SOCIO DEMOGRAPHIC FACTORS IN RELATION TO CHRONIC ILLNESS AMONG ELDERLY IN INDIA: EVIDENCES FROM DLHS-4 DATA.

Epidemiology

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ABSTRACT

Introduction: Aging is a natural phenomenon associated with deteriorating health condition. Chronic diseases in elderly people hindering their physical functioning and psychological well-being. The rapid growth in the elderly population poses social and financial challenges. In this present study, it is try assess the associations of socio demographic, personal habits with chronic diseases among rural and urban areas of the elderly in India.

Methodology: District Level Household Survey (DLHS) - 4 data (2012-13) covered 171739 elderly people aged 60 years and above from 21 States/UTs of India. Of the total 40334 (24.8) elderly were reported to suffer from some kind of chronic illness during last one year including rural and urban areas. Bivariate analysis along with chi-square test were performed for associations between socio-demographic, personal habit and Chronic illness, binary and multiple logistic regression were performed to examine risk between exposure and outcome variables.

Results: Almost 25% of elderly suffers from different types of chronic illness in India. The prevalence of chronic illness were found higher in urban area among all the socio demographic characteristics and personal habits. Prevalence of ever use chew tobacco was 21.6, ever smoke tobacco was 25.0 and ever drink alcohol was 24.8% respectively. Unadjusted odds ratio shows male were 10% less likely to have chronic illness (CI= 0.88-0.92, p<0.001) than the female. Risk of chronic illness among general caste were higher than SC/ST/OBC. As compared to reference category (Hindu), Sikh (OR-1.29, CI-1.24-1.34, p=<0.001) and Muslim (OR-1.20, CI-1.14-1.25, p=<0.001) were more likely to have chronic illness. Adjusted odds ratio shows, risk of chronic illness among upper SES, higher years of schooling, marital status as separated/divorcee etc.) were higher as compared to their other respective categories. More risk were also found in ever smoking habits (OR-1.23, CI-1.18-1.28, p=<0.001) and ever use alcohol (OR-1.10, CI-1.05-1.14, p=<0.001) while in ever chew tobacco habits shows less likely to have chronic illness as compare to never use chew tobacco.

Conclusions: An effective social and policy guideline for regular assessment of elderly health, especially in urban areas, females, higher SES group, higher age group along with their preventive and curative measures is needed . Government of India launched a number of program, their implementation needs to be strengthen.

KEYWORDS

Elderly, Chronic Disease, Logistic Regression, DLHS-4, India

INTRODUCTION

Chronic diseases such as cardiovascular diseases, mental health disorders, diabetes, and cancer are the leading causes of death and disability in India among elderly. The rapid socioeconomic transformation has affected various aspects of Society[1]. According to census of India 2011, nearly 104 million people are elderly and the number of elderly is projected to reach 158.7 million in 2025 in India [2]. Across the world, phenomenon of population ageing is becoming a major alarm for the policy makers either countries belong to developed or developing.

Swami (2002) found that morbidity among the elderly were higher in the urban areas as compared to the rural. More prevalent disorders were hypertension (58 per cent) followed by arthritis (50 per cent)[3]. Guha (1994) found in his study that cardiovascular and respiratory diseases are leading causes of death[4]. Similarly Hughes & Gove (1981), Shah & Prabhakar (1997) found that hearing and visual impairments are two common causes of morbidity among the elderly in India [5,6].

As almost 67 per cent of the total India population reside in rural. Of which approx. 71 per cent of elderly population resides in villages while 29 per cent is in cities [7]. Few recent studies from different parts of India reported an increasing prevalence of multimorbidity with age. For example, the prevalence of multimorbidity in India increased from 1.3% in individuals aged 18–29 years to 30.6% in those aged 70 years and above[8-11]. Some other community-based rural studies shown that the prevalence of tobacco and alcohol use among elderly (age ≥60 years) were 31– 42 and 10 respectively [12-14].

Most of the studies carried out in relation to socio-demographic factors and personnel habits (i.e. use of chewed tobacco, smoking and alcohol) are focused on prevention of problems arises due to these substances in adolescents and youngsters. All previous study on elderly in relation to aforesaid factors were disease specific. None of the previous studies found which show association of socio-demographic and personal habits factors on overall chronic illness. Thus, this study is plan to estimates the relationship of socio-demographic factors and personal habits on overall chronic illness among rural-urban elderly population of India.

