

COMPARATIVE STUDY OF HEALTH STATUS AMONG SLUM AND NON-SLUM ELDERLY POPULATION IN KADAPA REGION, SOUTH INDIA

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ABSTRACT: AIMS: The study aims to compare the health status of the elderly population residing in slum and non-slum areas in Kadapa region and to find out the association between socio-demographic profile and health status of the elderly population. The community based cross sectional study was conducted on 200 elderly subjects selected from slums (n=100) and non-slums (n=100) using multistage simple random technique. Structural questionnaire was used to collect data. The study showed that the proportion of females 112 (56%) among the elderly population were seen more than males 88 (44%) in both clusters. 52% in slum were illiterate, with per capita income of ≤675INR (44%) with class V (33%) in slum areas compared to the non-slum areas (58%) on Class II and III. Among 200 elderly persons studied, the average illness per person was 4.56. Visual problem due to cataract and refractive errors 144 (72%) and pain in joints 114 (59.5%) was most common morbidity in both slum and non-slums areas followed by gastrointestinal (46%) and dental problems (44%). Other morbidities were hypertension in 84 (42%), genitourinary 50 (25%), dermatological 47 (23.5%) and psychological problems 32 (16%). 49% of the subjects had a normal BMI (18.5-24.99Kg/m²) in slums as compared to 40% of the non-slums having BMI ≥25Kg/m². Conclusions: There were no geriatric clinics found in both the areas. Providing social assistance by social organizations and Mobile geriatric clinic services should be provided in both slum and non-slum areas in Kadapa region, south India.

KEYWORDS: Ageing, Elderly, slums, morbidity, Health Status, India.

KEY MESSAGES: Old age is like a second childhood for our parents so it's our duty to give them love and care, in a same way as they have given us in our childhood.

INTRODUCTION: Geriatric health is emerging as a main problem with an increased risk of age-related diseases. In developed nations like US, various studies have shown an increase in the geriatric population at a very fast pace (MIAH 2004; NCHS 2004)^{1,2}. It is expected that by 2030 the number of old population may reach to 70 million. According to the estimates of World Health Organization (WHO) the geriatric population will be more than teenage population (WHO 2012)³. Thus in coming two decades there will be a major burden due to the spending on the health services to geriatric population. This consequences will be perhaps more devastating among the developing nations due to inequalities in access to health care (WHO 2012)³. Addressing this issue in Asian scenario, high population countries like India will be perhaps among those effected most. At present, India has about 90 million elderly populations which are expected to be 315 million by 2050 (Bressler and Bahl 2003; Ingle and Nath 2008; Bremner, Frost et al. 2010; UNPFC 2011)⁴⁻⁷. In addition to the health challenges, Indian elderly population also faces social and community related challenges, more than seventy per cent are illiterate, unemployed and residing in rural areas. Of whom 48.0% are women

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which at a higher risk of gender base discrimination (UNPFHAI 2012)⁸. Moreover, in terms of health status, Indian elderly population (with low socio-economic status) is at a high risk of communicable and non-communicable diseases, a majority suffering through visual/ optic complications, skeletomuscular disease, dental problems followed by hearing disorders (Shah and Prabhakar 1997; Singh, Murthy et al. 1997)^{9,10}. Along with these major morbidities, were cardiovascular complication (mainly hypertension), followed by diarrhoea, skin complication, diabetes, asthma and urinary tract complications (Joshi. K, Kumar. R et al. 2003; Purty AJ, Bazroy J et al. 2006)^{11,12}.

Whist, the elderly population from middle or high socioeconomic status are more prone to obesity, regardless of gender.(Ahluwalia 2004; Singh, Kapil et al. 2004)^{13,14}. Findings from the main northern India i.e. Delhi revealed declined financial status among their elderly while in Chennai elderly women, specifically widowed women were reported to face verbal, physical and sexual abuse (Kumar 1995; Bose 1997; Chokkanathan and Lee 2005; India 2006)¹⁵⁻¹⁸. All these medical and social consequences act as major threat to the physical, social and psychological wellbeing of the Indian elderly and perhaps due to this reason the elderly in the urban India are at a higher risk of mental and psychological complication (Khandelwal 2003)¹⁹.

