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A Comparative Study of Morbidity Profile of Elderly Residing in Old Age Homes and in the Community of a Tier-II City in India

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ABSTRACT

Introduction: Due to increasing life expectancy and large number of nuclear families, more and more elderly people are residing in old age homes (OAHs). The study compared the morbidity profile of the elderly living in the OAHs and those living in the community.

Methods: This cross sectional study was carried out among all the 88 elderly inmates (≥60 years) residing in all the six OAHs of Rajkot city and 180 elderly persons from the community. The difference between the two groups was analyzed using Chi Square test, Odds ratio and Mann Whitney U test.

Results: As compared to 45% of the elderly in the community who considered themselves as 'mostly healthy', only 31.8% elderly of the OAHs had a similar self-perception (P=0.004). Majority of the known illnesses were more common among elderly of the OAHs. Forty eight elderly (54.5%) from OAHs and 75 (41.7%) elderly from community were taking some medication on a daily basis (P=0.046). Proportion taking more than one medicine was higher among elderly of OAHs than those in the community (20.4% vs. 9.4%). The regularity of taking medicines was more among elderly living in the community than those in the OAHs.

Conclusions: The health profile of the elderly living in the OAHs was poorer than those of the community.

Key Words: Old age home, elderly, morbidity

INTRODUCTION

The world population is rapidly ageing. Between 2000 and 2050, the proportion of the world's population aged over 60 years will double from 11% to 20%. The absolute number of people aged 60 years and above is expected to increase from 605 million to over 2000 million during the same period.[1] The population over the age of 60 years has tripled in last 50 years in India. As per National Program of the Health Care of Elderly, the proportion of older people would increase to 8.94% in 2016.[2]

In the absence of joint family system and increasing number of nuclear families the old parents have no other alternative than joining the old age homes (OAHs).[3] The growth and development of OAHs had begun in India in 1901.[4] It is estimated that there are more than a thousand OAHs in India.[5] Though perceived to be a 'safe haven' for the elderly, OAHs still remain inadequate to meet their needs.[4]

Data available from a community based study conducted at Bengaluru suggest that almost 50% of the elderly suffer from chronic diseases. It has been observed that the prevalence of diseases rises with increasing age: from 39% in 60–64 years to 55% in those older than 70 years. Cardiovascular diseases followed by respiratory diseases are the leading causes of mortality among elderly in India. Hearing and visual impairments are the two most common causes of morbidity in the elderly.[6]

Studies conduced in the community[7-14] and in OAHs[15-18] have shown a large variation in the prevalence of chronic diseases. However not much information is available of the scenario of comparative morbidity among elderly residents of the community and in the OAHs of a similar geographic location.

The present study was conducted to compare the morbidity profile of elderly persons living in the OAHs versus those elderly living in the city Rajkot.

METHODS

Rajkot, the fourth largest city of Gujarat, is ranked the 27th largest city of India, in the Census 2011 and has been adjudged to be the 22nd fastest growing city in the world.[19] It is one of the 89 Tier II cities of India.[20] As per the Census 2011, the percentage of elderly population in the urban areas of Gujarat was 7.39%: hence it is estimated that there were around 95,086 elderly residing in Rajkot city.[21]

For selection of 'elderly', the definition of the United Nations (which is persons aged 60 years and more) had been used in the study.[22] The inclusion criterion for selection of the participants was all those elderly who were 60 years and more and not having any demonstrable difficulty in hearing, speech or understanding. This was especially kept to reduce any bias arising during the detailed interview and examination of the respondent.

This analytical study with cross sectional design was conducted among all those elderly residing in all the six OAHs of Rajkot city during November 2012 to August 2013. A total of 88 'elderly' inmates from all the six OAHs could thus be selected for the study as per the inclusion criteria. For comparative purpose, it was decided to have twice the number of elderly (as that obtained from the OAHs) from the city. Hence 176 elderly persons from the community would need to be studied.

Rajkot city has been divided by the Municipal Corporation into three zones: East, Central and West. All the zones had been included in the study. For proper representation across all the socioeconomic levels, two 'slum/semi-slum' areas and two 'non-slum' areas were selected from each zone by random selection method using computer generated random numbers. Thus from each zone, four areas were selected. In this way a total of 12 areas of Rajkot city were selected for the study. For uniform selection of elderly persons from the 12 areas of the city, a total 180 elderly persons had to be taken from the community. Hence, from each area 15 elderly persons were selected to achieve a total of 180 elderly persons in the 12 areas. After reaching the approximate geographical center point of the selected slum/semi-slum/non-slum area, the first nearest household on the East direction was selected as the starting point of the survey. All the elderly persons who usually resided in the household were covered. In case an elderly person was not physically present at the time of visit, a second visit was carried out. If the person was again absent then, he/she was omitted from the study. If a particular household did not have any eligible elderly person, the next adjacent household was visited. In this way the households were visited until 15 elderly were obtained from one area.

