ORIGINAL ARTICLE

A study on morbidity pattern among geriatric population of an urban slum, Dehradun, India.

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Abstract

Background: Ageing is a process of deterioration in the individual's functional capacity that results from structural changes as age advances. India has acquired the label of "an ageing nation" with 7.7% of its population being more than 60 years old. Research on geriatric morbidity and related risk factors are required to improve the delivery of health care to the elderly. This study was an attempt to study the morbidity status of geriatric people that may serve as a baseline data and also help in planning the health services. **Aims and Objectives:** To ascertain determinants and predictors as potential socio-epidemiological correlates of the prevalent morbidity pattern and recommend appropriate measures / interventions to address felt and unmet needs in geriatric health. **Material and Methods**: An observational study conducted in field practice area of Department of Community Medicine, Himalayan Institute of Medical Sciences, HIHT, Dehradun. Study participants aged above 60 years were administered by pre tested, semi structured questionnaire after obtained informed consent. Descriptive statistics were calculated by using SPSS version 17. **Results:** Among 520 subjects most common morbidity in study subjects was arthritis (49.61%) followed by cataract (46.34%), chronic gastritis (44.23%), COPD (25%), diabetes (21.15%), skin lesions (19.03%), hypertension (11.39%). **Conclusion:** There is high morbidity rate identified in this present study so there is an urgent need to develop geriatric health care services at primary health centre level

Keywords

Ageing; Morbidity; Urban; Geriatric

Introduction

Ageing is an universal phenomenon. It has not only social but also economical, political and health-related implications. This ever-increasing age group needs special healthcare. In recent years, problems related to old age are getting recognition. Growing number of older persons puts increasing demands on the public health and on medical and social services. The needs of the old are distinct and mostly related to health, comfortable and dignified living, psychological well being (including recreation and social networking), meaningful occupation (with or without economic gains) and security aspects (1).

Projections beyond 2016 made by United Nations have indicated that 21% of the Indian population will be 60 plus by 2050 which was 6.8% in 1996 (2). The life span has increased in India from 32 years in 1947 to 64 years at present. India has thus acquired the label of "an ageing nation" with 7.7% of its population being more than 60 years old. The demographic transition is attributed to the decreasing fertility and mortality rates due to the availability of better health care services (3). A major component of burden of illness for the elderly derives from prevalent chronic diseases, particularly in India where the elderly people suffer from dual medical problems, i.e., both communicable as well as non-communicable diseases. A decline in immunity as well as age-related physiologic changes leads to an increased burden of communicable diseases in the elderly (4). Although Primary Health Centers along with their sub- centers are distributed all over the country, they are not able to avail all the facilities owing to lack of transport, geographical distance, physical disabilities, for want of funds or physical help for travel (1).

In view of the changing socio-demographic scenario, epidemiological transition and emerging trend in morbidity profile of the elderly with newer disease entities vis-a- vis advances in promotive, preventive & curative health care and ample scope for further research in Geriatrics in the state of Uttarakhand, the present study was designed to study pattern of ailments or morbidity and its socio-epidemiological determinants / predictors as potential correlates, among the elderly population of the field practice areas of the Department of Community Medicine, Himalayan Institute of Medical Sciences, HIHT, Dehradun. The observations/findings may possibly be extrapolated in a larger universe and appropriate interventions designed to be either replicated and or scaled up.

Aims & Objectives

1. To identify and assess self-reports of perceived physical and psycho-social health problems among the geriatric population.
2. To ascertain determinants and predictors as potential socio-epidemiological correlates of the prevalent morbidity pattern.

Material & Methods

This observational study was conducted among all the families registered with the Urban Health Training Center under the jurisdiction of field practice areas of the Department of Community Medicine, HIMS, Dehradun over a period of 12 months. After obtaining the written informed consent, particulars of the study subjects, relevant clinical history and reports of investigations were recorded as per the pretested, semi-structured questionnaire consisting of sociodemographic variables such as name, age, gender, education, occupation, income, SES, employment, religion, marital status, type of family, family support, property, social security, etc.

Selection of study subjects:

Inclusion Criteria:

All persons 60 years of age & above belonging to the families registered under the jurisdiction of Urban Health Training Center of the Department of Community Medicine, HIHT, Dehradun.

Exclusion Criteria

Those who had completed 60 years of age but were critically ill / unconscious/uncooperative and or not willing to give written consent were excluded from the study.