Health challenges to north Indian elderly population are explored in recent studies. However, the health challenges to geriatric population in south India are still needed to be explored. The north and south India differ completely from one another based on their culture, food, life style and social settings. Kadapa or Cuddappah district is one of twenty three districts of Andhra Pradesh, south India. The source incomes in Kadapa region are agriculture and mining. According to the recent regional and district development assessment, Kadapa is ranked as one of the 250th most backward state of India and thirteenth in Andhra Pradesh (BRGFP 2009)²⁰ and majority of the population is from low income status and residing in slum. Till to date there is scarcity of any effort that addresses the health status of elderly in Kadapa region. The current study is perhaps the first effort aiming to assess and compare the health status of the elderly population residing in slum and non-slum areas in Kadapa region. Findings from the current study will assist in making an association between socio-demographic profile and health status of the elderly population resign in backward state of India.

METHODOLOGY: A cross sectional community based study was planned in the slum and non-slum areas of Kadapa town during the period of November 2011 to October 2012.

Study Design and Sampling method: A cross-sectional study was conducted using a structured questionnaire. In order to approach a true representative sample two clusters were defined from the slum and non-slum areas of Kadapa town and a sample of one hundred elderly populations from slum and non-slum areas were selected systematically based on the presence of elderly family members (Aged >60 years) in a house hold.

Data collection: In order to ensure the effective data compilation as structured questionnaire was drafted. The questionnaire was comprised of following sections

- Demographics: gender, age, marital status and occupation.
- Educational and socioeconomic status: educational status, per capital income and socioeconomic status is classified according to the Modified Kuppuswami's classification (Kumar, Gupta et al. 2012)²¹.

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- **Physical and Medical information:** Modifiable risk factors i.e. smoking, alcohol use and chewing tobacco, body mass index (BMI) and medical conditions (current/past) were compiled as per WHO classification of disability scale in to chronic and acute diseases– according to WHO’S classification of diseases. In addition physical examination was also done in the case if patient disclose any skin, dental, eye complications. Moreover, to confirm complications like anaemia nail and eye conjunctiva examination was also done. The complication that is reported by the elderly was reconfirmed by the medicine they are talking or the information provided by the family members.

Ethical considerations: The study was approved by the Institutional Ethical Committee of the Rajiv Gandhi Institute of Medical Sciences, Kadapa. Informed consent was obtained verbally from the patient or legal guardian (when the patient was not able to give consent). The entire interview was conducted in local language, if the patients have some communication difficulties assistance was seek from the family members.

Data analysis: Data management and computations of descriptive statistics were performed using Epi Info software version 3.5.3. and the results are presented.

RESULTS: Among 200 elderly population >60 years from two clusters were defined, 100 were from slum and 100 from non-slum areas of Kadapa town during the study period from November 2011 to December 2012, of which 46 were males and 54 females as compared to 42 males and 58 females in non-slums. The proportion of slum elderly in the age group of 60-70 was 65 percent and non-slum elderly in the age of 71-80 was 20 percent and in this study it was observed that 42 percent of the elders are not going for any work. The predominant occupation was house wives 43 percent in slums compared to 41 percent non-slums (Table 1).

Results show the majority of the slum participants 52 percent were illiterate as compared to non-slum participants (29 percent) and 54 percent of the respondents have \leq 675 rupee income and they depend on other family members for financial support. The difference in per capital income domain was found to be statistically significant ($P < 0.001$). The findings show that 33 percent of the elderly in slum were with Class V (1-5) socioeconomic status compared to non-slum elderly of Class II (16-25) (33 percent) and majority of the elders in the slum (34 percent) having habit of chewing tobacco compared to 55 percent of the non-slum elders don’t involved in any modified risk factors. However, the association between the socioeconomic classes and elderly in slums and non-slums was found to be statistically significant at $P < 0.0001$ (Table 2).

Table 3. The total number of illnesses among 200 subjects was 912. Therefore, the average number of illness per person was recorded as 4.56. At the time of study, 83 percent of the study population having medical complication and 42.5 percent were suffering from more than 5 ailment while 25 percent, 20 percent of the population were suffering from two and three ailment respectively. As the table shows, complaints of visual problems due to cataract and refractive errors 144 (72 percent) was the most common, joint pains/joint stiffness were seen in 114 (59.5 percent) followed by gastrointestinal complaints/diarrhoea in 92 (46 percent) and dental problems 88 (44 percent). Hypertension was found in 84 (42 percent) and genitourinary problems in 50 (25 percent). Dermatological and neurological problems in 47 (23.5 percent) and psychological problems in 32 (16

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percent) were less common. The study population reveals only 47.5% of the subjects had a normal BMI (18.5-24.99) whereas in remaining 47 (23.5 percent) had BMI (25-29.99) followed by 41 (20.5 percent) having BMI (<18.5) respectively.

