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Dr. MD Vidhyashree
Assistant professor, Department of Community Medicine, Government medical College - Omandurar Government Estate, Chennai, Tamil Nadu, India

Dr. R Umadevi
Professor, Department of Community Medicine Balaji Medical College and Hospital, Chennai, Tamil Nadu, India

Dr. B Kamini
Associate professor, Department of Community medicine Muthukumaran Medical College Chennai, Tamil Nadu, India

Dr. R Rama
Assistant professor, Department of Community Medicine, Government medical College - Omandurar Government Estate, Chennai, Tamil Nadu, India

A cross sectional study on morbidity profile among geriatric population in a rural area in Kancheepuram district of Tamil Nadu

Dr. MD Vidhyashree, Dr. R Umadevi, Dr. B Kamini and Dr. R Rama

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Abstract
The WHO has given significance to geriatric health by choosing "Ageing and Health" with the theme of "Good health adds life to years" as its topic for the world health day for the year 2012.It highlights on productive ageing, not mere adding years to life, but adding life to years.
Objective: The present study was done to assess the morbidity profile of the elderly population in rural field practice area, Sripuram (RHTC) of Sree Balaji Medical College & Hospital and also to study the association between certain socio - demographic and economic determinants with the morbidities.
Methods: This is a community based cross sectional study conducted among elderly men and women aged $\geq$ 60 years who belonged to the rural field practice area, Sripuram, located at Kancheepuram district of Tamil Nadu. Simple random sampling technique was applied to draw the required sample size of 300.
Results: Overall prevalence of the geriatric morbidity was 277 (92.3%) with 95% CI of 88.7 – 94.9. The highest morbidity was found with diabetes 118(39.3%) followed by Musculoskeletal problems 112 (37.3%), Hypertension 107 (35.7%). The association between certain demographic characteristics like age, occupation, marital status and Some of the socio-economic characteristics like socio economic status, type of family and source of income were observed to be statistically significant with the geriatric morbidities.
Conclusion: The present study gives the morbidity pattern prevalent among geriatric population in rural area and it also marks the need for the elderly people to be educated regarding their health problems and importance of regular treatment and follow up.

Keywords: Musculoskeletal problems, morbidity pattern, Hypertension, geriatric and demographic characteristics.

Introduction

The world health day topic for the year 2012 was "Ageing and Health" with the theme of "Good health adds life to years". It highlighted on importance of geriatric health and how it contributes to productive ageing, not mere adding years to life, but adding life to years. WHO defines Old age as "the period of life when impairment of physical and mental functions has become increasingly manifested by comparison in the previous period of life" [1]. Older persons constitute one of the most vulnerable sections of the society. Most people enter old age in poor health status as a result of chronic illness, social deprivation, poor access to health services. People above 60 years are considered 'old' and as constituting the 'elderly' section of the population and the study of old age is called Geriatrics. The word 'geriatric' was coined by Nascher in 1914 and, is derived from Greek word *gerus* and *iatrea,* which means old age and treatment respectively. "Old age can be divided into three categories: Young-old (60-75 years), Old-old (75-85 years) and Oldest-old (85 + years)" [2]. Older people usually suffer from chronic conditions. Fifty percent of aged Indians have chronic disease and disabilities. Frequent chronic ailments among the elderly are Diabetes Mellitus, Hypertension, Cardiovascular diseases, Arteriosclerosis, Arthritis, Dementia, Kidney diseases, Cancer, etc. Most often elderly may suffer from multiple chronic conditions, visual defects, hearing impairment and deterioration of speech which can cause social isolation. A feeling of low self-worth may be felt due to the loss of earning power and social recognition, which is harmful. The health problems of the elderly in most of the developing countries are aggravated by the lack of social security, inadequate accessibility

Corresponding Author:
Dr. B Kamini
Associate professor, Department of Community medicine Muthukumaran Medical College Chennai, Tamil Nadu, India

for health care, rehabilitation and recreation. Studies on the patterns and determinants of health seeking behaviour for chronic diseases among elderly can yield information to help in designing comprehensive health care programmes for them.

