher frequency of illness than young adults due to age related decline in immune function.

Changes affecting nutrition

Nutritional risk factors increase in the aged due to 1) Physiologic decline; 2) Decreased socio-economic status; 3) Limited food consumption; 4) Multitudes of disease processes and 5) Therapeutic regimens.

NUTRIENT REQUIREMENTS OF ELDERLY

Energy : The current ICMR, RDAs (1990) suggested a reduction in the energy requirements i.e., 18% for males and 11% for females than adults and not for other nutrients.

Protein : Protein requirements increase for a number of physiological stresses, including chronic diseases, infections, fractures, surgery and burns. Many authors suggested that 1g/kg/day seems to be adequate for both sexes in their advanced years.

Carbohydrates : Intake should be about 60% of total calorie intake. Emphasis should be given to have more of complex carbohydrates and away from refined starches.

Fat : Dietary fat with an equal proportion of saturated, monosaturated and polysaturated fatty acid components is

desirable. The fat intake should be kept below 20% of total calories.

Fibre : The elderly are bothered with two physiological problems. Constipation and diverticulosis, that may well be relieved by increased dietary fibre. Intake around 20-30g/day could be beneficial. There is a good deal of fibrous material in millets, green leafy vegetables and fruits. High fluid intake is essential along with high fibre food.

Vitamins : Many studies have indicated an inadequate intake of vitamins A, B1, B2, B6, niacin, folic acid, C, D & E. Nutritional requirements have not been established for >60 years. Elderly who are confined to bed at home or live in harsh winter areas can be affected by lack of sun exposure. Osteomalacia and osteoporosis are the major clinical

problems associated with poor vitamin D status. Calcium uptake and deposition in bone require vitamin D (400 I.U.).

Minerals : Minerals that are important in human nutrition are Iron, calcium, phosphorus, magnesium and electrolytes, sodium and potassium.

Iron : Iron deficiency in elderly is often not due dietary deficiency but rather to chronic blood losses from ulcers and decreased absorption as a result of reduced HCl secretion. The iron from animal food source absorbs efficiently rather than plant sources. To avoid iron deficiency, older persons should include green leafy vegetables, wheat flour, liver, jaggery, honey or dates in their daily diets.

(Contid... page 3)

"Good health is the pre-requisite of good "quality of life" and adequate nutrition is the key to good health".

Calcium : The elderly population is at high risk of inadequate calcium absorption which consequently leads to osteoporosis. Food sources rich in calcium are milk, ragi, green leafy vegetable, prawns, crab and small fish.

Sodium and potassium : The major health concern related to dietary sodium and potassium is hypertension which increases with age, regardless of sex and race.

Zinc : Zinc deficiency in the elderly may lead to altered taste, anorexia, generalised weakness, delay in wound healing and it may pre-dispose to certain diseases. It is also required for the maintenance of immune function and resisting infections caused by viruses, bacteria, fungi and protozoa. Good sources are fleshy foods, cereals, pulses, nuts etc.

The elderly should ensure that the food they eat is wholesome and

nutritious. Those who suffer from chronic diseases should follow diet restrictions as directed by the physician/dietician. Prevention of malnutrition in risk population can be achieved through timely nutrition education and proper nutrition intervention programmes based on the disabilities of old. It must be recognised that most disabilities of old age are not inevitable, universal or irreversible.

RESEARCH HIGHLIGHTS

HEALTH AND NUTRITIONAL STATUS OF ELDERLY IN DIFFERENT PARTS OF ANDHRA PRADESH.

In different regions of Andhra Pradesh

The nutrient intake and nutritional status of elderly (n=184) was studied in three regions of Andhra Pradesh i.e., Rayalaseema, Telangana and Coastal Andhra. Results of their study revealed that the most limiting nutrients in their diets were (β-carotene and vitamin C. Only 40-60% of the

requirement of riboflavin, calcium and thiamin was met. The adequacy of calories ranged from 71 to 83% and protein from 80-90%. The study suggests that in general, the elderly consumed less amount of most types of foods and nutrients especially protein and iron.

P.Pushpamma, P.Geervani & Krishna Kumari (1981)

Nutrition Reports of International, 20:1.

Institutionalised and non-institutionalised elderly

Food and nutrient intakes, nutritional knowledge and incidence of nutritional and health disorders among 30 institutional and 90 non-institutional elderly men subjects from High Income Group, Middle Income Group and Low Income Group were studied in Hyderabad city. The findings of the study showed that the subjects of LIG had poor health, nutritional status and very poor nutritional awareness compared to other two groups. Mean weight and skin fold measurement of the subjects belonging to MIG & HIG and non-institutionalised were better compared to subjects in other groups. The intake of all nutrients by the elderly in LIG, MIG and institutionalised groups was less compared to the RDAs except for calcium. The incidence of nutritional deficiencies like B-vitamin deficiencies, anaemia and dental disorders were more common among low income elderly. Higher incidence of ocular problems were commonly seen in all the subjects. Incidence of chronic disorders like diabetes and hypertension, were high among subjects of HIG group.