Sampling: Considering person prevalence of geriatric morbidity from community initiatives from similar study settings to be an estimated average of 60%, desired sample size with an allowable error of 10% was calculated as 266. Allowing for a dropout rate of another 10%, the sample size estimated was 292.

All the house hold/settlements (100%) were enumerated for the study. All persons 60 years of age & above from the study population (Natural population pyramid) constituted the sampling frame and were recruited for the study following set criteria of selection.

House-to-house survey of all households i.e 100% enumeration (census) of the study population was done. All members of the house-hold, 60 years of age and beyond were identified, explained the purpose of the study and sought consent for participation in the same. In-depth interview of the study subjects was conducted administering the pre-designed and pre-tested study instruments. All information, namely, socio-demographic attributes, perceived physical and psycho-social health problems, determinants and predictors of geriatric morbidity and its pattern among the study subjects were elicited, collected and recorded. Standardized diagnostic criteria were adapted to identify and assess ailments/diseases implying geriatric morbidity as per definition in the study. General

physical examination followed by a thorough clinical examination was conducted.

Data thus obtained was analysed on standard statistical software (SPSS version 17) and interpreted by descriptive methods in terms of frequency distribution in percentages, proportions, rates, ratios etc; Parametric and non-parametric tests were applied to ascertain significance of association.

Results

A total of 12319 population was surveyed in both the slums, out of which the Geriatric population (≥60 years) was 520 (4.22%).

Maximum geriatric population belonged to age group of 60-69 years i.e 412(79.23%) followed by 73(14.03%) in 70-79 years age group. Insignificant proportion i.e 35(6.74%) was found in 80 or more than 80 years of age. Overall, in the study subjects, males were more than females i.e 315(60.58%) males as against 205(39.42%) females (Table 1). Maximum number of the study subjects (90.96%) were from general caste and (96.15%) were Hindus. Maximum number of study subjects i.e 149(28.65%) were having a family size of 3-5 members and 93.08% subjects were living in joint families. Nearly half of the study subjects (49.24%) belonged to lower socioeconomic class while 6.92% belonged to upper class (Table 2).

As per Table 3 most common complaints in study subjects were pain in joints (78.65%) followed by hard of hearing (73.65%) constipation (72.22%), pain abdomen (70.00%), poor eye sight (67.88%), headache (60.96%), shortness of breath (59.03%) etc. Most common morbidity in study subjects was arthritis (49.61%) followed by cataract (46.34%), chronic gastritis (44.23%), COPD (25%), diabetes (21.15%), skin lesions (19.03%), hypertension (11.39%) etc (Table 4). Table 5 shows the distribution of study subjects as per already diagnosed disease status. Study found hypertension (24.02%) as the most common co-morbid disease in age group 60-69 years followed by COPD (22,57%) and diabetes (21.11%). However, diabetes (27.40%) was the major comorbid disease in age group 70- 79 years followed by hypertension (21.91%) and COPD (20.54%). The major co-morbid disease in males was COPD (30.79%) followed by hypertension (30.79%), whereas in the females' major comorbid disease was diabetes (29.76%) followed by COPD (21.95%).

Discussion

Community based morbidity studies with the elderly population at different study settings across India are available in published literature, most of which were reviewed for the present study. The present study is distinguished essentially by its study setting of urban slums and it's atypical population including 'in-migrants' and itinerants living in make-shift settlements with distinct socio-demographic features. Also, the study considered 'natural population pyramid' of the study population and adopted 100% enumeration of study subjects in its methodology instead of a sample survey and estimates.

Majority of the study subjects i.e. 79.23% was in the age group of 60-69 years followed by 14.03% and 6.74% in age groups 70-79 and > 80 years; percentage of males (88.25%) was higher only in the age group 60-69. The age and sex distribution of study subjects in other key community-based studies were in variance with the present study. This can be ascribed to relatively smaller scale of the study and its distinct setting and population attributes of in-migrants/itinerants i.e. Besides, self reports of the age were mostly based on calendar of local events by mostly illiterate study subjects (61.16%). Because of this approximation several individuals who were at the cusp of 59 might have been labeled as 60 thus leading to inflation in this age group.