Necessary approval of the Institutional Ethical Committee (human) was obtained prior to the beginning of the study. Written intimation to the concerned authority of the OAHs was given. Written informed consent from the participants was obtained. All the participants were free to withdraw at any stage of the study. Detailed information of their present health complaints, known illnesses, and self-reported adherence to prescribed medicines were asked for using a pre-tested semi-structured interview schedule for each elderly. Keeping in purview the newer terminology, the word 'adherence' has been used instead of the older term 'compliance'.[23] 'Medical adherence' referred to the extent to which a patient's or caregiver's medication administration behavior coincided with the medical advice. Information pertaining to adherence to medicines prescribed was ascertained using traditional method of assessing adherence based on the 'patient and caregiver self-report'.[23] The participants' knowledge regarding their schedule of medications was elicited by asking them to recount the medicines taken along with their schedule and comparing this response with their available medical records.

The data was entered and analyzed in Epi Info version 3.5.1. (CDC, Atlanta) software.[24] The descriptive statistics and the difference between the two groups were analyzed by using Chi Square test and Odds Ratio (OR) was determined. Mann Whitney U test (Wilcoxon Rank Sum test) was used for comparison of median values of two groups having continuous variable but following 'non- normal distribution' or having 'unequal variances'. The test was applied using freely available online statistical calculator.[25]

RESULTS

Table 1 shows the age and sex distribution of the elderly living in the OAHs and in the community. In both the settings, the maximum prevalence (as per the cut offs recommended by the United Nations) has been obtained in the 'young-old' sub group.[22] The difference in the total numbers of elderly <75 years of age and those ≥75 years age in the two settings was significant (χ^2=14.27, P=0.0002;

Table 1: Age and Sex distribution of the Elderly

Age Group (Years)	Old Age Homes (N=88) (%)			Community (N=180) (%)		
	Male (N=30)	Female (N=58)	Total	Male (N=77)	Female (N=103)	Total
Young old* (60–<75)	23 (76.7)	32 (55.2)	55* (62.5)	65 (84.4)	85 (82.5)	150* (83.3)
Old– old (75– <85)	6 (20)	18 (31)	24 (27.3)	12 (15.6)	10 (9.7)	22 (12.2)
Very old (≥85)	1 (3.3)	8 (13.8)	9 (10.2)	0 (0)	8 (7.8)	8 (4.4)
Median (Range)	72‡ (60–85)	71.5§ (61–105)	72† (60-105)	67‡ (60 – 83)	67§ (60–93)	67† (60-93)

* Total Young old vs. others $\chi 2 = 14.27$, df = 1, P = 0.002, OR = 0.33, 95% CI = 0.19-0.60
† Total (OAH vs. Community): Mann Whitney U test: Z = 5.371, P = 0.00
‡Males (OAH vs. Community): Mann Whitney U test: Z = 2.633, P = 0.008
§Females (OAH vs. Community): Mann Whitney U test: Z = 4.499, P = 0.00

OR 0.33, 95% CI=0.19-0.60). The median age of elderly residing in the OAHs was 72 years, (range 60 to 105), while in the community, it was 67 years (range 60 to 93). Mann Whitney U test showed this difference between median ages of two groups to be statistically highly significant (Z=5.371, P=0.00). Out of 88 residents in the OAHs, 58 (65.9%) were females and 30 (34.1%) were males. In the community out of 180 elderly, 103 (57.2%) were females and 77 (42.8%) were males. In both the settings, more females were found as compared to males.

In the OAHs, the median age of males was 72 years (range 60 to 85), while in the community, it was 67 years (range 60 to 83). Mann Whitney U test showed this difference between median ages of males of two groups to be statistically highly significant (Z=2.633, P=0.008).

In the OAHs 32 out of 58 females (55.2%) were 'young old' as compared to 85 out of 103 (82.5%) females in the community. In the OAHs, the median age of females was 71.5 years (range 61 to 105) which was higher than that in the community (median 67 years; range 60 to 93). Mann Whitney U test showed this difference to be statistically highly significant (Z=4.499, P=0.00).