Elderly with different income groups

A study was conducted to assess the health and nutritional status of elderly (n=120) living in Tiruvur mandal of Krishna District, Andhra Pradesh.

The results of the study showed that the incidence of anaemia was higher in the LIG males and females. The other chronic disorders found among elderly

were blood pressure, diabetes, heart ailments which were more prevalent in HIG than the other two groups.

Significant differences were observed between the three groups i.e., LIG, MIG & HIG in the intakes of cereals, fat & oils, milk and milk products for males and females.

Jayasreemani M and P.Padmavathi (1990)

*G.Sarojini and K.Nirupama Chowdary
A.P. Journal of Community medicine
Aug, 1990.*

"Eat before when you are hunger stop eating before satiety"

Dietary patterns of institutionalised elderly in Andhra Pradesh, India

A three day weightment diet survey was conducted to investigate the dietary intake of the elderly (>60 yrs n=104) residing in different category of institutions. As far as dietary intake is concerned, the cereal intake was found to be varied among the inmates of different category institutes, highest being by inmates of State Government and lowest in Private and Charity Home inmates. The mean intake of pulses was found to be 38g/day. The mean intake of green leafy vegetables was significantly lower than RDAS by the inmates in all four category of institutes. The intake of fruit was nil by inmates of State Government run homes and significantly higher in Charity Home. Results of nutrient intake revealed that intake of energy ranged from 1730 to 1890 Kcal/day by inmates of different category of institutes. The intake of protein, fat, calcium, vitamin A, thiamin, riboflavin and niacin were found to be lower by inmates of State run institutes. None of the inmates in four category of institutes were meeting the requirement even 50 percent of RDA for thiamin, riboflavin, niacin and iron. There is an imperative need for improvements in the existing nutritional front in the homes especially in State run homes.

*Lakshmi Devi N and Vijaya Khader
3rd International Conference on
"Nutrition & Aging",
21-22nd September, 1999, Tokyo,
Japan*

Nutrient adequacy of institutionalised elderly in Andhra Pradesh

A three-day weightment diet survey was conducted to investigate the nutritional adequacy or otherwise of the elderly (>60 yrs. N=104) living in different categories

of institutions. It was observed that the overall percent adequacy of energy was just sufficient and for protein it was found to be 87 percent. The overall adequacy of calcium was higher for both males and females except in State Government category. The adequacy for iron was only about one third of the requirement. Vitamin A adequacy was found to be lowest for inmates of State Government run institutes and highest for inmates of a Charity home. The adequacy of ascorbic acid was found to be exceeding RDA. However, when considered by category of institute and sex-wise, males of State Government and Central Government institutes were falling short of this vitamin. The inadequacy of ascorbic acid in these institutes could be due to their lower/no intake of fruits. The study showed that none of the inmates in the four categories of institutes were meeting the requirements even fifty percent of RDA for thiamin, riboflavin, niacin and iron.

*Lakshmi Devi N and Vijaya Khader
(1997)*

Current nutritional status of institutionalised elderly

The current nutritional status of elderly (n=262) residing in different categories of institutes was assessed by body mass index. The results revealed that 47% of the total inmates were found to be having normal BMI limits. More number of males (54%) were found to be normal compared females (44%) and the trend is same in all the age groups. More number of females (36%) were found to be overweight and obese compared to males (17%). A lowest mean weight was observed in inmates of State run homes and highest in Private run institutes.

*Lakshmi Devi N and Vijaya Khader
(1997)*

Disease pattern of elderly residing in old age homes

The disease pattern of elderly (n=270) residing in old age homes was assessed. Elderly have multiple medical problems, quite often a combination of more than one health problem. The prevalence of major health problems from which the inmates suffer from are cataract (35%), hypertension (17%), diabetes mellitus (11%), arthritis (9%) and miscellaneous other problems (11%). Only 12% of total inmates were free from any disease.

Prevalence of dental problem was a common observation (70%) among the total inmates. Anemia was observed among 18% of total inmates.