MATERIALS AND METHODS
Sampling Design and Sample Size:
Used District Level Health Survey (DLHS-4) survey data collected in 2012-13 in 21 states and union territories of India. It was a cross-sectional survey. Multi-stage stratified sampling design was followed in this survey. In urban areas a two-stage sampling design was used in which the primary sampling unit (PSU) was the NSSO Urban Frame Survey (UFS) blocks and second-stage sampling unit (SSU) was the household. The PSUs were selected by equal probability without replacement and households were selected by process of circular systematic sampling. Similarly, a two stage sampling design was followed in rural areas with villages as PSU and household as the second-stage sampling unit (SSU). The PSUs were selected by PPS with replacement and SSU were selected by circular systematic sampling. Overall 171739 elderly peoples aged 60 years and above were studied to assess the relation between socio-demographic factors, personal habits (such as use of tobacco & alcohol) and chronic illness among elderly in India.

Study Variable
The outcome variable in this study is elderly having chronic illness during last one year from the survey date. Elderly were asked, "Chronic Illness (during last 1 year)?" The options for the questions were yes (coded as 1) and no (coded as 2). Independent variables are area of residence, age, education, religion, caste, , marital status, socioeconomic status (SES) and personal habits such as use of tobacco, alcohol and smoke. For SES, first a wealth index was created on the basis of 20 households' assets using principal component analysis and then three groups were created by quintile. This exercise was done separately for urban and rural samples. Age was grouped into two categories: <75 years and ≥75 years. Education was divided into five categories: information not available, no schooling, ,up to 5 years schooling, up to 10 years schooling, > than 10 years schooling. Marital status was categorized as unmarried/marries gauna not performed, married and all others.

Statistical Analysis
Descriptive statistics, Pearson Chi-square test, univariate binary logistic and multiple logistic regression were used to examine statistical significance of socio demographic factors in relation to chronic illness among Elderly. Binary logistic regression was carried

out to estimate the adjusted effect socio-demographic and economic covariates on chronic illness. Binary logistic regression was used due to the dichotomous nature of outcome variables, that is, "no" and "yes" (coded as 0 and 1 respectively). The results were presented in the form of odds ratios (OR) with 95 per cent of confidence interval. The model can be put into a more compact form as follows:

$$Chronic\ illness\ during\ last\ one\ year = 1/(1 + e^{-t_i})$$
$$where\quad t = \beta_0 + \beta_i x_i\ ;\ i = 1,2,\dots n$$

Where $\beta_0 \dots \beta_i$ are regression coefficients indicating the relative effect of a particular explanatory variable on the outcome variable. The coefficients for each of the remaining categories of the variable express the magnitude of the effect of each category on the outcome controlling the effects of other variables in the model, relative to the reference category. In all the analyses, state weights were used to correct oversampling and to maintain the representativeness of the data as well as the statistical soundness of indicators calculated based on these data. SPSS-23 was used to analyse the data. Results were considered significant at 5 percent level of significance.

RESULTS
This study provides an overview of the magnitude of reported symptoms and diagnosed cases of chronic illness among elderly in India. Found overall 171739 elderly covered in survey were age ≥ 60 years, of which approx. 25 per cent diagnosed of having some chronic illness (table1). Chronic illness symptoms pertaining to illness persisting for more than one month were found higher in Musculoskeletal-System (14.1%) followed by Respiratory-System (12.9%), Cardiovascular-System (11.5%), Central-Nervous-System (7.9%), Gastrointestinal-System (5.1%) etc. Similarly while looking about diagnosed chronic illness, higher percentage reported in Hypertension (23%) followed by Diabetes (20.3%), Hernia-Hydrocele-Peptic-Ulcer (11%), Asthma--Respiratory-Failure (6.9%), Chronic-Heart-Disease & Rheumatoid-Arthritis (4.7%) etc.

Table 1: Elderly self-reported their Chronic illness symptoms and disease diagnosed.

