

# Nutrition and health profile of elderly females residing in old age homes in four major cities of Gujarat

KOMAL CHAUHAN, PALLAVI MEHTA, HEMANGINI GANDHI, ANNAPURNA MAITY AND HETAL SHAH

India is witnessing demographic transition leading to rapid increase in number of elderly and old age homes. There is dearth of information about problems related to health, nutritional status and quality of life of the institutionalized elderly in many parts of the country. **Objectives:** Analysis of the old age homes (institutions) and nutrition and health profile of the elderly females residing in old age homes of major cities of Gujarat. **Methods:** Baseline data on basic infrastructures and facilities available in 12 old age homes of four major cities (Ahmedabad, Rajkot, Surat and Vadodara) of Gujarat state were collected. Baseline data on nutritional status, life style, general and mental health (GDI, CIT and MMSE) profile of 149 institutionalized elderly females aged  $\geq 60$  years were also collected. **Results:** Institutional profile revealed that old age homes of Ahmedabad and Baroda offered better facilities. Poor dietary and other facilities were offered by the old age homes in Rajkot. 75 per cent institutes provided first aid and emergency hospital facilities. Only 7 homes provided less than 3 meals per day. Mean age of the female elderly was 74 years. 33.6 per cent and 14.8 per cent subjects were overweight and obese, respectively. Anemia was prevalent in more than 45 per cent subjects. Dietary intake of protein, fibres, iron and  $\beta$ -carotene was less than the RDA. Problems of oral cavity, pain in joints, mobility, vision, neurological problem, sleep disturbance, constipation etc. were prevalent among the subjects. GDI scores showed no significant difference between the age groups and inmates of different cities but showed a significant ( $P < 0.01$ ) difference in MMSE and CIT scores. **Conclusion:** Location, environment, activities and meal pattern might have influence on health of the elderly. Better dietary health care with good recreation activities and long term observational as well as interventional studies are recommended for old age home.

**Key Words :** Old age homes, Institutionalized female elderly, Health and nutritional status

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## INTRODUCTION

Indian aged population is currently the second largest in the world (UN revision, 2006). India, like many traditional societies today faces a unique situation in providing care for its elderly because of fast erosion of old age support structures. Therefore, old age homes are a necessity in the present day

scenario as the younger generation is having problems in coping up with special needs of the elderly and required resources for the special care. Though there is increase in the number of old age homes, one is not sure of the situation under which elderly live. There is dearth of information about the diet, nutrition and disease profile and also other living conditions of elderly residing in old age homes of urban and rural areas within Gujarat state. 0.5 per cent Indian elderly males and 1.1 per cent females live in old age homes in urban areas and 0.5 per cent elderly males and 1 per cent females reside in old age homes in rural areas (Bose and Shankardas, 2001). Of this, 1.1 per cent elderly males in urban areas and 0.7 per cent males and 1 per cent females in rural areas reside in old age homes in Gujarat. With advancing age there is a reduced vitality and increased vulnerability to common disease

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both acute and chronic. Nutritional problems are highly prevalent among the elderly require appropriate counselling in long term management. The elderly become vulnerable to malnutrition and health owing to their economic dependence, social deprivation and change in behaviour towards diet and health care. Depression is the most common problem among elderly which not only affects their nutritional status but also their overall health (Mehta and Laddu, 2002).

## METHODOLOGY

### Study setting:

12 old age homes from four major cities of Gujarat state namely Ahmedabad, Rajkot, Surat and Baroda were purposively selected.

### Sample size:

149 elderly women aged of  $\geq 60$  years.

### Sampling technique:

Old age homes and elderly subjects from each old age home were selected purposively according to their willingness and consent.

Baseline data were collected from 12 old age homes regarding the infrastructure and facilities provided to the inmates, general sanitation and hygiene conditions of the institution, personal hygiene of the working staff, medical and transportation services provided, meal provided to the inmates. Semi-structured questionnaire was used for the same. Among the 12 old age homes 149 elderly females aged  $\geq 60$  years were randomly selected. Baseline data were collected on socio-demographic profile using a semi structured questionnaire, activity pattern by 24-hour activity recall, nutritional status in terms of anthropometric measurements (height: measuring tape, weight: bathroom scale, and BMI was calculated), dietary profile using 24-hour dietary recall method, disease profile using checklist for various health problems, hemoglobin, mental health status using geriatric depression inventory (Yesavage, 1983), mini mental health status (Folstein *et al.*, 1975) and cognitive impairment test (Katzman *et al.*, 1983) etc.

