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Assessment of nutrition, diet and disease profile of elderly males residing in rural Vadodra, India

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ABSTRACT

A total of 130 elderly male subjects were selected from the villages of Padra taluka of Vadodara. They were classified into Low-income group (LIG) and Middle-income group (MIG) and further into two age groups as younger elderly (60-74yrs) and older elderly (75+yrs). Data on SES and lifestyle pattern were collected using the pre-tested semi structured questionnaire. Nutritional status was assessed using anthropometric measurement and clinical parameters like hemoglobin, blood glucose and blood pressure measurements. Dietary intake was assessed by 24hr dietary recall and food frequency questionnaire. Disease profile was assessed by using exhaustive checklist for major and minor illnesses. Mental health status was assessed by using Geriatric Depression Inventory Scale (GDI), Mini Mental State Examination (MMSE) and Cognitive Impairment Test (CIT) scores. Socio-economic data showed that 78% were married and majority of the subjects were Hindu. In LIG 42% of subjects were illiterate and in MIG 92% of subjects were literate at different levels. Energy and protein intake was found markedly different when compared with economic status and age groups. It can also be inferred that half of elderly males could meet energy intake between 51-75% of RDA in LIG whereas in MIG three fourth of elderly males had energy intake between 76 - 100% of RDA. In case of protein more than half of the subjects from LIG could meet 26-50% of RDA whereas in MIG majority of subjects could meet 51-75% of RDA. Major illnesses showed higher prevalence of oral problems (81.7%) followed by locomotor problems, GIT problems and respiratory problems. Subjects of LIG and older elderly had more health problems than that of MIG and younger elderly. According to GDI, 70.7%of subjects were found under different degrees of depression. Almost 3/4th number of subjects fell under different of depressed performance and abnormal category according to MMSE and CIT, respectively. Majority of subjects belonging to LIG and 75+ years of age group showed poor mental health status as compared to subjects of MIG and younger elderly.

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Key words : Rural ageing, Elderly men, Nutritional status, Food frequency, Mental health.

Living longer is one of the most significant demographic phenomena in recent history. Healthy long lives are a goal to which more and more can realistically aspire. Studies in various parts of the world on geriatric population have thrown light on various aspects of healthy ageing and longevity. The number of elderly above 80 years of age is expected to increase to 11 million in 2021. In the developed world, the very old (80+ years) is the fastest growing group (WHO, 2007). Though there are many factors shown to affect the quality of life of elderly in urban local population. Lifestyle, illiteracy, poor hygiene and sanitation seem to have greater impact on health of the elderly in rural setting. Since sizeable proportion of our elderly population live in rural areas, it was thought worthwhile to explore their nutrition, diet, disease and mental health profile. There are very clear differences in the life style of rural population versus urban population. These differences have influence on health and nutrition profile of rural and urban elderly. Total elderly population in rural Gujarat is 23 lacs and in urban 11 lacs and same scenario can be seen in Vadodara district, in rural total elderly population is 1.4 lacs and in urban 1 lac (PRC data, 2001). Rural elders had significantly poor health status than urban elders. Higher prevalence of major and minor illness are observed in rural elders than urban elders (Census, 2001, Ganguli *et al.*, 1991, Joshi *et al.*, 2003; Manious and Khors, 2003; Purty *et al.*, 2005; Rajkumar *et al.*, 1998; Shah and Sundaram, 2004). Considering these facts and dearth of information on rural local elderly population, study was planed with the objectives to collect information on socio-demographic profile, lifestyle pattern, assessment of nutritional status, diet, disease and mental health status of elderly males belonging to different economic status and age groups.

METHODOLOGY.

Location of study area:

In present study, some selected villages based on proximity to Vadodara free from urban influence and not under VUDA (Vadodara Urban Development Association) were selected (Kalali, Talsat, Bil, Bhayali, Samiyala and Laxmipura). Within the village, purposive

sampling technique was used to select elderly male subjects between September to December 2007 . Besides this "snowball technique" method was also used in order to speed up the process.

Plan of study:

A total of 130 elderly male subjects were purposively selected. These elderly were broadly classified as LIG (n=65) and MIG (n=65). Per capita income less than and equal to 500 were considered as LIG and per capita income more than 500 were considered as MIG. Subjects belonging to these income groups were further categorized in two age groups *i.e.* younger elderly (60-74 yrs) and older elderly (75+ yrs).