Chronic illness symptoms pertaining to illness persisting for more than one month	Number	Valid %	Chronic illness diagnosed	Number	Valid %
Musculoskeletal-System	6027	14.1	Hypertension	9731	23.0
Respiratory-System	5502	12.9	Diabetes	8586	20.3
Cardiovascular-System	4893	11.5	Hernia-Hydrocele-Peptic-Ulcer	4642	11.0
Central-Nervous-System	3369	7.9	Asthma--Respiratory-Failure	2920	6.9
Gastrointestinal-System	2164	5.1	Chronic-Heart-Disease	2000	4.7
Asymptomatic	2180	5.1	Rheumatoid-Arthritis	1995	4.7
Eye-Problems-Diseases	1900	4.4	Myocardial-Infection-Heart-Attack	866	2.0
Genitourinary-System	1017	2.4	Cataract	732	1.7
Skin-Diseases	967	2.3	Chronic-Liver-Diseases	525	1.2
Ent-Problems-Diseases	462	1.1	Others	5317	12.6
Others	13550	33.2	Not-Diagnose	4931	11.7
Sub total	**42031**	**100.0**	**Sub total**	**42245**	**100.0**
System Missing	129024		System Missing	129491	
Grand Total	171739		Grand Total	171739	

Characteristics of elderly along with their Sociodemographic, Economic and Personal Habits Profile (table 2)
Table 2 depicts the profile of elderly who participated in the survey according to type of locality and their sociodemographic, economic and personal habits. Broadly it is found that elderly living in urban areas were have more proportion of chronic illness than elderly living in rural areas across all the sociodemographic, economic and personal habits categories. Among all the elderly surveyed, 24.4% reported that they are suffering from some kind of chronic illness from last one year at the time of survey. Gender wise distribution shows, around 26% were female and 24% were male. Age wise comparison (< 75 years and ≥ 75 years) shows almost similar proportion (approx. 25%) for elderly who were reported suffering from chronic illness. Caste wise analysis shows that general caste (33%) were higher proportion of sufferer from chronic illness as compared to OBCs (24.2%), SC (23.0%) and ST (15.0%). Religion wise, Sikh (30.2%) were found higher sufferer than Muslim (28.6%) and Hindu religion (25.1%). It is also observed that as the level of education and SES status increases, sufferer from chronic illness were also increases. Prevalence of ever chew tobacco users was 21.6%, ever smoker 25% and ever drinker 24.8% respectively.

Table 2: Characteristics of the study population.

Description of exposure variables		Chronic Illness during last one year		
		Rural N (%)	Urban N (%)	Total N (%)
Gender	Male	11241 (21.7)	8312 (27.4)	19553 (23.8)
	Female	11656 (23.5)	9125 (29.4)	20781 (25.7)
Age in group	< 75 Years	19530 (22.5)	14928 (28.4)	34458 (24.7)
	>= 75 Years	3367 (22.8)	2509 (28.2)	5876 (24.8)
APL/BPL Status	yes	9447 (22.6)	4950 (28.2)	14397 (24.3)
	no	13341 (22.6)	12401 (28.6)	25742 (25.1)
	dk	109 (15.2)	86 (19.5)	195 (16.8)
Caste	SC	5438 (22.3)	2740 (24.7)	8178 (23.0)
	ST	2978 (14.7)	839 (16.3)	3817 (15.0)
	OBC	7991 (23.0)	6688 (25.8)	14679 (24.2)
	General	6490 (29.3)	7170 (37.2)	13660 (33.0)
Religion	Others (Jain/Boudh etc.)	964 (21.8)	373 (27.1)	1337 (23.1)
	Muslim	1149 (28.6)	1658 (28.7)	2807 (28.6)
	Christian	1641 (13.7)	1082 (23.0)	2723 (16.3)
	Sikh	2857 (29.2)	996 (33.3)	3853 (30.2)
	Hindu	16286 (22.8)	13328 (28.6)	29614 (25.1)
Years of schooling completed	Information not available	1264 (19.3)	680 (22.7)	1944 (20.4)
	No Schooling	13169 (22.0)	5232 (25.8)	18401 (23.0)
	Up to 5 Yrs Schooling	4142 (23.7)	3357 (29.9)	7499 (26.1)
	Up to 10 yrs Schooling	3502 (24.1)	5227 (30.4)	8729 (27.5)
	> 10 Yrs Schooling	820 (26.0)	2941 (30.5)	3761 (29.4)
Marital Status	unmarried/marries gauna not performed	263 (13.6)	190 (20.4)	453 (15.8)
	married	14785 (21.8)	11106 (27.4)	25891 (23.9)
	all others	7849 (24.8)	6141 (30.7)	13990 (27.1)