### Activity pattern:

24 hour activity recall of all the subjects was noted down and then they were grouped on daily routine activities like at home or outside work, leisure, religious, social activities and sleep.

### GDI scale:

The geriatric depression inventory scale (Yasavage *et al.*, 1983) was designed as a screening instrument for the depression in the elderly persons. Concepts measured by this 30-item scale include: cognitive complaints, motivation,

future/past orientation, self-image, losses, agitation, obsessive traits and mood itself. A score of 11 and more is the indication for presence of depression, yielding 84 per cent sensitivity and 95 per cent specificity rate.

### MMSE scale:

Mini mental status examination scale (Folstein *et al.*, 1975) was used to assess the orientation, registration, attention, calculation, memory, and language and visuo-special abilities of the subjects. The questionnaire contained different sections and the maximum score was 30. The total of all the answers give the extent of mental health. A cut-off for depression was 20-11 and those who scored more than 26 were considered normal, those below 26 were considered having mental impairment.

### CIT scale:

Cognitive impairment test scale (Katzman *et al.*, 1983) measures the cognitive function. The score of 1 was given for each incorrect response; maximum weighed error score was 28. Score of 0-11 indicated normal percentage and 11-28 indicated abnormality.

### BMI (Body Mass Index) :

Height (cm) and weight (kg) of women were measured using height meter and bathroom scale. BMI was calculated using the formula weight (kg)/ height (m<sup>2</sup>). Based on the BMI scores, the women were categorized as follows: Less than 18.4 – underweight, 18.5 to 22.9 – normal, 23 to 24.9 – overweight, more than 25 – obese (WHO, 2006).

### 24 hour dietary recall :

Dietary recall of last 24 hours was done using semi structured questionnaire and standard cups and spoons. The average nutrient intake was calculated in terms of calories, protein, fat, folic acid, vitamin C, vitamin B12 etc. and compared with the RDA for elderly.

### Statistical analysis :

Collected data were analyzed using appropriate statistical tests such as score system, frequency distribution, percentages, mean, SD, paired' test, F test and chi-square test.

## OBSERVATIONS AND ASSESSMENT

Infrastructure and facilities of 12 old age homes provided to the inmates were compared and expressed in number and per centage.

### Infrastructure and facilities provided by the institutions :

Results on the infrastructure facilities revealed that all the institutions had kitchen facilities. 100 per cent old age

homes were providing kitchen facility. 75 per cent institutions were providing sitting area as well as recreation room. More than 58 per cent institutions were providing library and compound facilities, 83.33 per cent were providing railing, swings and dining hall facilities. 91.6 per cent institutions had prayer hall for the elderly but only 41.6 per cent and 50 per cent homes were providing physiotherapy and lift facilities (Fig. 1). Mobility and related morbidities are associated with aging but such problems and related morbidities like falls fracture etc. could be managed by providing appropriate facilities. Bathroom, toilet, upholstery and the building were in good condition only in six institutions thus gave an indication of vulnerability towards infectious diseases among the elderly inmates of the institutions. Only five institutions had transportation, hobby classes, and attendants for special needs and call for help facility during emergency. Most of the institutions had security, provision for recreational trips, meeting family and friends and religious activities. 75 per cent institutions provided first aid facilities. Study carried out in Vadodara on free living elderly self care giver, the frequency of meal provided in the old age homes was very low and this might result in poor food intake leading to more of physiological and psychological problems amongst institutionalized elderly (Chauhan and Mehta, 2007).

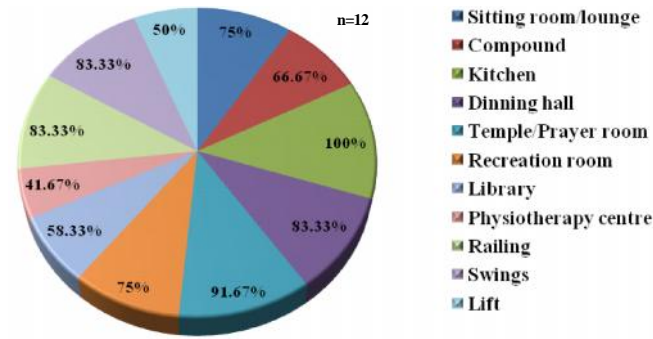


Fig. 1: Distribution of old age homes according to the infrastructure facilities (n=12)