According to Seneca, Old age is an incurable disease and James Sterling Ross Commented as you can't heal old age but you can protect, promote and extend it. Hence a study to assess the present morbidity pattern of rural elderly persons will help to suggest a remedial measure. There is a need to strengthen geriatric care services in the existing public health system so that the increasing care & demands of the elderly can be met.

Materials and Methods

Study design: This is a community based cross sectional study conducted among permanent residents of rural area Sripuram, located at 5 kms from Chrompet in Kancheepuram district of Tamil nadu. The study subjects included elderly men and women aged $\geq$ 60 years who belonged to the rural field practice area.

Sample size: According to Ansari M A *et al*. the prevalence of geriatric morbidity was 58.1% in rural area of Aligarh. This was taken for sample size calculation

P = 58.1% Q = 100 – P = 41.9%

With Allowable Error 10% of Prevalence (58.1) which is,

L = 5.81

$N = Z\alpha^2 PQ/ (L \% (P = 277.09$

Adding 5% for non response =290.9 and the final sample size was derived to be 300.

Sampling method

Simple random sampling. The list of elderly staying in the locality was obtained from RHTC. Random numbers were generated using the computer software and the subjects for the study were selected accordingly.

Study population

Inclusion criteria: All permanent Residents of rural field practice area, Sripuram RHTC of Sree Balaji Medical College aged 60 yrs and above who gave the consent for the study.

Exclusion criteria: Elderly who were not willing to participate.

Consent and ethical approval

The study was approved by institutional ethics committee of Sree Balaji Medical College Ref. no. 002/SBMC/IHEC/2013-113 dated 6/6/2013. Informed consent in their local language (Tamil) was obtained from the study participants before getting the information from them.

The personal interview schedule consists of demographic profile, health problems, family profile and socio-economic status. The clinical examination consists of

General Physical Examination.

Measurement of height, weight, vital signs.

Systemic examination

Modified B.G Prasad scale 2014 was used to assess the socio-economic status of the elders. The diagnosis of morbidities was made by history and clinical examination which was confirmed by medical records possessed by the individuals.

Data collection method

The data was collected by making house to house visits and interviewing all the selected subjects. A Portable weighing machine was used to record the weight of the study subjects. Inelastic measuring tape was used for measuring the height of the elders. Body Mass Index (BMI) was calculated according to 'Quetelets' Index which is a relationship between the height and weight of an individual arrived at by dividing body weight (kg) and height in m^2. Normal BMI: 18.0-22.9 kg/m^2, Overweight: 23.0-24.9 kg/m^2, Obesity:>25kg/m^2 [33].
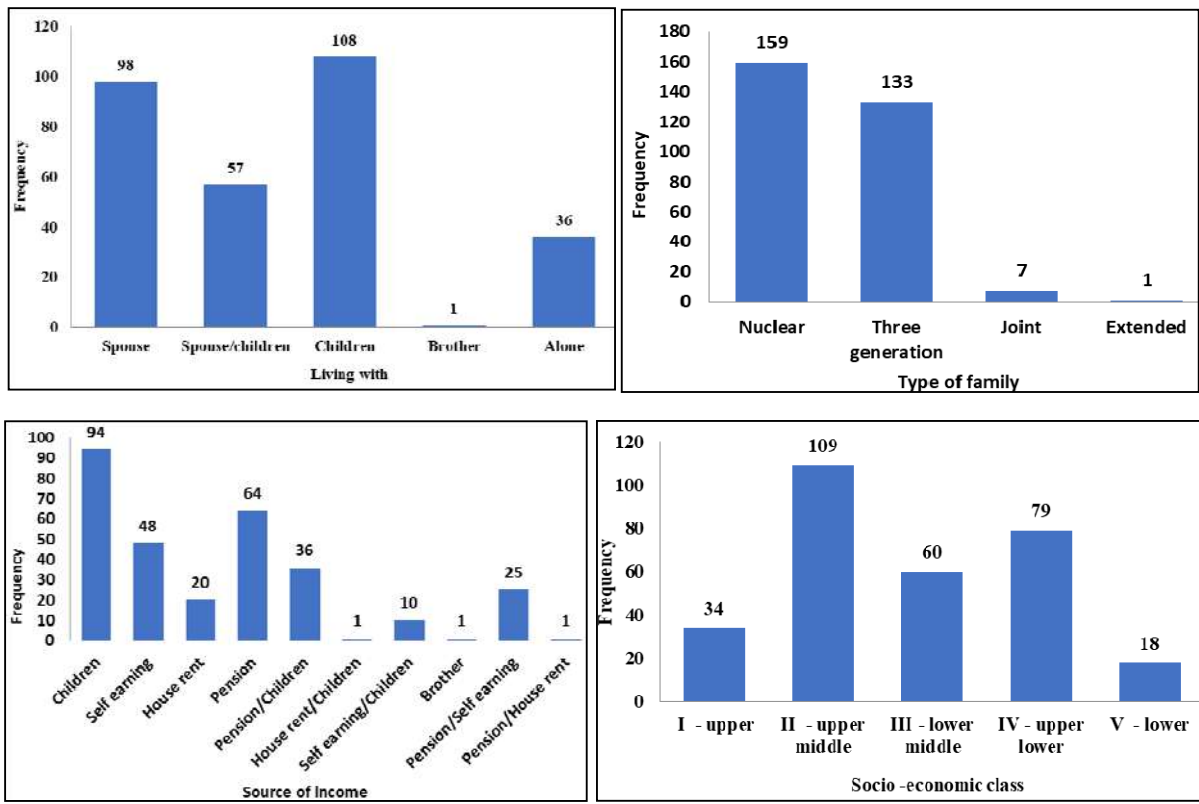
Mercury sphygmomanometer was used to measure blood pressure. BP was measured on the right arm in the sitting posture, after a resting period of ten minutes.