SES	Lower	8154 (19.8)	5924 (24.1)	14078 (21.4)
	Middle	8642 (21.7)	7263 (29.5)	15905 (24.7)
	Upper	6101 (29.8)	4250 (34.8)	10351 (31.7)
Chew habits (tobacco)	Ever Tobacco Chew	4945 (19.7)	2544 (26.6)	7489 (21.6)
	Never Tobacco Chew	17952 (23.5)	14893 (28.7)	32845 (25.6)
Smoke habits (tobacco)	Ever Smoke	3589 (23.1)	1946 (29.3)	5535 (25.0)
	Never Smoke	19308 (22.5)	15491 (28.3)	34799 (24.7)
Drink habits (Alcohol)	Ever Drink Alcohol	3813 (22.8)	1994 (29.6)	5807 (24.8)
	Never Drink Alcohol	19084 (22.5)	15443 (28.3)	34527 (24.8)

Factors associated with chronic illness of elderly in bivariate analysis (table 3)

Univariate logistic regression analysis showing association of sociodemographic factors and personal habits of elderly with chronic illness as per their type of locality. It was found that elderly living in rural area were 27% less likely to have chronic illness as compared to urban areas, p<0.001. Female were 10% less likely chance to have chronic illness than male (OR-0.90, CI-0.88-0.92) p<0.001. Age group (< 75 year and >=75 years) were not found statistically significant. As compared to general caste, others caste such as SC(39%), ST(64%) and OBC(35%) less likely to have chronic illness, p<0.001. Religion-wise comparison shows that rural elderly are more vulnerable to have chronic illness as compared to reference category (Hindu). In rural Sikh chronic illness have (OR-1.39, CI-1.33-1.46, p=<0.001), Muslim have (OR-1.35, CI-1.26-1.45, p=<0.001), Jain/budhhist etc. (OR-0.94, CI-0.88-1.02, p=0.12) and Christian (OR-0.54, CI-0.51-0.54, p=<0.001) while in urban only Sikh have (OR-1.25, CI-1.15-1.35, p=<0.001) and other religion have less likely chance. Chance of having chronic illness were increasing as years of schooling and SES increases in rural as well as in urban both. Ever smoking tobacco (OR-1.05, CI-0.99-1.11, p=0.08) and ever drinking alcohol (OR-1.07, CI-1.01-1.13, p=0.02) were more vulnerable than never in urban areas as compared to rural areas while chewing tobacco habits showing adverse effect.

Table3: Bivariate logistic regression analysis in relation to factors of socio-demographic factors, personal habits and chronic illness among elderly in India.