Collection of data:

The information was collected with respect to socio-economic status, lifestyle factors by using semi structured questionnaire, nutritional status (anthropometric measurements), clinical parameters by [hemoglobin levels (Cyanmethemoglobin method), blood pressure (Spygmomanometer) and random blood glucose levels(Glucometer)], dietary profile (24 hour dietary recall method for 3 consecutive days and food frequency questionnaire), disease profile (checklist for major and minor illnesses) and mental health by Geriatric Depression Inventory Scale (GDI), Mini Mental Status Examination (MMSE) and Cognitive Impairment Test (CIT).

RESULTS AND DISCUSSION

Socio economic status:

Majority of elderly (78%) were married and 15.4% were widower and subjects were higher in number among LIG. In LIG the education status of elderly males showed (41.5%) were illiterate whereas among MIG 26% of subjects had completed secondary education. In LIG 63.1% of subjects had semi pucca house while in MIG 56.92% of subjects had pucca house. In MIG 98% of subjects had toilet in their house but in LIG 29% of subjects went for open defecation.

Life style factors:

Activity pattern:

In MIG elderly males spent more time in leisure activities, religious activities and exercise as compared to elderly belonging to LIG. It was found that in MIG, higher percentage of elderly males (66.15%) required assistance for daily activities when compared to subjects of LIG (45.38%) irrespective to age groups. Data also depicted that 86% of older elderly required support in all the activities as compared to 25% of younger elderly irrespective of economic status.

Addiction pattern:

Subjects belonging to LIG showed higher addiction for bidi, cigarette and oral consumption of tobacco than subjects of MIG. With regard to age groups, subjects belonging to 75+ years of age group were found with more addiction than the subjects of 60-74 years of age group irrespective of economic status may be because older elderly were sitting idle most of the time.

Nutritional status:

Anthropometry:

It is evident from Table 1 that majority of elderly (58.46%) in both the income and age groups fell below normal level of BMI (Asia Pacific 2004 classification).

As per Table 1, in LIG the prevalence of under weight was 70.77% whereas in MIG it was 46.15%.

Clinical parameters:

Hemoglobin:

Table 1 : Percentage of elderly males belonging to different economic status and age groups showing nutritional status as per BMI classification

BMI SCORES (kg/m^2)	LIG		SUB TOTAL	MIG		SUB TOTAL	GRAND TOTAL
	60- 74 Yrs n = 33	75 +Yrs n = 32	n = 65	60-74 Yrs n = 33	75 + Yrs n = 32	n = 65	N = 130
<18.5 (Underweight)	63.64 (21)	78.13 (25)	70.77 (46)	51.52 (17)	40.63 (13)	46.15 (30)	58.46 (76)
18.5 – 22.9 (Normal)	30.30 (10)	18.75 (6)	24.62 (16)	33.33 (11)	44.0 (14)	38.0 (25)	32.0 (41)
23 – 24.9 (Overweight)	3.03 (1)	3.13 (1)	3.08 (2)	6.06 (2)	6.25 (2)	6.0 (4)	5.0 (6)
≥25 (Obese)	3.03 (1)	0 (0)	1.54 (1)	9.09 (3)	9.38 (3)	9.0 (6)	5.0 (7)

Figures in the parenthesis denote the number of subjects

Majority of elderly males were falling below the normal level of hemoglobin. The total prevalence of anemia was found to be 60.76% in male elderly subjects. The prevalence of anemia in LIG was 73.85% which was higher than that of elderly males belonging to MIG 47.69%. There was no case of severe anemia in MIG but (7.69%) was observed in LIG. Around 69% of older elderly showed different degree of anemia when compared to 53% of younger elderly irrespective of their income groups.

Blood pressure levels:

Higher percentage of subjects with abnormal BP (> 140/100mmHg) was found in MIG than in LIG.

Random blood glucose levels:

It was observed that 34.62% of subjects were found under the abnormal levels (> 140 mg/dl). More number of subjects (38.46%) from MIG had abnormal blood glucose level than that of subjects of LIG (30.76%). In both the income groups, higher percentage of younger elderly were found with abnormal blood glucose levels than older elderly.

Diet profile :

Nutrient intake:

The mean nutrient intake of all the subjects (Table 2) indicated lower intake in terms of energy, protein, iron, calcium and β carotene when compared to RDA except fat irrespective to economic status and age groups. With regard to income groups, there was a considerable difference in the nutrient intake by the subjects belonging to difference economic status. It can also be inferred that half of elderly males could met energy intake between 51-75% of RDA in LIG whereas in MIG three forth of elderly males had energy intake between 76-100% of RDA. Consumption of iron and â carotene was found less than 50% of RDA among all the elderly males.