**Meal pattern :**

Data on food service provided revealed that only 50 per cent institutions provided breakfast and snacks. 100 per cent institutions provided full lunch but only 8.3 per cent, 50 per cent and 41.6 per cent provided full dinner, half dinner and

one single item as dinner, respectively. Number of food items was limited to half dinner (Fig. 2). Addiction was prohibited in all the institutions. Most of the institutions provided milk and milk products but seasonal fruits were provided by only three institutions. Study on 80 edentulous elderly subjects reported that 50 per cent and 65 per cent of subjects had non frequent consumption of calcium rich foods and hard to chew foods. Thus, low vitamin D level (and low calcium intake) seems to be a major contributing factor to poor bone health and osteoporosis in India (Puliyel *et al.*, 2000).

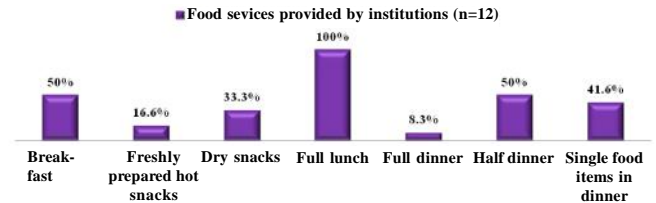


Fig. 2 : Percentage of institutes showing the meal pattern (n=12)

**Socio-demographic profile of the elderly study subjects :**

Socio-demographic data showed that the mean age of the study population was 74 ± 8.3 years. 65.8 per cent elderly subjects were widow. Tenure of staying in the old age homes was quite long *i.e.* subjects were staying since five to ten years and 30.9 per cent were staying for more than ten years. Such condition might contribute to development of loneliness and to poor mental health status. Forty seven per cent subjects had primary school education and 23.5 per cent were illiterate.

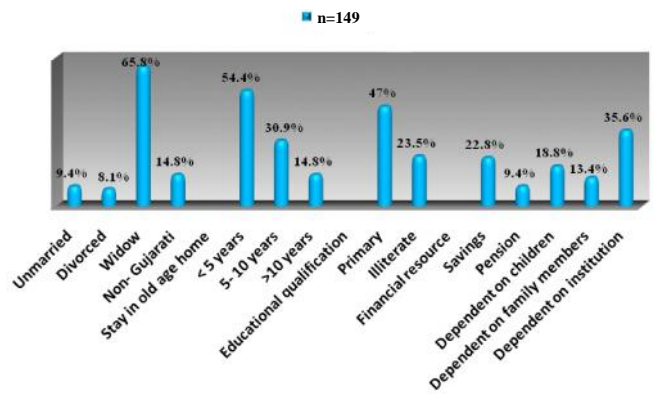


Fig. 3: Socio-demographic profile of institutionalized elderly female (n=149)

**Table 1 : Mean hours spent per day on different activities by institutionalized female elderly subjects (n=149)**

Type of activity	Ahmedabad n= 37	Vadodara n= 38	Rajkot n= 37	Surat n= 37	Total n=149	F value
Daily activities	5.35±0.71	4.44±0.89	5.18±0.81	4.89±0.73	4.96±0.85	9.42***
Leisure time	2.75±1.38	3.71±1.67	3.10±1.5	3.37±1.53	3.24±1.55	2.62NS
Religious activities	3.35±1.15	2.60±0.88	3.21±1.39	2.4±1.09	2.89±1.2	5.97***
Physical activities	0.43±0.6	0.71±0.75	0	0.38±0.54	0.38±0.6	10.39***
Idle time	5.62±1.8	5.11±2.0	6.11±1.9	5.31±2.3	5.53±2	1.63NS

\*\*\* Significant at p< 0.001

NS= Non - significant

Financial expenditure was provided by the institutions to 35.6 per cent subjects and 32.2 per cent were dependent on children and other family members for the same. Only 22.8 per cent and 9.4 per cent subjects had savings and pension for their expenses (Fig. 3).