*Lakshmi Devi N and Vijaya Khader
(1997)*

Low cost nutritious menus for institutionalised elderly

The menu pattern/dietary pattern in different institutes (n=11) was elicited with help of inventory method. It is evident from the data that two State Government run institutes had no provision of breakfast. The pattern of menu is very monotonous. Based on the observations and keeping in view of the resource positions, two types of menus i.e., institutes having low budget provision and institutes with moderate/adequate budget provisions were suggested. The mean nutrients provided by each menu and the approximate food cost for each menu were calculated. The nutrient gap is met with the suggested menu patterns and meets RDA. The cost of low and moderate provision of budget are Rs.9.00 and Rs.15.50 per day/person respectively.


*Lakshmi Devi N. & Vijaya Khader
(1997)*

STAFF VISITS ABROAD FOR TRAINING AND ATTENDING CONFERENCES

	Name	Country	Purpose	Duration	Sponsors
	Dr. Kamini Devi, Asst. Professor, College of Home Science, Hyderabad	Kansas University, U.S.A.	Training on "Food additives in product development" at Animal Sciences & Industry, KSU. She formulated and developed an acceptable commercially viable reduced fat/calorie baked product using different additives as fat replacers.	3-5-99 to 28-7-99	Agricultural Human Resource Develop- ment Project
	Dr. R. Manorama Asst. Professor P.G. & R.C., Hyderabad	Cairns, Australia	Presented a paper on "Effect of red palm oil supplementation on serum lipids and antioxidant vitamin status of healthy adult population and iron absorption in anemic adolescent girls", at 12 th International Carotenoid Symposium.	18 th - 23 rd July, 1999	Malaysian Palm oil Promotion Council, Kuala Lumpur, Ma- laysia.
	Dr. K. Krishna Kumari, Assoc. Professor	Chicago, U.S.A.	Presented a paper on "Sale of supplementary food at subsidised price and its impact on health and nutritional status of pre- school children" at VI World Soyabean Research Conference	4-7 th Au- gust, 1999	Agricultural Human Resource Develop- ment Project
	Dr. Vijaya Khader, Professor & University Head, P.G. & R.C., Hyderabad	Seoul, South Korea	Participated in Pre-Congress Satellite Workshop on " Dietary approaches to vitamin A deficiencies" and presented a paper on "Operational feasibility of introducing red palm oil into the supplementary feeding programme in urban ICDS centres" and involved in the Drafting Group Meeting. She had also presented a paper on "Home based low cost energy protein rich preparations using horse- gram for vulnerable	27-28 th Au- gust, 1999	Malaysian Palm Oil Promotion Council, Malaysia

"Those who salute and serve daily the elderly ripe with age, wisdom and experience will be sure to obtain the four benefits of Long life, Knowledge, Fame and Strength"

An Old Sanskrit saying

Name	Country	Purpose	Duration	Sponsors	
		groups" in poster session of VIII Asian Congress of Nutrition.	29 th August -4 th Sept. 1999	Agricultural Human Resource Development Project.	
	Dr. N. Lakshmi Devi Asst. Professor PG & RC, Hyderabad	Tokyo, Japan	Presented a paper on "Dietary patterns of institutionalised elderly in Andhra Pradesh" in a poster session at 3 rd International Conference on " Nutrition and Aging" organised by International Life Sciences Institute, Japan.	21 st - 22 nd September, 1999	Agricultural Human Resource Development Project

NUTRITION WEEK (SEPT. 1 TO 7TH, 1999)



Nutrition week was celebrated at the College of Home Science on 1-9-99 jointly organised by Food & Nutrition Board and College of Home Science. A State level workshop on preventing malnutrition among children under two years was organised.

"The misery of a child is interesting to a mother; The misery of a young man is interesting to a young woman; The misery of an old person is interesting to nobody"

Victor Hugo

ANNOUNCEMENT

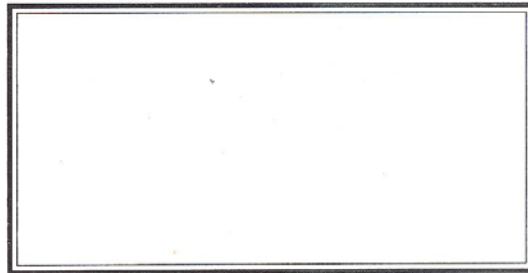
A short course on "*Recent advances in Mineral Nutrition*" will be conducted from 1-2-2000 to 1-3-2000 by the Centre of Advanced Studies, Department of Foods and Nutrition, Post Graduate and Research Centre, College of Home Science, ANGRAU, Rajendranagar, Hyderabad. TA, food and lodging expenses for the State Agricultural University staff will be met by the organisers. Nominations of trainees may be sent to:

The Director
Centre of Advanced Studies
Post Graduate & Research Centre
Acharya N. G. Ranga Agricultural University
Rajendranagar, HYDERABAD - 500 030.