Socio Demographic Characteristics
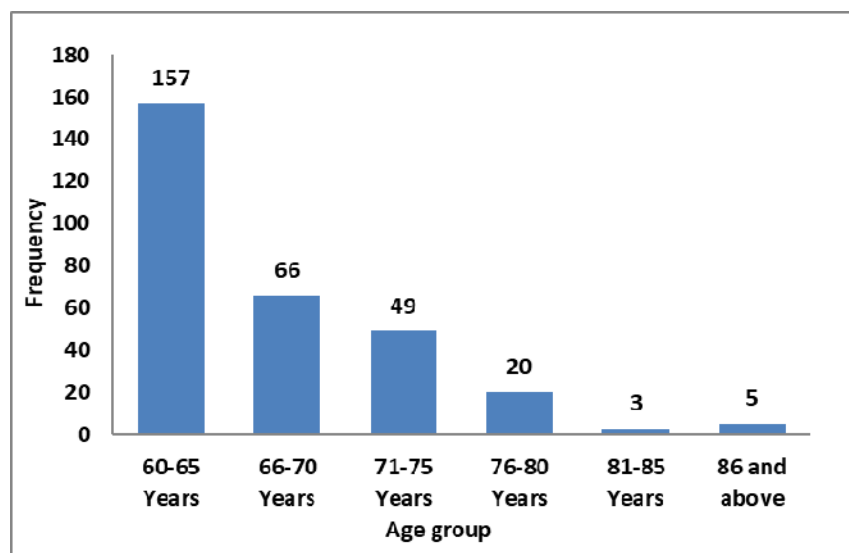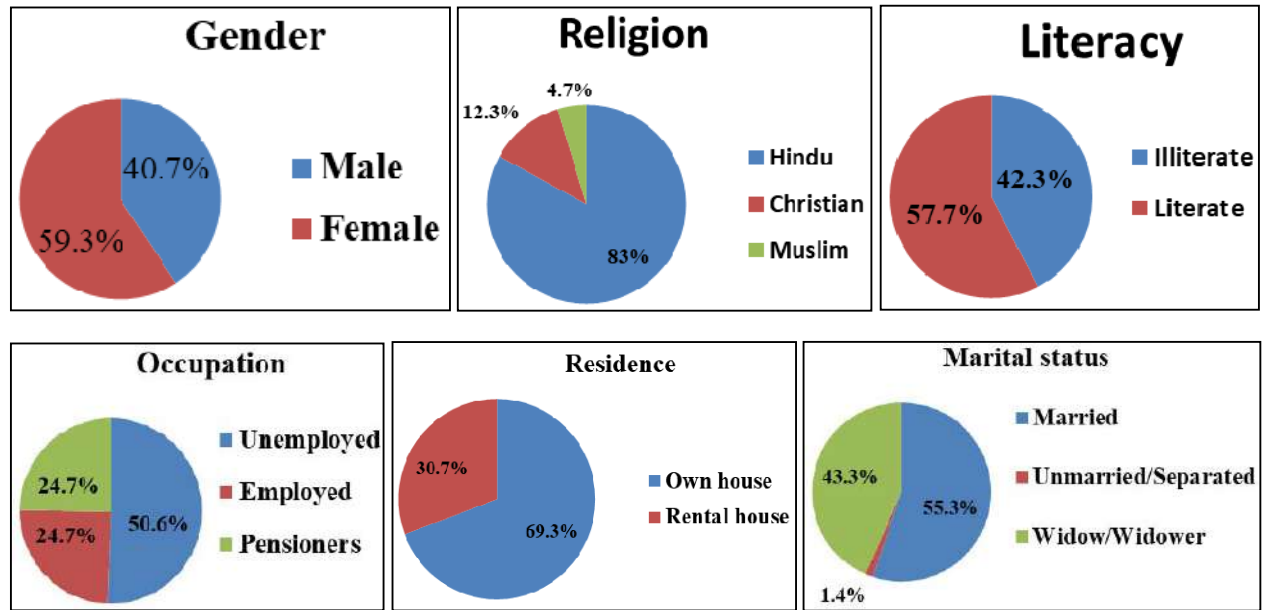
Socio Economic Characteristics