Study subjects were almost exclusively 'Hindus' (96.15%); also, as many as 473 (90.96%) of the study subjects belonged to 'General' category of caste followed by 44 (8.46%) belonging to SC/ST category. Ravishankar from Varanasi had a comparable profile of study subjects i.e. in proportion of 98.7% 'Hindus' and 1.3% 'Muslims'; however, his study subjects mostly belonged to the 'Backward caste' group (5).

About half the study population (50.56%) belonged to families having family size 3-5 and 41.76% to family size 6-8 whereas corresponding figures for the elderly study subjects were 28.65% and 25.57% respectively; 28.09% of the families had a family size of >8; as much as 93% of the study subjects lived in joint families. Comparable if not similar mean family size (8.2) was reported by Ravishankar (5).

The mean family sizes of study population and subjects are higher in comparison to the National average possibly because of preponderance of joint family system in the study area. Generations of older Indians did find shelter in the extended family

system during crises, be these social, economical or psychological. With urbanization, migration and various factors influencing social mobility, structure & dynamics, families are becoming nuclear, smaller and are not always capable of caring for older relatives (6).

The population was classified by modified B.G. Prasad classification using All India Price Index, October 2000. Considerable proportion of families (44.08%) belonged to 'Lower' socio-economic class (per capita income/month < Rs.330) and another 33% to 'Middle' class; only 6.93% belonged to 'Upper' class.

Corroborative findings similar to the present study setting exist. Proportionately more study subjects in 'Lower' socio-economic class was found by R. Prakash (2). A study by Sudha S et al observed that one-third of the elderly were living below the poverty line, i.e., 66% of older persons were in a vulnerable situation without adequate food, clothing, or shelter. About 90% of the elderly were from the unorganized sector, i.e., they had no regular source of income which was also a cardinal feature of the present study (6).

It can be seen from observations of the study that Locomotor system was the most commonly affected among all body systems. The most common complaint and morbidity were 'joint pains' and arthritis with overall prevalence 49.61%, which is in concordance with the reported prevalence of 57.48% and 57.08% among the people > 60 years in rural area of Varanasi (5). Complaints of Eye problem were among the commonest (67.88%) and cataract was the second most common elderly morbidity found in this study (46.34%). A comparable study conducted in the rural areas of Pondicherry reported decreased visual acuity due to cataract and refractive errors in 57% of the elderly (7). Prakash R. reported the prevalence of cataract to be 34.7% in m ales and 60% in females (2). Padda et al and Ravishankar also reported 'cataract' to be the second most common morbidly affecting the elderly- 54.0% & 55.4% respectively (8,5).

Gastrointestinal system involvement was also a prominent morbidity feature with constipation (72.22%) and pain abdomen (70.00%) as key complaints and 44.23% of the respondents having gastritis. Comparable results from similar study settings were reported by Sengupta et al. where constipation was found among 11% and diarrhea with enteritis in 0.5% of geriatric people (9).

Involvement of the respiratory system in the present study was also pronounced- with 59.80% reporting 'Cough'; 58.84% and 59.03% reporting 'Wheezing' and 'Shortness of breath' respectively. Similar study by Kant S et al reported that 66.5% of their study population had respiratory problems while 80.3% had chronic cough (10). Prakash R. et al reported a prevalence of respiratory diseases among 36 % of the elderly; 6.3% of males having chronic bronchitis and 11.5% females having bronchial asthma (2). Ravishankar, also found 20.4% of his study subjects having respiratory system disorders with 7.5% having Bronchial Asthma, 6.7% chronic Bronchitis and 3.8% Pulmonary Tuberculosis (5).

As regards involvement of 'Cardiovascular System', the study found shortness of breath 'Chest pain' and 'Palpitation' in 59.03% ,49.03% and 51.92% respectively of the study subjects with another 11.3% suffering from 'Hypertension'; 'IHD' was found in another 7.88%. Cardiovascular diseases were found among 42% of elderly population in a comparable study carried out by Sharma M K et al in city areas of Chandigarh (11). Tandon J et al detected hypertension in 11.25% of elderly rural population (12). Whereas, very high prevalence of hypertension was reported by Singh et al (47.77%) and Padda et al, (16.5%) (13,8,). Such variation in findings may be ascribed to varied scales, settings and population attributes of the studies undertaken.