Food frequency:

Food frequency showed that green leafy vegetables, fruits (non citrus), sweets and snacks were consumed on frequent basis (more than 2-3 times in a week) by the subjects belonging to MIG. Older elderly decreased or omitted consumption of more number of food items like fried foods, spicy foods and milk than younger elderly.

General dietary aspects:

Forty one per cent of the subjects in all the income groups and age groups did not consume the recommended amount of water, *i.e.* at least 10-12 glasses, everyday. In LIG higher percentage of subjects (43%) used to observe fast as compared to MIG (39%), out of that number of younger elderly were found more (15%). More than 20% elderly used to do fasting once in a week or month. It was observed that more number of older elderly had changed their taste perception after the age of 75 years in both the economic status.

Disease profile :

Major illnesses:

Data on major health problems revealed higher prevalence of oral problem (81.7%), followed by locomotor problems (68.46%), gastrointestinal problems (61.54%) and respiratory problems (53.18%) as shown in Fig. 1.

Minor illnesses:

Most prevalent minor illnesses among the elderly males residing in rural areas were infections (90.0%) followed by eye problem (81.54%), lack of appetite (69.23%), pain in joints (67.69%) and sleep disturbance

Table 2 : Mean nutrient intake of elderly males belonging to different economic status and age groups

NUTRIENTS	RDA	LIG		MIG	
		60 – 74 Yrs. n = 33 Mean ± SD	75 + Yrs. n = 32 Mean ± SD	60 – 74 Yrs. n = 33 Mean ± SD	75 + Yrs. n = 32 Mean ± SD
Energy (Kcal)	1750	1265 ± 224	1124 ± 269	1417 ± 177	1351 ± 114
Protein (g)	60	29.27 ± 7.19	25.46 ± 4.75	41.99 ± 5.86	37.48 ± 3.84
Fat (g)	30	27.09 ± 4.40	25.28 ± 2.66	35.3 ± 3.35	32.34 ± 1.81
Calcium (mg)	400	227 ± 52	209 ±51	280 ± 45	264 ± 40
Iron (mg)	30	10.37 ± 2.46	10.228 ± 2.94	12.45 ± 3.09	11.73 ± 1.849
Vit. C (mg)	40	37.04 ± 10.11	30.174 ± 10.09	50.23 ±13.11	44.9 ± 6.26
Fiber (g)	20	12.77 ± 3.38	11.69 ± 1.56	13.59 ± 16.83	13.33 ±11.29
β carotene (µg)	2400	1288 ± 330	1157 ± 261	1388 ± 329	1299 ± 253

Source of RDA: Natrajan, 1991

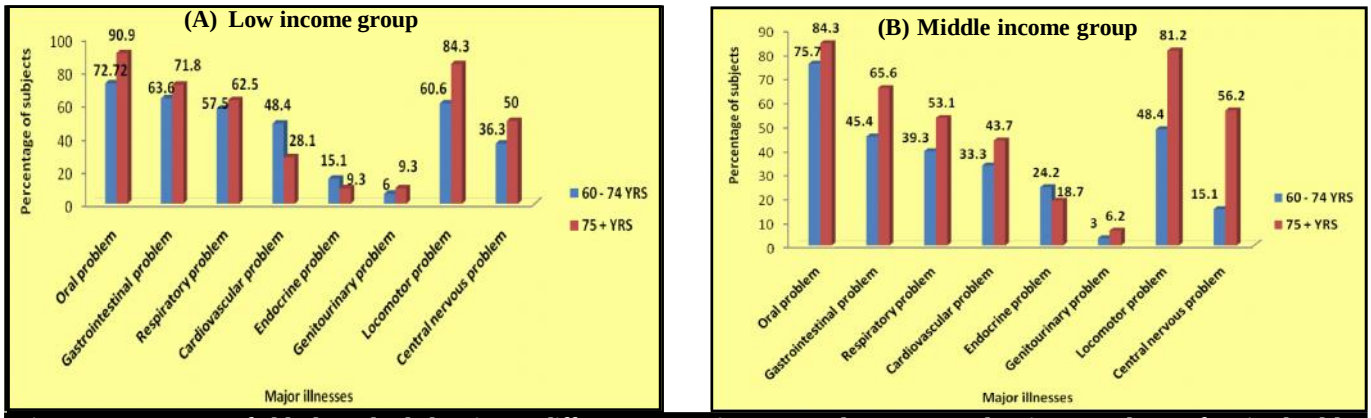

Fig. 1 : Percentage of elderly males belonging to different economic status and age groups showing prevalence of major health problems