Out of 300 elders studied, 178 (59.3%) were female and 122(40.7%) were male. The age of the subjects in the study population ranged from 60 to 89 years with the mean age of 67 ± 6.5 years. The education status of the elderly showed that 173(57.7%) of subjects were literate, while the remaining 127 (42.3%) were illiterate. Of the total study population 74(24.7%) were employed, while 74(24.7%) were retired and the remaining were unemployed 152 (50.7%). In the present study, 159 (53%) of them belonged to nuclear family. And 133 (44.4%) were in three generation type remaining 2.6% were joint or extended type. Similar finding were observed by Shraddha K *et al*. [3] found that majority of the respondents belonged to Nuclear family (48.9%).

Table 1: Prevalence of geriatric morbidities

S. No	Morbidity	N	%	95% CI
1.	Musculoskeletal problems	112	37.3	32.0 – 43.0
2.	Diabetes Mellitus	118	39.3	33.9 – 45.0
3.	Hypertension	107	35.7	30.4 – 41.3
4.	Respiratory illness	96	32.0	26.9 – 37.5
5.	Anemia	66	22.0	17.6 – 27.1
6.	Neurological problems	7	2.3	1.1 – 4.8
7.	UTI	53	17.7	13.7 – 22.4
8.	Prostatomegaly	3	1.0	0.3 – 3.1
9.	Post-menopausal disorders	3	1.0	0.3 – 3.1
10.	Carcinoma	0	.0	–
11.	Renal problems	3	1.0	0.3 – 3.1
12.	Hearing impairments	23	7.7	5.1 – 11.3
13.	Visual impairments	107	35.7	30.4 – 41.3
14.	Skin disorders	6	2.0	0.9 – 4.4
15.	Constipation	38	12.7	9.3 – 17.0
16.	Sleeping disorders	6	2.0	0.9 – 4.4
17.	Cardiac problems	10	3.3	1.8 – 6.1
18.	Thyroid dysfunction	12	4.0	2.3 – 6.9
19.	Any one morbidity	277	92.3	88.7 – 94.9