DISCUSSION: Old age is the closing period in the life span and in this period when people “move away” from previous more desirable periods, providing wellbeing of older persons has been mandated in the Article 41(5) of the constitution of India to provision for securing the right to the public assistance in the old age. This study reveals that nearly 65 percent of elderly in the age group 60-70 years, 71-80 was 25 percent and non-slum elderly in the age of 60-70 was 63 percent. Similar studies conducted in the rural southern India showed that elderly population between 70-79 years ranged from 51.7 percent in Guntur district to 39 percent in Villupuram district (Venkateswarlu et al. 2003)²². Since old age is the period in which most of the elders get retirement and remains jobless and often depend on the other family members for their financial support. Results show 44 percent of the respondents living in slum has income of ≤ 675 INR with Class IV-V of socioeconomic status, which is less for their subsistence and depend on others for their financial support. The dependency found among the elderly was similar to the study by Mandandhar et al 1997²³.

Majority of the slum participants (31 percent) were primary school literates followed by 27 percent illiterates compared to non-slum participants (13 percent and 14 percent). In a study conducted in other rural areas, the percentage of illiterates in slum was found to 74.75 percent compared to 49 percent in non-slum areas of Wardha district, Maharashtra (Mudey A et al. 2011)²⁴ and 54 percent in slums of Thruchirappalli district, south India (Udhayakumar P & Ponnuswamy I et.al 2012)²⁵. Moreover, tobacco chewing habit was found to be more common in slum area women (34 percent) than men compared to non-slum areas (15 percent). But, a study results from southern state like Kerala reveals 32.8 percent slum women were habituated to chewing of betel leaves and perceived morbidity was higher among the females than men (Vijayakumar K et al. 1992)²⁶. In our study, 35 percent were smokers and 30 percent consume alcohol in both clusters. Smith et al (1996)²⁷ opined the rate of deterioration of organ function is accelerated by bad habits like cigarette smoking and alcohol consumption in elderly. Whereas, Wendy L. et al (1999)²⁸ described that there is an increased prevalence of hypertension among heavy drinkers as response relationship between usual alcohol use and level of systolic blood pressure and these alcoholics have four fold high risk of dementia.

In this study, more than 80 percent of the respondents were concerned to health problems with an average number of illnesses per person was 4.56. Other studies among the elderly in south India reported it as 2.62 and 2.77, respectively (Niranjan GV et al 1996; Purty AJ et al. 2006)^{12, 29}. The presenting symptoms of the elderly are significant because patients report to health care providers with these ailments. Thus, health workers and general physicians should be aware on the underlying diseases related to these symptoms. The presenting symptoms of the same disease may vary in elderly in comparison to younger population. (Bhatia SPS et al. 2007)³⁰.

A high prevalence of visual problems (72 percent) was suffering from immature and mature senile cataract (51 percent) were observed in both slum and non-slum elders, followed by cataract with presbyopia (9 percent) and presbyopia (7.5 percent), these results were similar to the study done by Sharma M et al. (2008)³¹ in elderly population of Chandigarh, North India. Cataract in the elders may be due increased exposure to the ultraviolet radiation during long hours of work in open

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fields and eighty percent of blindness in elders is due to cataract alone (Angra SK et al. 1997)³². Venkatarao T et al. (2005)³³ study findings shown the prevalence of visual disability was found to be 56 percent in geriatric population in south India.

Sixty four percent of the subjects from non-slums and fifty five percent slums were suffering from arthritis/joint pain in the current study especially females, was also reported in other studies, (Purty AJ et al 2005; Joshi VR et al 2007)^{12, 34} possibly reflecting the hard life faced by women who never retire from household work unless totally disabled.

Relatively elderly people with hypertension were found more in non-slum areas (46 percent) compared to those in slum areas (38 percent), unlike reports from other studies. A much higher prevalence level of 56 percent has been reported in a WHO report (1995)³⁵ and 59 percent among the rural elderly from Tamilnadu, south India (Radhakrishnan S et al 2013)³⁶.

The elders living in the non-slum areas have significant higher presence of diabetes mellitus and coronary artery diseases in 11 percent than slum elderly (21 percent; 19 percent), further reflects the increasing life-style diseases in the community. It was twice as prevalent in females as in males. In terms of health status, females had a higher rate of morbidity than males.