**Activity pattern :**

Activity pattern showed a significant difference (p<0.001) in the daily activities, religious and physical activity among the elderly subjects of old age homes of different cities. Physical activity was not encouraged among the institutionalized elderly study subjects in Rajkot. Maximum time was spent in leisure activities and as idle time (Table 1). A study conducted in the year 2009 by Mehta *et al.* (2009), reported that more than 80 per cent elderly males and females (≥60 years) residing in Vadodara city was leading a sedentary lifestyle. Several cohort studies show that physical inactivity in the old age populations are responsible for decline of bone mass and the major risk factor for osteoporotic fractures (Land Coup *et al.*, 1993).

**Nutritional status :**

Nutritional status was good among the institutionalized elderly females of Ahmedabad city. Overweight and obesity were prevalent among 33.6 per cent and 14.8 per cent elderly females (Fig. 4).

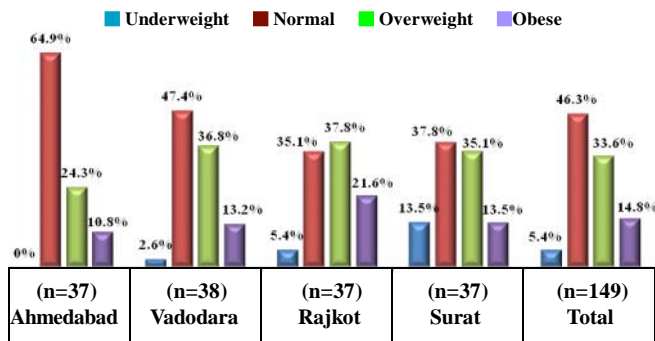


Fig. 4 : Nutritional status of institutionalized females subjects of four cities (n=149)

**Diet profile :**

Mean dietary protein, fibre; beta-carotene and iron intake was less than the RDA. Poor dietary fibre intake might contribute to obesity. Minimum two to three signs of iron deficiency anemia like pallor in palm tongue and nails were prevalent among the study subjects and poor dietary iron intake might be one of the contributing factors. No significance difference was observed in the nutrient consumption of the elderly subjects of different cities. A study by Scott and Beiter *et al.* (2006) in USA on 80 elderly males and females revealed that self neglecting elderly were at risk for folate, antioxidants

**Table 2 : Mean dietary intake of nutrients by institutionalized female elderly (n=149)**

Nutrients	RDA*	Intake by the subjects
Energy (kcal)	1350	1279.6±372.9
Proteins (g)	50	41.1±32
Fats (g)	30	46±22.7
Fiber (g)	20	4.4±1.5
Calcium (mg)	400	575.6±162.5
Iron (mg)	28	22±141.6
β- carotene (ug)	3000	2199.3±1410
Vitamin C (mg)	40	150.8±86.5

\* Source: Natrajan, 1991

and vitamin D deficiency. Care giving is a strenuous job particularly if the elderly are sick and disabled. Therefore, there is a need to evoke the self care giving behavior that is there in all of us. Mehta and Laddu (2002) concluded that consumption of vitamin C, vitamin B<sub>6</sub> and vitamin B<sub>12</sub> was 25 per cent lower than the RDA among the depressed elderly subjects aged 45-60 years residing in Baroda. Parnami *et al.* (2005) conducted a study on 250 women elderly aged ≥ 65 years in Vadodara city and reported prevalence of anemia was 51.6 per cent.

**Morbidity profile :**

Irrespective of the institutions in different cities, the most common problems prevalent among the elderly female subjects were oral cavity problem (84.6 %), locomotor problem (74.5 %), cardiovascular problem (52.3 %) and problems of central nervous system (51.7%). Vision problem, neurological problem, sleep disturbance, backache and constipation were also prevalent among them (Fig. 5). Studies showed that most prevalent problem were those related to GIT, CNS, respiratory, followed by locomotors and oral cavity problems (Mehta and Mehta, 1999).