Diseases of Genitourinary system were observed with 37.30% of the study subjects reporting increased frequency of micturition, 36.53% with incontinence and as many as 18.65% presenting with 'Benign Prostatic Hypertrophy' and another 2.5% females with 'Pelvic Inflammatory Diseases'. A study conducted by Singh et al (1996) in rural area of Varanasi reported that 14.39% of the elderly had urinary problems (13). In 1982 Garg et al reported much lower prevalence of hyperplasia of prostate as 4.2% and prevalence of inflammatory diseases of cervix, vagina and vulva to be 7.2% (14). Ravishankar also observed Genitourinary system involvement in 5% of the elderly with Hyperplasia prostate in only 3.8% of the males and PID in 1.2% of females however, higher prevalence's of prostatic enlargement (9.35%) were reported by Singh et al. (5,13).

Distribution of study subjects as per already diagnosed diseased status found 'COPD' to be the most common co-morbidity among 122(23.46%) study subjects; 'Hypertension' (24.02%) was the

commonest co-morbidity in age group 60-69 years followed by 'COPD' 93(22.57%) and 'Diabetes' in 287(21.11%) however 'Diabetes' was the major co-morbidity among 20(27.40%) followed by 'Hypertension' and 'COPD' among 16(21.9%) and 15(20.54%) respectively in the age group 70-79 years. Besides, significant association between age and occurrence of 'Diabetes mellitus' (p=0.02), and 'COPD' (p=0.05) were also seen.

Corroborative evidence can be seen in study by Ravishankar from rural Varanasi who reported significant association between prevalence of 'old age-related morbidity' and increasing age (5). Old age morbidity was significantly associated with age by in the study by Shah B et al (15). Age specific prevalence of old age morbidity was found to be progressively increasing in rate of all disorders by Purty A J et al (16). Eun-kyung Woo et al from the AGE cohort study established significant association of old age morbidity with age (17).

Aging indeed may have a number of characteristics; to name a few- increased mortality with age after maturation, changes in the biochemical composition of tissues with age, a broad spectrum of progressive deteriorative physiologic changes with age, a decreased ability to respond adaptively to environmental changes with age and an increased vulnerability to various diseases.

Conclusion

The study among the elderly in the field practice area of the department of Community Medicine, Himalayan institute of Medical Sciences, HIHT India has highlighted a high prevalence of morbidity and identified common existing medical problems like arthritis, cataract, hypertension, and diabetes mellitus. There is an urgent need to develop geriatric health care services in the developing countries like India and provide training to health care providers to manage the commonly existing health problems in the community. Measures to enhance social support systems and social integration like guidance, counselling to the family members and financial support to the elderly need to be provided through voluntary agencies and welfare associations. Health professionals need to be oriented to the needs of geriatric population at PHC level.

Recommendation

Community must be aware that old people are their assets. Rather it should assist the aged to fight the triple evils of poverty, loneliness and ill health. One approach to address these issues can be to create a social environment wherein the elderly have access to recreational facilities, 'self help groups', regular and frequent group interactions. To ensure active participation, the community capacity has to be enhanced i.e. the key community representatives (PRI etc.) may be trained so that they can take charge of the community initiative for the elderly and plan, implement, monitor & also evaluate such initiatives themselves. Involvement of public health services in this endeavor could be achieved through meticulous training and motivation of grass-root health worker in primary screening and detection of the common morbidity related to old age.

Limitation of the study

The results may not be necessarily generalized because of it being a small scale study. The results might have been affected by some unknown confounding factors due to the multidimensionality of the morbidity patterns.

Relevance of the study

The study findings have highlighted a grim scenario of a resource poor, disadvantaged & itinerant/ in-migrant elderly people living on subsistence and particularly in respect of old age related morbidity and its predictors/determinants.

Authors Contribution

All the authors have contributed significantly to the study design, collection, analysis and interpretation of data as well as preparation of manuscript.