The body mass index (BMI) is a useful index of relative weight that can be applied to define obesity and chronic energy deficiency at the community level (Arlappa N et al. 2005)³⁷. Majority of the elderly slum participants (49 percent) were normal (BMI 18.5-24.9 Kg/m²) than 46 percent of non-slum and 27 percent were thin (BMI <18.5 Kg/m²) compared to 14 percent of the non-slums. However, 40 percent of the non-slum elderly were overweight (BMI>25Kg/m²) than slums (24 percent). Although less directly "preventable" CED is associated with impaired physical activity and increased mortality (NIN 1991)³⁸.

There were no geriatric clinics in both slum and non-slum areas and it was observed that proportion of the non-slum elders were living in old age homes. The prevalence of high morbidity among slum elderly requires geriatric health care services in accordance with health education campaigns from time to time, to improve the awareness of the elderly people in slum areas, so as to improve timely health seeking behavior and also enable the information on various geriatric problems and their prevention should be organized.

CONCLUSION: This is the first geriatric health study that was designed to compare the health status of elderly people in slums and non-slums living in Kadapa region, south India. Our study finding highlighted that the majority (83%) of the elders are with an average number of illness per person was recorded as 4.56 in both slums and non-slum area. Identified common existing medical problems such as visual problems (72%), joint pains (59.50%), gastric problems (46%), and dental problems (44%) were more prevalent in both slum and non-slum elderly. Due to rise in the elderly population in the country, there is an urgent need to make necessary changes to develop special emphasis on geriatric health care facilities like mobile geriatric clinic services can be provided in both slum and non-slum areas in the developing countries like India.

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Characteristics	Slums (N=100)	Non- Slums (N=100)
Gender		
Male	46	42
Female	54	58
Age		
60-65	50	44
66-70	15	19
71-75	18	16

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76-80	7	14
81-85	5	5
86-90	2	1
91-95	2	1
>96	1	-
Marital Status	-	2
Un married	52	50
Married	37	39
Widowed	11	9
Separated		
Occupation Status		
Agriculture workers	5	0
Skilled/Craftsperson	7	13
Unskilled(daily wage/coolies	12	12
Professionals	-	4
House wives	33	30
Previously working	43	41

Table 1: Demographic characteristic of respondents

	Slum	Non-Slum	P value
Education-Score			
Post-graduation	-	3	
Graduation	2	7	0.02
Intermediation	5	11	
Secondary school	15	28	
Primary school	26	22	
Illiterate	52	29	
Per capita income (INR)			
≥ 13,500	-	4	
6,750 - 13,499	1	13	
5,050 - 6,749	6	18	<0.0001
3,375 - 5,049	8	21	
2,025 - 3,374	16	15	
675 - 2024	25	19	
≤ 675	44	10	
Socio economic status			
Class I (26 - 29)	0	10	
Class II (16 -25)	12	33	<0.0001
Class III (11 -15)	29	25	
Class IV (5 - 10)	26	21	
Class V (1- 5)	33	11	

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Modifiable risk factors			
Smoking	19	16	0.0017
Alcohol consumption	16	14	
Tobacco chewing	34	15	
None	31	55	

Table 2: Social Status according Kuppuswami's classification

	Slum	Non- Slum
Chronic Disease among geriatric population		
Visual Problems-H00-H59	76	68
Joint Pains-M00-M99	55	64
Gastric Problems K00-K93	44	48
Dental Problems K00-K93	42	46
Respiratory Problems J00-J99	41	34
Hypertension I10-I15	38	46
Skin Problems L00-L99	33	14
Genitourinary Problems N00-N99	24	26
Neurological Problems G00-G99	21	26
Psychological Problems F00-F99	18	14
Dementia G30-G32	15	12
Diabetes Mellitus E10	11	21
Coronary artery diseases I20-I25	11	19
Hearing loss H60-H95	12	9
Hemorrhoids K00-K93	7	4
Kyphosis of spine M00-M99	6	4
Cancers C00-D48	1	2
Medical Complications		
Absent	14	20
Present	86	80
Number of Medical complications		
1 complications	12	8
2 complications	12	13
3 complications	10	12
4 complications	6	8
5+ complications	46	39
Body Mass Index		
< 18.5 [underweight]	27	14
18.5- 24.99 [Normal]	49	46
25- 29.99 [Pre-obese]	17	30
30- 34.99 [Obese – class I]	4	6
35- 39.99 [Obese – class II]	3	3
>40.00 [Obese – class III]	0	1

Table 3: Physical and Medical information of patients

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