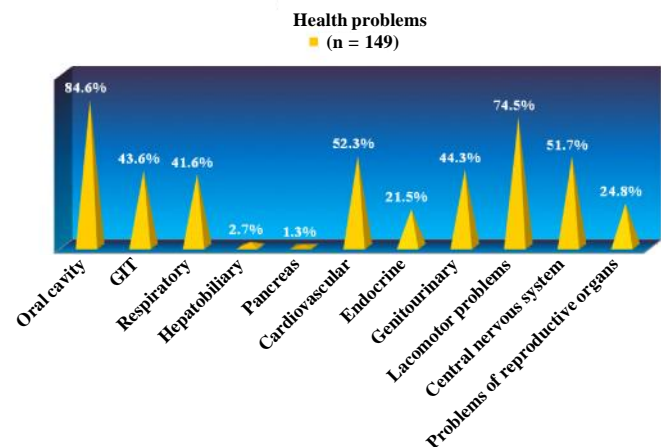
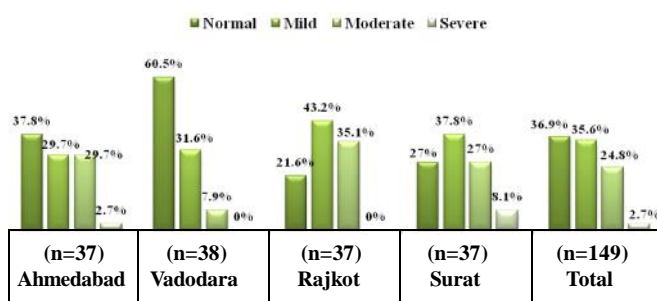


Fig. 5 : Percentage of the female elderly subjects having health problems (n=149)

**Mental health status :**

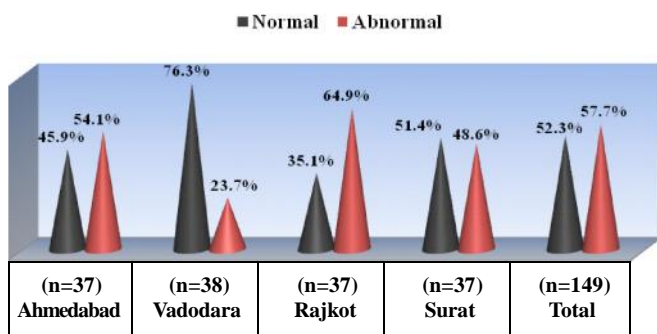
A significant ( $p < 0.01$ ) difference was observed in the MMSE scores among the elderly subjects of different cities (Fig. 6). Looking at the MMSE scores irrespective of cities, mildly and moderately poor mental health status were prevalent among 35.8 per cent and 24.8 per cent elderly study subjects. Mental health status of the female elderly might be affected by the environment of the institutions, activity pattern and the nutritional status. A study carried out by Martin *et al.* (2003) on 125 elderly male and 125 elderly female subjects ( $\geq 50$  years) showed that bereavement, sleep disturbances, disability, prior depression and female gender appeared to be important risk factors for depression among elderly community subjects.



Chi-square value: 22.73 (significant at  $p < 0.01$ )

**Fig. 6 :** Percentage of subjects showing performance in MMSE between the cities

Cognitive impairment was prevalent among 57.7 per cent institutionalized elderly females but the magnitude was in Rajkot with 64.9 per cent (Fig. 7). Severe, moderate and mild depression were prevalent among 10 per cent, 60 per cent and 30 per cent elderly subjects aged 50-60 years, using Beck's Depression Inventory (Desai, 2008).

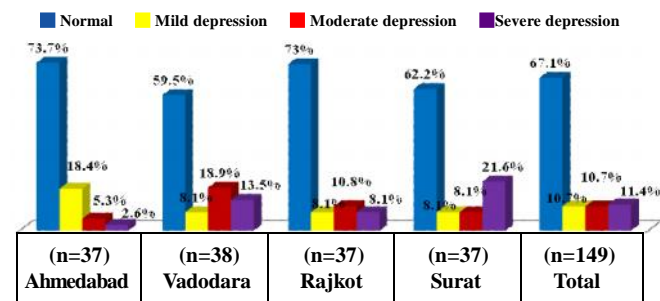


Chi-square value: 13.76 (significant at  $p < 0.01$ )

**Fig. 7 :** Percentage of elderly female subjects showing CIT scores between the cities

No significant difference was observed in the GDI scores when compared between the age groups and also between the inmates of different cities (Fig. 8). Mild, moderate and severe depression were prevalent among 10.7 per cent, 10.7 per cent

and 11.4 per cent elderly female subjects, respectively. Hence, institutions with better environment in terms of freedom, activities and involvement of inmates in several did show better influence on mental health. In Gujarat, 25 per cent elderly populations were suffering from depression and 16.7 per cent from schizophrenia, 7.9 per cent from anxiety and 8.3 per cent from bipolar disorder (Sharma and Dak, 1980).



**Fig. 8 :** Percentage of elderly female subjects showing prevalence of depression

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