Last date for the receipt of nominations : 15th January 2000

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Mail to :



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Agricultural and non-agricultural elderly

A study was conducted to assess the health and nutritional status of elderly (n=120) in agricultural and non-agricultural families in Ranga Reddy district, Andhra Pradesh. Results of health status of the groups revealed that majority of the subjects suffered from vision related problems (68.0%) followed by arthritis (60.0%); anaemia (58.0%), constipation (47%) etc. Majority of (48%) elderly from non-agricultural families fell in chronic energy deficiency (CED) category as compared with agriculture elderly (33%).

With regard to food intake cereal consumption of elderly males from both agricultural and non-agricultural families consumed less than the RDA as compared to elderly females. The consumption of protective foods were found to be far below the RDA which reflects the fact that cultivation and availability do not seem to have any influence on the food intake. Except for thiamin all the other nutrients were found to be below the RDA. The adequacy of the former might be due to consumption of millets like jowar, Italian millet etc., daily.

Results of the study revealed that there was no significant difference in health and nutritional status of elderly from both agricultural and non-agricultural families.

Vanaja Rani & P.Rajyalakshmi (1997)

Psychological and physical factors affecting the nutritional status of free living elderly

A study was conducted on 100 elderly citizens (60-80 yrs) i.e., well nourished (n=34), at risk of malnutrition (n=34) and malnourished (n=32). With the help of mini nutritional assessment proforma a 24 hr recall method was done

on sub sample (n=30) considering 10 from each group. Digit span scale, a part of Wechsler Adult Intelligence Scale (WAIS) was administered to the sub sample to measure the memory level. The results of the diet survey revealed that the cereal intake of malnourished group were slightly higher when compared to well nourished elderly. Intake of protective foods showed a decline with the decreased nutritional status. Irrespective of the nutritional status, calcium and iron intakes for women and calcium for men were far below the RDA. The intakes of vitamins i.e., vitamin A, thiamin, riboflavin, pyridoxin, vitamin C and folic acid gradually decreased from the well nourished to malnourished elderly.

A clear decline in memory scores was observed from well nourished to malnourished elderly showing a positive correlation between the vitamin intake and memory scores.

Among the physical problems faced by the elderly, digestive complaints and weakness were more common in malnourished where as sleeplessness and breathlessness were common in well nourished elderly.

Hence, the study concluded that apart from providing nutrition and palatable diet to the elderly the family members should provide an healthy environment to promote their social interaction.

S.Krishnaveni and V.Vimala (1998)

Foods Developed for the Elderly

Vermicelli with wheat and pulse blends for geriatrics

Traditional vermicelli prepared from maida (refined wheat flour) was modified, replacing 25% maida with pulse flour to make it more nutritious. Recipes prepared from modified vermicelli on a home scale was evaluated for physico-chemical properties and acceptability. The protein content increased in pulse-blended variety, compared to traditional maida-based vermicelli. Black gram and

Green gram flour blended well, while Bengal gram dhal flour showed the least tendency to blend. Judges were unanimous in their opinion, regarding the suitability of pulse based vermicelli preparations to the elderly.

Lakshmi Devi N and Vijaya Khader J. F. Sci. Tech., (1997) 34: 6: 513-515.

Development of nutritious geriatric food supplements and vitamin losses sequel to processing

In view of the reported observations in the literature about the deficiency of certain nutrients in the diets of the elderly three types of nutritious supplements were developed from locally available raw foods namely porridge mix, vermicelli and extruded snack. These products were enriched with vitamins like vitamin A, thiamin and riboflavin, and were compared with the products sold in market (control) on aspects like vitamin losses. The vitamin A level in fortified experimental porridge mix has shown a loss of 22 percent inspite of not involving any type of further processing. Vermicelli and extruded snack, being extruded products are influenced by factors of extrusion and showed a loss of 55 to 60 percent of vitamin A content. The losses of thiamin and riboflavin were considerably less in porridge mix when compared to vermicelli and extruded snack which might be due to the fact that porridge mix did not undergo heat processing. The loss in extrusion processing varied from 13.5 to 30 percent and 20 to 48 percent in thiamin and riboflavin respectively. However, inspite of losses on processing, all the products contained adequate amounts of vitamins to meet the vitamin gaps in the diets of elderly.

Lakshmi Devi N and Vijaya Khader Poster abstract, ICFOST-97, Mumbai and IFCON-98, 4th International Convention, 23-27th November, 1998, CFTRI, Mysore.

"If only, when one heard that old age was coming one could bolt the door, Answer "Not at Home" and refuse to meet him"

Kokinshu (collection of Ancient and modern poems)