The elderly were asked to grade their own health condition into three sub-groups: 'mostly healthy', 'somewhat healthy' and 'not healthy'. Regarding self-perception of current health status, among the elderly of the old age homes, 28 (31.8%) considered themselves as 'mostly healthy', 32 (36.4%) as 'somewhat healthy' and 28 (31.8%) as 'not healthy'. In the community, 81 (45.0%) elderly considered themselves as 'mostly healthy', 59 (32.8%) as 'somewhat healthy' and 40 (22.2%) as 'not healthy'. Compared to the elderly of the OAHs, more elderly from the community considered themselves as 'mostly healthy': this difference was statistically significant (χ^2=8.15, P=0.004).

All the elderly were asked to enumerate the various types of ailments or health problems they were suffering at the time of the survey [Table 2]. It was observed that only 6 (6.8%) elderly of the OAHs had 'no complaint' as against 30 (16.7%) from community: this difference was statistically significant (OR=0.37, 95% CI:0.15-0.92; χ^2=4.9, P=0.026). Elderly from the OAHs had more health complaints as compared to that from community. Median number of health complaints of residents of OAH and community elders were three and two respectively, with a range of zero to ten (OAH) and zero to eight (community). Mann Whitney U test showed this difference to be statistically significant (Z=2.494, P=0.013).

The elderly were asked to enumerate all the health related complaints currently present (without prompting). Joint pain (OR 2.54), shortness of breath (OR 2.11), reduced sleep (OR 1.66), tremor (OR 1.64), numbness (OR 1.64), reduced memory (OR 1.43), cough (OR 1.40), generalized weakness (OR 1.33), constipation (OR 1.24) and reduced vision (OR 1.17) were found to be more in the elderly of the OAH as compared to those of the community [Table 3]. The top five health complaints which emerged were joint pain (OAH-44.3% vs. 27.2%-community), reduced vision (OAH-35.2% vs. 31.7%-community), hearing difficulty (OAH-26.1% vs. 21.7%-community), generalized weakness (OAH-25% vs. 20%-community) and difficulty in chewing (OAH-17.1% vs. 21.1%-community).

Table 4 shows the known illness among the elderly (which they had suffered in the past or were suffering as of now). Most of the 'known illnesses' were more common among elderly of the OAHs. The prevalence of elderly having 'cataract' (51.5% against 38.3%; OR=1.68), 'arthritis' (29.5% against 17.8%; OR = 1.94) and 'diabetes mellitus' (19.3% against 9.4%; OR=2.30) was significantly higher (P < 0.05) in OAHs as compared to the community.

Table 2: Numbers of current daily health complaints among the elderly

No. of health complaints	Old Age Homes (N= 88) (%)	Community (N= 180) (%)
0*	6 (6.8)	30 (16.7)
1 – 2	33 (37.5)	70 (38.9)
3 – 5	32 (36.4)	61 (33.9)
≥ 6	17 (19.3)	19 (10.5)
Median (Range) †	3 (0 - 10)	2 (0 - 8)

* No complain vs. others, $\chi^2 = 4.929$, df = 1, p = 0.026
OR = 0.37, 95% CI = 0.15 – 0.92
†Mann – Whitney U test: Z = 2.494, p = 0.013

Table 3: Comparison of current health complaints among the elderly

Health complaints	Old Age Homes (N = 88) (%)	Community (N = 180) (%)	OR (95% CI)
Joint pain*	39 (44.3)	49 (27.2)	2.54 (1.47 – 4.40)
Reduced vision	31 (35.2)	57 (31.7)	1.17 (0.69 – 2.01)
Hearing difficulty	23 (26.1)	39 (21.7)	1.28 (0.71 – 2.32)
Generalized Weakness	22 (25)	36 (20)	1.33 (0.72 – 2.44)
Difficulty in chewing	15 (17.1)	38 (21.1)	0.77 (0.40 – 1.49)
Backache	13 (14.8)	34 (18.9)	0.74 (0.37 – 1.50)
Reduced memory	14 (15.9)	21 (11.7)	1.43 (0.69 – 2.97)
Shortness of breath†	15 (17)	16 (8.9)	2.11 (0.99 – 4.49)
Reduced sleep	13 (14.8)	17 (9.4)	1.66 (0.77 – 3.60)
Reduced appetite	8 (9.1)	16 (8.9)	1.03 (0.42 – 2.50)
Body ache	7 (7.9)	17 (9.4)	0.83 (0.33 – 2.09)
Cough	8 (9.1)	12 (6.7)	1.40 (0.55 – 3.56)
Constipation	6 (6.8)	10 (5.6)	1.24 (0.43 – 3.54)
Numbness	7 (7.9)	9 (5)	1.64 (0.59 – 4.56)
Tremor	7 (7.9)	9 (5)	1.64 (0.59 – 4.56)
Others	55 (62.5)	71 (39.4)	