The highest morbidity was found with diabetes 118(39.3%) followed by Musculoskeletal problems 112 (37.3%), Hypertension 107 (35.7%),Visual impairment 107(35.7%), Respiratory illness 96 (32%), Anemia 66 (22%), UTI 53(17.7%), Constipation 38 (12.7%), Hearing impairment 23 (7.7%), Thyroid dysfunction 12(4%), Cardiac problems 10 (3.3%), Neurological problems 7 (2.3%), Skin infections 6 (2%), Sleeping disorder 6 (2%), Renal 3 (1%), Prostatomegaly 3 (1%), postmenopausal disorder 3 (1%) and cancer 0 (0%). Overall prevalence of the geriatric morbidity were 277 (92.3%) with 95% CI of 88.7 – 94.9.

Table 2: Treatment seeking pattern for geriatric morbidities

S. no	Character	Frequency (N)	%
1	**Treatment**		
	Regular	252	84
	Irregular	48	16
2	**Type of treatment**		
	Allopathic	297	99
	Homeopathy	1	0.3
	Siddha	2	0.7
3	**Disease Under control**		
	Yes	222	74
	No	78	26
4	**Medical Support**		
	Self	192	64
	Self/Spouse	60	20
	Self/Children	22	7.3
	Children	25	8.3
	Brother	1	0.3
5	**Medical insurance**		
	Yes	11	3.7
	No	289	96.3

Table 2 shows the health seeking behavior of the elderly: Out of 252 (84%) elder were on regular treatment and 222(74%) were under control and mostly on allopathic. In

the present study, 99% respondents preferred allopathic. Joshi K *et al*. [4] shows the most popular type of medicine preferred by those who were seeking treatment was allopathic (92.2%.)

Table 3: Association between demographic characteristics with morbidities

S.no	Character	N	Morbidity N	(%)	Chi square	OR	95% CI	P value
1	Age							
	> 70 years	77	76	98.7	5.9	8.3	1.1-62.8	0.015
	≤ 70 years	223	201	90.1				
2	Sex							
	Male	122	111	91	0.5	0.7	0.3-1.7	0.467
	Female	178	166	93.3				
3	Literacy							
	Illiterate	127	115	90.6	0.9	0.6	0.2-1.5	0.32
	Literate	173	162	93.6				
4	Occupation							
	Unemployed	152	146	96.1	6	3.6	1.2-8.2	0.014
	others	148	131	88.5				
5	Marital status							
	Sing/wid/sep	134	130	97	7.5	4.2	1.4-12.7	0.006
	Married	166	147	88.6				

Table 3 shows the association between demographic characteristics with morbidities and association between age and morbidity were significant, above 70 years has higher risk for morbidity (x^2=5.9, OR =8.3, p value=0.015). Association between occupation and morbidity were significant, unemployment has higher risk for morbidity. (x^2=6.0, OR = 3.6, p value=0.014). Association between Martial status and morbidity were significant, widow/widower (x^2=7.5, OR =4.2, p value=0.006).

Table 4: Association between socio-economic characteristics with morbidities

S. no	Characters	N	Morbidity		Chi square	OR	95% CI	P value
			N	(%)				
1	Source of income							
	Others	217	210	96.8	21.9	7.2	2.8-18.1	0.001
	Self-earning	83	67	80.7				
2	Type of family							
	Nuclear	159	141	88.7	6.4	0.3	0.1-0.8	0.012
	Others	141	136	96.5				
3	Family support							
	No support	191	169	88.5	11	0.1	0.01-0.54	0.001
	Support	109	108	99.1				
4	Socio-economic status							
	Lower	149	144	96.6	7.8	3.9	1.4-10.8	0.005
	Upper	151	133	88.1				

Table 4 shows the association between socio-economic characteristics with morbidities and the association between source of income and morbidity were more significant, economically dependent elder has more risk for morbidity (x^2 =21.9, OR = 7.2, p-value = 0.001). Association between the type of family and morbidity were significant, nuclear type of family has risk for morbidity (x^2 = 6.4, OR = 0.3, p-value = 0.012). Association between family support and morbidity were more significant, when there is no support from the family members there is a risk for the morbidity (x^2 = 11.0, OR = 0.7, p-value = 0.001). The present study, socio -economic strata: upper 34(11.3%), upper middle109 (36.4%), lower middle 60(20%), upper lower 79(26.3%) and lower 18(6%).

