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Original Research Article

Cross sectional study on nutritional status among elderly people in the rural community of Pondicherry

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Abstract

Introduction: Food intake is diminished among old age people due to ill health, disability, co-morbid condition. Hence the quality of life of elderly affects nutrition & protein deficiency contributes to high percentage of DALY.

Objectives: To know the calorie deficiency and nutritional status among elderly people

Material and methods: This was a cross sectional and community based study done on 300 elderly people among 17079 in rural village of Puducherry during March and April 2015. Data were collected by two methods (questionnaire, basic anthropometry measurement) at their residence. Data was analysed for calorie deficiency and body mass index.

Results: There were equal number of men and women. Sixty percent of the subjects were aged between 60-70 years and 7% were aged more than 80 years. Caloric deficit was more in males than females and 35% of them were either overweight or obese according to body mass index.

Conclusion: There were no serious micro nutrient deficiency individuals but more than 35% are already obese/ overweight and 50% are suffering from age related problems. The rehabilitation service of old age group is strongly recommended in order to give quality of life.

Key words

Old Age, Nutritional status, Deficiency, Calories, Overweight, Obese.

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Introduction

Protein energy malnutrition is common in elderly. Approximately 10% of geriatric patients are malnourished on admission and the prevalence is 50% among elderly people living in institutional care. Approximately 3% of them have existing disease which is age related changes in gut physiology and nutrition status [1, 2]. There were obesity and other systemic illnesses like hypertension and thus aggravating other systemic illnesses as contributing factors [3].

Psychological stresses such as bereavement are important causes of decreased appetite, as is the inability to chew food because of poor dentition or dry mouth factors often neglected while diagnosing [4]. Over the past decade, the importance of nutritional status has been increasingly recognized in a variety of morbid conditions including cancer, heart disease, and dementia in persons over the age of 65 [5].

Although there is no uniformly accepted definition of malnutrition in the elderly, some common indicators include involuntary weight loss, abnormal body mass index (BMI), specific vitamin deficiencies, and decreased dietary intake. Malnutrition in older patients is regularly under diagnosed [6], and many physicians have expressed their need for more education regarding nutritional status in older patients [7, 8]. In addition to the recognition of nutritional problems, current medical literature recognizes the importance of promptly implementing a treatment plan. The physical exam does not usually aid in the detection of early malnutrition in the elderly, as some of the loss of muscle bulk may be similar to age-related processes [6, 7, 8]. This study was undertaken with an objective to estimate the nutritional status and calories deficiency among elderly people residing in the rural community of Pondicherry.

Material and methods

This was a cross sectional study done on 300 elderly people among 17079 in rural village Katterikuppam, Puducherry (Pondicherry) for a period of 2 month (March- April 2015) to analyse the nutritional status, calories intake and normal aging changes among them. The subjects were selected randomly with the criteria of age 60 years and above. Data were collected by three steps (questionnaire, basic anthropometry measurement, clinical examination) at their residence. The data collected includes:

- **Basic information** such as name, age, sex, occupation and health status.
- **Ecological factors** such as family size, income, pension from government or private, BPL card are recorded because they play a major role in all aspects of physical and mental health of the individual especially the nutritional status.
- **Dietary intake and calorie deficit:** The diet intake is calculated by 24 hours recall method and from that the calorie deficit are calculated.
- **Anthropometry:** Height and weight were measured using inch tape and weighing machine, from that BMI is calculated using the formula weight in kg/ height in m^2. It is an essential tool in geriatric nutritional assessment used to evaluate underweight and obesity condition which are both important risk factors for severe disease and disability among elderly.

Results and Discussion

As per **Table – 1,** in total population, female were 3% more than male. Male population was more (67%) around the age group of 70 to 75 whereas in female age group of 60 to 65 were more (62%). As per **Table – 2**, as age increases

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the eating pattern changes. People require lesser energy as age increases, but due to the eating habits of people, there is increased intake of food thus BMI increases when this habit remains beyond old age.

As per **Table – 3**, in old age population there calorie required is usually low than adult population, hence the calorie intake is reduce, but micronutrient required for the body should be maintained. Average calorie deficit is more in males (754.1) in age group of 76-80.variation of average deficit is more in age group of 66-70 between male and female. The calories deficiency difference was above 100.

As per **Table – 4**, angular stomatitis was more common in males (4.9%) in age group of 60-65 years. Thyroid enlargement was more common in females (2.9%) in age group of 60-65 years. Absence of ankle and knee jerk was common in males (6.2%) in age group of 76-80 years. Premalignant patches were common in both males (4.2%) and females (4.4%) in age group of 71-75 years and 65-70 years. Lymphadenopathy looks like not present in elderly as common.

As per Table – 5, hypertension, diabetes mellitus, osteoarthritis were the disease common in old age. Among 301 population, total 97 people had hypertension, 40 had diabetes mellitus and hypertension, 52 of them had both, 16 had osteoarthritis and 15 had bronchial asthma which showed as age increases people suffer from certain diseases due to normal aging changes.