* $\chi^2 = 7.83$ df = 1, p = 0.005, † $\chi^2 = 3.844$, df = 1, p = 0.049

Table 4: Known Illnesses (current or past) among the elderly*

Illness	Old Age Homes (N = 88) (%)	Community (N = 180) (%)	OR (95% CI)
Cataract†	45 (51.5)	69 (38.3)	1.68 (1.01 – 2.82)
Hypertension (HT)	22 (25)	47 (26.1)	0.94 (0.52 – 1.70)
Arthritis†	26 (29.5)	32 (17.8)	1.94 (1.07 – 3.52)
Diabetes Mellitus(DM) †	17 (19.3)	17 (9.4)	2.30 (1.11 – 4.75)
Ischemic Heart Disease (IHD)	12 (13.6)	14 (7.8)	2.09 (0.92 – 4.76)
Chronic Respiratory Diseases	7 (8)	12 (6.7)	1.21 (0.46 – 3.19)
Paralysis/ Stroke	4 (4.5)	7 (3.9)	1.18 (0.34 – 4.13)
Others	20 (22.7)	26 (13.8)	

*Multiple responses, † $\chi^2 > 3.84$, df = 1, $p < 0.05$

Table 5: Self-reported consumption pattern of medicines for common known illnesses

Illness	Old Age Homes			Community		
	Total	Taking Medications (%)	Regularly (%)	Total	Taking Medications (%)	Regularly (%)
HT*	22	18 (81.8)	15 (83.3)	47	44 (93.6)	41 (93.2)
DM†	17	12 (70.6)	10 (83.3)	17	17 (100)	16 (94.1)
IHD‡	12	8 (66.7)	7 (87.5)	14	9 (64.3)	8 (88.9)

*HT-Hypertension, †DM-Diabetes Mellitus, ‡IHD- Ischemic Heart Disease

A greater proportion of elderly of the OAHs were taking some medication on a daily basis as compared to those in the community (54.5% vs. 41.7%): this difference was statistically significant (χ^2=3.95, P=0.046). Proportion of elderly of OAHs taking more than one medicine was also higher than those in the community (20.4% vs. 9.4%). It was found that (among those consuming medicines) 74.6% of those who lived in the OAHs consumed all their medicines on a regular basis as compared to 86% of those staying in the community. However, this difference was statistically not significant (P 0.068).

Examination of medical records of the known hypertensive, diabetic and ischemic heart disease patients residing in the OAHs, showed that 81.8%, 70.6% and 66.7% were taking respective medications. In the community, 93.6% 'hypertensive', 100% 'diabetic' and 64.3% patients of 'IHD' were taking medications [Table 5]. Comparison of medical prescriptions and patient self report revealed, that adherence to medicines were by and large more among those elderly residing in the community. Among those inmates of the OAHs taking medications, 83.3% 'hypertensive', 83.3% 'diabetic' and 87.5% patients of 'IHD' were taking medications 'regularly'. In the community 93.2% 'hypertensive', 94.1% 'diabetic' and 88.9% patients of 'IHD' were taking medications 'regularly'.

DISCUSSION

The median age of elderly in the OAHs was 72 years while that in the community was 67 years (P=0.00). A similar trend has been observed by Pai MK [26] in which the median age of elderly from OAHs and from community was 71.5 years and 66.5 years respectively. In both the settings (OAHs and community), females were more than males. The census 2011 shows that the percentage of females is more than males in the age group ≥60 years.[27] Studies conducted in the OAHs have

found a similar trend of females outnumbering males.[17,18] A comparative study of elderly residing in the OAH and in the community has also shown a larger number of females than males.[28]

A significantly higher (P=0.004) percentage of the elderly in the community (45%) considered themselves as 'mostly healthy', as compared to those in the OAHs (31.8%). In a study done on 233 elderly inmates of OAHs by Das et al.,[16] 22.7% of elderly had a self-perception of themselves as being 'very healthy' 61.4% as being 'fairly healthy', and 15.9% as 'not healthy'. A community based cross sectional study of elderly done by Bartwal et al.,[29] found that the self perception of the health status was 'good' in 4.3%, 'fair' in 83.4% and 'poor' in 12.3%. However there remains a definitive lack of comparative information pertaining to 'self-perception of health status' among elderly residents of OAHs and in the community.