Discussion

Out of 300 participants, 52.3% (157) of respondents belong to 60 – 65 yrs, 22% (66)were in 66 – 70 yrs, 16.4% (49) were in 71 – 75 yrs, 6.7% (20) were in 76 – 80 yrs, 1%(3) were in 81 – 85 yrs and 5% (1.7) were in 86 yrs and above. A study done by Chauhan P et al. [5] showed that 42.8% of the respondents were in the age group of 60 – 65 yrs and 8.3% were above 80 years. In the present study, females 178(59.3%) outnumbered the males 122(40.7%). Similar results were observed by Chauhan P et al. [5] female 66.2% outnumbered the male 33.8%.
.According to Ajitha K et al. [6] prevalence of overweight and obesity were more among females 31.4% than male 25.4%. In the present study116 (38.7%) elders has normal BMI and 183(61%) were obese and 1(0.3%) were undernourished.
In the present study, socio -economic strata: upper 34(11.3%), upper middle109 (36.4%), lower middle 60(20%), upper lower 79(26.3%) and lower 18(6%). According to Kamble S V et al. [7] majority of the respondent in study sample belonged to socioeconomic class IV (34.6%) & III (32.0%). 5.9% respondents were from socioeconomic class I, 17.8% from socioeconomic class II & 8.7% from socioeconomic class V. Majority of morbidity were in class IV and class V for whom treatment may not be affordable. In the present study, 159 (53%) of them belonged to nuclear family. And 133 (44.4%) were in three generation type remaining 2.6% were joint or extended type. Similar finding were observed by Shraddha K et al. [3] found that majority of the respondents belonged to Nuclear family (48.9%). In the present study, 99% respondents preferred allopathic. Joshi K et al. [4] shows the most popular type of medicine preferred by those who were seeking treatment was allopathic, which was adopted by nearly 92.2%. In the present study only 3.7% has medical insurance. Similar findings were observed by Ingle GK et al. [8] which hardly covers about 11% of elders and the majority (89%) remains uncovered with any social security protection. So there is a need for awareness regarding the social security.

Relationship with socio-demographic and economic variables:

In the present study, statistically significant association between presence of morbidity and other socio - demographic factors like Age, occupation, marital status, personal habits like smoking and alcohol consumption, socio economic factors like socio economic status, type of family and income were observed. According to Joshi K et al. [4], the relationship of morbidity among elderly people with socio-demographic variables age-wise, higher mean morbidity was noticed in above 70 years age group (P<0.001) and there was no significant difference by sex in the univariate analysis. According to Kumar R et al. [9] the association of age and presence of morbidity in elderly was found to be statistically significant (P<0.005). In the present study there was association between morbidity and age (P<0.015), occupation (P<0.014), marital status (P<0.006), type of family (P<0.001) and income (P<0.001). In the present study association between smokers and alcohol consumption was significant but BMI was not significant. According to Madhu T et al. [10] association with tobacco was significant (P<0.001) and BMI also significant P<0.05. Association with socio- demographic variables with diabetes, musculoskeletal, visual impairment, hypertension and anemia were also has significance.

Limitation

The diagnosis of some diseases was based on the Medical records available with the elders.

Recommendation

Elders need to be educated regarding their health problems and importance of regular treatment and follow up
Assessment on issues like socioeconomic problems, morbidity pattern, and psychological stress and social security needs of the elderly should be done on nationwide.
The WHO has recently taken initiatives towards elderly-friendly primary healthcare and has introduced 'Age-Friendly Primary Health Care Centers Toolkit' aiming at improving the primary healthcare responses to older persons [63].

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