Conclusion

There is no serious micro nutrient deficiency but more than 35% are already obese /overweight, more than 50% are suffering from age related problems. Proper food habits and regular physical activity would increase the levels of health status in old age population though normal aging changes cannot be reversed but can be maintained in a healthy way by having a good mental and physical health.

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Table – 1: Description of study population according to age and sex wise.

Age group	Total	Male No (%)	Female No (%)
60-65	109	41 (37.6)	68 (62.4)
66-70	73	28 (38.4)	45 (61.6)
71-75	71	48 (67.6)	23 (32.4)
76-80	28	16 (57.1)	12 (42.7)
>80	20	12 (60.0)	8 (40.0)
Total	**301**	**145 (48.2)**	**156 (51.8)**

Table – 2: Distribution of BMI (Kg/M^2) according to sex wise.

Range	Male (%)	Female (%)	Total (%)
Below 18.5	2 (1.4)	0	2 (0.7)
18.5 – 24.9	96 (66.2)	90 (57.7)	186 (61.8)
25.0 – 29.9	45 (31.0)	58 (37.2)	104 (34.6)
30.0 and Above	3 (2.1)	8 (5.1)	11 (3.7)

Figure – 1: Overall BMI of the total elderly population in the study.

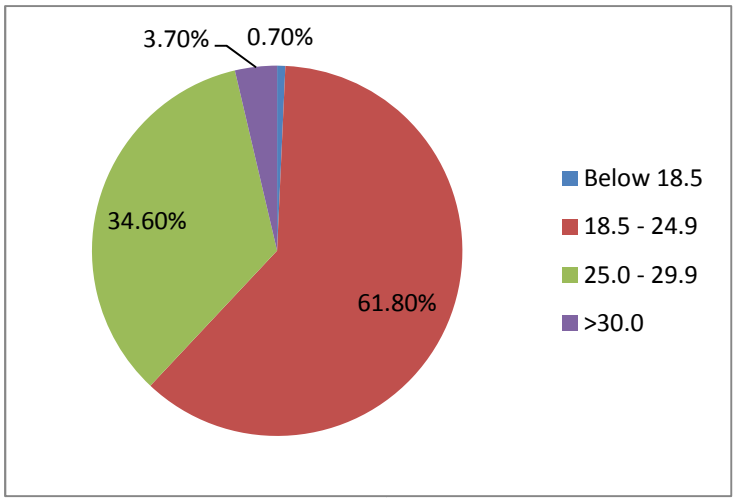

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Table – 3: Distribution of calories intake among male and females in different age groups.

Age group	Sex	Total	Total calorie intake	Average calorie deficit
60-65	Male	41	19226	468.9
	Female	68	37049	544.8
66-70	Male	28	11250	401.8
	Female	45	22666	503.7
71-75	Male	48	26267	547.2
	Female	23	15474	672.8
76-80	Male	16	12065	754.1
	Female	12	6163	513.6
>80	Male	12	6945	578.8
	Female	8	4925	615.6

Table – 4: Prevalence of nutritional deficiency.

Age group	Sex	Total	AS	TE	Absence of ankle and knee jerk	PP
60-65	Male	41	2 (4.9)	0	0	1 (2.4)
	Female	68	0	2 (2.9)	0	1 (1.4)
66-70	Male	28	0	0	1 (3.5)	0
	Female	45	1 (2.2)	1 (2.2)	0	2 (4.4)
71-75	Male	48	0	0	0	2 (4.2)
	Female	23	0	0	0	1 (4.3)
76-80	Male	16	0	0	1 (6.2)	0
	Female	12	0	0	0	0
>80	Male	12	0	0	0	0
	Female	8	0	0	0	0
Total (%)		**301**	**3 (0.9)**	**3 (0.9)**	**2 (0.6)**	**7 (2.3)**

AS – Angular stomatitis, TE - Thyroid enlargement, PP – Premalignant patch

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Table – 5: Distribution of health status according to the age group and sex wise.

	60-65		66-70		71-75		76-80		81 and above	
	M (%)	F (%)	M (%)	F (%)	M (%)	F (%)	M (%)	F (%)	M (%)	F (%)
HTN	12(29.2)	16 (23.5)	12(42.8)	12(26.6)	21(43.7)	11(47.8)	3(18.7)	6(50)	3(25)	1(12.5)
DM	6(14.6)	10(14.7)	4(14.2)	7(15.5)	5(10.4)	4(17.3)	4(25)	0	0	0
HTN+DM	6(14.6	14(20.5)	6(21.4)	4(8.8)	8(16.6)	5(21.7)	2(12.5)	2(16.6)	3(25)	2(25)
OA	0	7(10.2)	1(3.5)	3(6.6)	1(2.1)	3(13)	0	1(8.3)	0	0
BA	2(4.8)	1(1.4)	3(10.7)	2(4.4)	3(6.2)	1(4.3)	0	0	2(16.6)	1(12.5)

HTN-Hypertension, DM- Diabetes Mellitus, OA- Osteo arthritis, BA- Bronchial asthma