This self-perception of health status by the elderly is also reflected in the numbers of daily health problems encountered by the elderly in the two settings. In the OAHs, 93.2% elderly had 'one or more health complaints' as compared to 83.3% elderly in the community (P=0.026). Median numbers of complaints were three and two for the elders of the OAHs and community respectively: the difference between the two medians was statistically significant (P=0.013). In a study of OAHs by Das et al.,[16] 14.2% elderly had no current health problems while 85.8% had one or more health problems. Kumar et al.[11] found that in the community setting, 5.9% elderly had no morbidity, 50.4% had 'one to three', 34.8% had 'four to six' and 8.9% had 'more than six' health problems.

Majority of the health complaints like joint pain, shortness of breath, reduced sleep, tremor, numbness, reduced memory, cough, weakness, constipation and reduced vision were more common among elderly of the OAHs. In a comparative study of elderly women, Beevi JS[3] found that the common morbidities like arthritis (34.3% in OAHs vs. 48.4% in community), visual impairments (69.5% in OAHs vs. 58.7% in community), hearing impairment (12.9% in OAHs vs. 13.1% in community) and gastro intestinal problems (11.9% in OAHs vs. 41.8% in community) were more common among those living in the community as compared to those of the institutions. In another study done in OAHs by Banker et al.[17] common symptoms were loss of teeth (70%), joint pain (60.2%), impaired vision (44.2%), impaired memory (34.7%), weakness (34.9%), insomnia (34%), constipation (22.6%), giddiness (13.6%), poor appetite (17.2%), and body ache (14.3%). In a community based study on elderly done by Swami et al.[12] common presenting symptoms were joint pains (36.5%), indigestion or heartburn (17.7%), backache (17.4%), weakness (17.1%), breathlessness (16.3%), headache (13.5%), cough (10.8%), and giddiness (9.7%).

In this study, the proportion of elderly having cataract, diabetes mellitus and arthritis was significantly higher (P<0.05) in OAHs as compared to the community. In a comparative study done by Beevi JS[3] among elderly females of OAH inmates and in the community, the common illnesses which were identified were 'hypertension' (39% in OAHs vs. 37.1% in community), 'diabetes' (16.7% in OAHs vs. 10.3% in community), 'arthritis' (34.3% in OAHs vs. 48.4% in community), and 'chronic respiratory diseases' (21.4% in OAHs vs. 10.3% in community). In another study done in OAHs by Banker et al.[17] the common illnesses were 'osteoarthritis' (54.9%), 'hypertension' (54.2%), 'cataract' (16%), and 'diabetes mellitus' (14.9%). In a community based study on elderly done by Swami et al.[12] the common illnesses were 'hypertension' (58%), 'osteoarthritis' (50.5%), 'cataract' (18.5%), 'gastritis' (17.67%), 'diabetes' (12.2%), and 'ischemic heart disease' (8.8%).

LIMITATIONS OF THE STUDY

In order to obtain a snapshot comparative scenario of the morbidity profile of the elderly residents in the community and OAHs, no age and sex matching was conducted. No specific health check-ups were conducted during the interview schedule. Self reported health complaints, past illnesses and current medications were asked for and compared with the available medical records to ensure authenticity.

CONCLUSIONS

The median age of elderly residing in the OAHs was significantly higher than those living in the community. Majority of the illnesses were more common among elderly of the OAHs. Significantly more numbers of elderly from the OAHs were taking medicines 'daily' than those of the community (P=0.046). As compared to elders in the community, those living in the OAHs were consuming more 'number' of medicines per day. However, it was found that as regards 'regularity' of consumption of medicines, those residing in the community were consuming it on a more regular basis than those living in the OAHs.

The health profile of the elderly living in the OAHs was poorer than those living in the community. It was also found that more 'old-old' and 'very old' segments of the aged (≥75 years) reside in the OAHs. Hence, regular health check-ups of such inmates should be conducted. Efforts to increase

adherence to prescribed medicines amongst the elderly of the OAHs need to be steeped up. Old age homes can thus be a key point of delivering health interventions. Further research into various methods to improve adherence to medicines among the elderly can be formulated.

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