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Tables

TABLE 1 AGE AND SEX DISTRIBUTION OF THE STUDY SUBJECTS (N=520)

Age (yrs)	Males		Females		Total	
	No.	%	No.	%	No.	%
60 – 69	278	88.25	134	65.36	412	79.23
70 – 79	34	10.80	39	19.02	73	14.03
≥ 80	3	0.95	32	15.62	35	6.74
Total	315	60.58	205	39.42	520	100

TABLE 2 DISTRIBUTION OF STUDY SUBJECTS BY CASTE, RELIGION, FAMILY SIZE, TYPE OF FAMILY AND SOCIO ECONOMIC STATUS (N=520)

Family Characteristics	Distribution	
	No.	%
Caste		
General	473	90.96
Backward Caste	3	0.59
SC/ST	44	8.46
Others	0	0
Religion		
Hindu	500	96.15
Muslim	13	2.5
Christian	3	0.57
Sikh	4	0.78
Average Family size		
1-2	92	17.69
3-5	149	28.65
6-8	133	25.57
>8	146	28.09
Type of Family		
Nuclear	36	6.92
Joint	484	93.08
Socio Economic Status		
Upper	36	6.92
Upper Middle	101	19.42

Lower Middle	49	9.42
Upper Lower	78	15.00
Lower	256	49.24

TABLE 3 HEALTH RELATED COMPLAINTS AMONG THE STUDY SUBJECTS N=520

Variable	Complaints	Prevalence No (%).
Locomotor system	Joint Pain	409(78.65)
	Joint swelling	202(38.84)
	Neck pain	218(41.92)
	Low backache	270(51.92)
Eye	Poor eye sight	353(67.88)
Gastrointestinal system	Pain abdomen	364(70.00)
	Diarrhea	311(59.80)
	Constipation	375(72.11)
	Malena	49((9.42)
	Hemorrhoids	58(11.15)
	Hernia	2(0.38)
Respiratory System	Cough	311(59.80)
	Wheezing	306(58.84)
	Hemoptysis	95(18.26)
	Others	10(1.92)
Cardiovascular System	Shortness of breath	307(59.03)
	Chest pain	255(49.03)
	Palpitation	270(51.92)
Genitourinary System	Frequency	194(37.30)
	Urgency	179(34.42)
	Incontinence	190(36.53)
ENT	Deafness	199((38.26)
	Pain in ear	50(9.61)
Skin	Skin lesion & Eczema	99(19.03)
Central Nervous System	Headache	317(60.96)
	Giddiness	286(55.00)
	Forgetfulness	260(50.00)

TABLE 4 HEALTH RELATED MORBIDITIES AMONG THE STUDY SUBJECTS (N=520)

Variable	Disease	Prevalence (%)
Locomotor system	Arthritis	258(49.61)
Eye	Conjunctivitis	69(13.26)
	Cataract	241(46.34)
Gastrointestinal system	Gastritis	230(44.23)
	Diarrhea	123(23.65)
	Ascites	5(0.96)
	Cholecystitis	21(4.03)
Endocrine system	Diabetes Mellitus	110(21.15)
	Hypothyroidism	52(10.00)
Respiratory System	Asthma	65(12.50)
	COPD	130(25.00)
	Pneumonia	11(2.11)
	Tuberculosis	5(0.96)
Cardiovascular System	IHD	41(7.88)
	Hypertension	59(11.34)
Genitourinary System	Urinary tract infection	37(7.11)
	Pelvic inflammatory disease	13(2.5)

	Benign prostatic hypertrophy	97(18.65)
	Others	423(81.34)
ENT	Chronic suppurative otitis media	19(3.65)
	Hard of Hearing	383(73.65)
Skin	Skin lesion & Eczema	99(19.03)
Central Nervous system	Parkinsonism	20(3.84)
Cancer	-	2(0.38)
Others	-	107(20.57)

TABLE 5 AGE WISE STATUS OF STUDY SUBJECTS HAVING CO-MORBID DISEASE

Age (yrs)	DM		IHD		HTN		Asthma		COPD		Parkinsonism	
	No.	%	No	%	No.	%	No.	%	No.	%	No.	%
60 – 69 (n=412)	87	21.11	51	12.37	99	24.02	64	15.53	93	22.57	18	20.16
70 – 79 (n=73)	20	27.40	7	9.59	16	21.91	13	17.81	15	20.54	2	2.75
≥ 80 (n=35)	11	31.42	2	5.71	3	8.57	3	8.57	14	34.30	2	5.71
Total (n=520)	118	22.69	60	11.53	118	22.69	80	15.38	122	23.46	22	4.25
Statistical value	χ^2 3.027 df 2 p 0.022		χ^2 1.72 df 2 p 0.4232		χ^2 4.423 df 2 p 0.1095		χ^2 1.585 df 2 p 0.4528		χ^2 5.857 df 2 p 0.0535		χ^2 0.6101 df 2 p 0.7371	