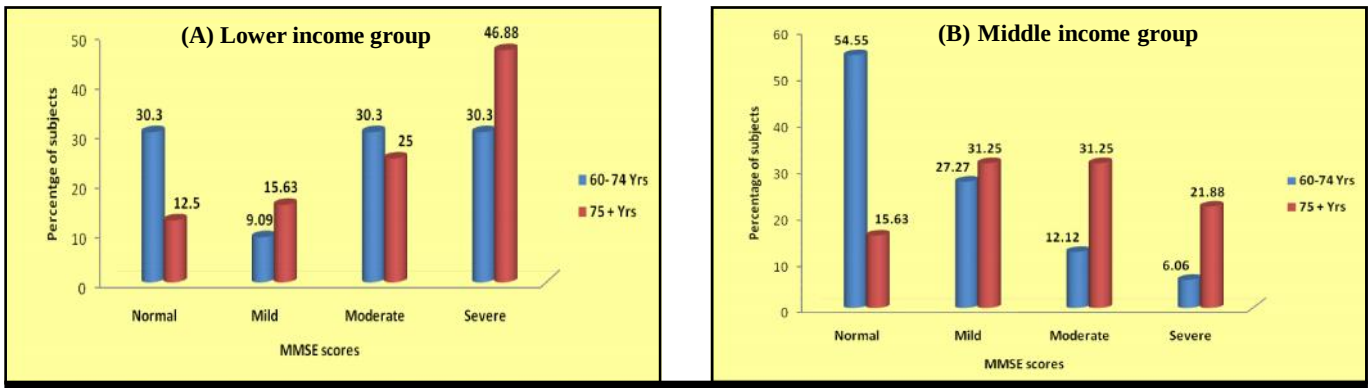

Fig. 2: Percentage of elderly male s belonging to different economic and age groups showing different degree of performance based on MMSE scores

(67.69%).

It was reported that the subjects belonging to LIG and older elderly had more health problems than subjects belonging to MIG.

Mental health :

According to Geriatric Depression Inventory scale, it was found that 70.77% of subjects were under different degrees of depression. In LIG, higher percentage of subjects were found depressed (80.0%) when compared to subjects of MIG (61.53%). Higher percentages of older elderly belonging to MIG were found depressed than younger elderly (Yesavage *et al.*, 1983).

Seventy two per cent of subjects fell under different degree of depressed performance (MMSE scores). In MIG the prevalence of depressed degree of performance was 64.61% which was less than LIG *i.e.* 78.46%. It was also found that higher percentage of older elderly (85.94%) fell under different degree of depressed performance than younger elderly (57.57%) irrespective of income groups as shown in Fig. 2 (Folstein *et al.*, 1975).

Study depicted that 38.46% of subjects were falling under abnormal category. In MIG 47.69% of subjects found under the abnormal category whereas in LIG 75.38% of subjects fell in abnormal category. It was also found that higher percentage of older elderly (73.44%) fell under abnormal category than younger elderly (50.0%) irrespective of economic status as shown in Fig. 3 (Katzman *et al.*, 1983).

Thus, the study clearly showed that poor economic

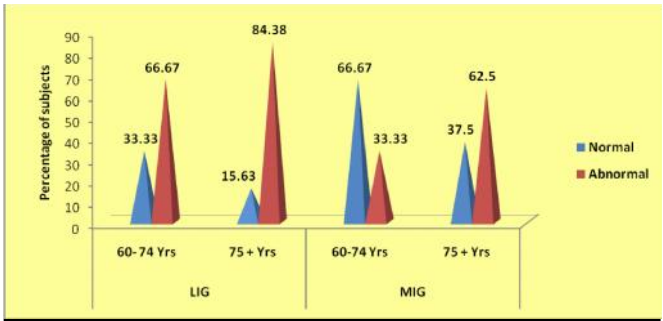

Fig. 3: Percentage of elderly males belonging to different economic status and age groups according to cognitive test scores

status and advancement of age has negative influence on the overall health of the elderly. Intervention strategy in relation to improve dietary habit and lifestyle improvements could serve as important step in improving quality of life of rural elderly.

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