Description of Explanatory variables		Rural	P Value	Urban	P Value	Total	P Value
		OR & 95% C.I. [LL,UL]		OR & 95% C.I. [LL,UL]		OR &95% C.I. [LL,UL]	
Locality (Ref.cat: Urban)	Rural					0.73 [0.72-0.75]	0.00
Gender (Ref.cat: Female)	Male	0.90 [0.88-0.93]	0.00	0.91 [0.88-0.94]	0.00	0.90 [0.88-0.92]	0.00
Age (Ref.cat: >= 75 yrs)	< 75 yrs	0.99 [0.94-1.03]	0.48	1.01 [0.96-1.06]	0.73	0.99 [0.96-1.03]	0.77
Caste (Ref.cat: General)	SC	0.69 [0.66-0.72]	0.00	0.55 [0.52-0.58]	0.00	0.61 [0.59-0.63]	0.00
	ST	0.41 [0.39-0.43]	0.00	0.33 [0.30-0.36]	0.00	0.36 [0.34-0.37]	0.00
	OBC	0.72 [0.69-0.75]	0.00	0.59 [0.56-0.61]	0.00	0.65 [0.63-0.67]	0.00
Religion (Ref.cat: Hindu)	Others	0.94 [0.88-1.02]	0.12	0.93 [0.82-1.05]	0.22	0.89 [0.84-0.95]	0.00
	Muslim	1.35 [1.26-1.45]	0.00	1.00 [0.94-1.07]	0.93	1.20 [1.14-1.25]	0.00
	Christian	0.54 [0.51-0.57]	0.00	0.74 [0.69-0.80]	0.00	0.58 [0.56-0.61]	0.00
	Sikh	1.39 [1.33-1.46]	0.00	1.25 [1.15-1.35]	0.00	1.29 [1.24-1.34]	0.00
Years of Schooling (Ref.cat: >10 yrs Schooling)	Information not available	0.68 [0.61-0.75]	0.00	0.67 [0.61-0.74]	0.00	0.61 [0.58-0.65]	0.00
	No Schooling	0.80 [0.74-0.87]	0.00	0.79 [0.75-0.84]	0.00	0.72 [0.69-0.75]	0.00
	Up to 5 yrs Schooling	0.88 [0.81-0.96]	0.00	0.97 [0.92-1.03]	0.37	0.85 [0.81-0.89]	0.00
	Up to 10 yrs Schooling	0.90 [0.83-0.99]	0.02	1.00 [0.94-1.05]	0.86	0.91 [0.87-0.95]	0.00
Marital Status (Ref.cat: separated /divorcee etc.)	Not married /Gauna not performed	0.48 [0.42-0.55]	0.00	0.58 [0.49-0.68]	0.00	0.51 [0.46-0.56]	0.00
	Married	0.85 [0.82-0.87]	0.00	0.85 [0.82-0.88]	0.00	0.85 [0.83-0.87]	0.00
SES (Ref.cat: Upper)	Lower	0.58 [0.56-0.60]	0.00	0.59 [0.57-0.62]	0.00	0.59 [0.57-0.61]	0.00
	Middle	0.66 [0.63-0.68]	0.00	0.78 [0.75-0.82]	0.00	0.71 [0.69-0.73]	0.00
Chew habits (tobacco) (Ref.cat: Never Use)	Ever Use	0.80 [0.77-0.83]	0.00	0.90 [0.86-0.95]	0.00	0.80 [0.78-0.82]	0.00
Smoking habits (tobacco) (Ref.cat: Never Use)	Ever Use	1.04 [1.00-1.08]	0.08	1.05 [0.99-1.11]	0.08	1.01 [0.98-1.05]	0.46
Drinking habits (Alcohol) (Ref.cat: Never Use)	Ever Use	1.02 [0.98-1.06]	0.39	1.07 [1.01-1.13]	0.02	1.00 [0.97-1.03]	1.00

OR=Odds Ratio, LL=Lower Limit, UL=Upper Limit

Multivariable association with Chronic Illness through multiple logic regression analysis (table 4)

Multiple logistic regression analysis also shows that elderly residing in rural areas were 17% less likely of having chronic illness as compared to urban areas, p<0.001. Male elderly were also 12% less likely of having chronic illness as compared to women, p<0.001. Age group were not found statistically significant for chronic illness. When comparing caste wise, we found that as compared to general caste, OBC (OR-0.71, CI-0.69-0.73, p=<0.001), SC (OR-0.70, CI-0.67-0.72, p=<0.001) and ST (OR-0.46, CI-0.44-0.48, p=<0.001) were less likely to have chronic illness. Religion-wise, as compared to Hindu religion, Christian were less likely while Sikh (OR-1.1, CI-1.06-1.15, p=<0.001), Muslim (OR-1.14, CI-1.09-1.20, p=<0.001) and others [Jain/Buddhist etc.] (OR-1.20, CI-1.13-1.28, p=<0.001) were more likely to suffer from chronic illness. Similarly, above 10 years of schooling (reference category) have less odds of being chronic illness than up to 5 years of schooling (OR-1.06, CI-1.01-1.11, p=0.03), while up to10 years of schooling were not found statistically significant (OR-1.03, CI-0.99-1.08, p=0.15) and on the other hand no schooling and schooling information not available in data were less likely to have chronic illness. Regarding marital status, as compared to separated/divorcee etc., married and married but guana not performed were was statistically significant. Lower and middle SES group were less likely to chronic illness than upper SES group, p<0.001. Ever users of smoking tobacco and drinking alcohol were more chance than never users, p<0.001.

Table 4: Multiple logistic regression analysis in relation to factors of socio-demographic factors, personal habits and chronic illness among elderly in India.

Description of Explanatory variables		AOR & 95% C.I. [LL,UL]	P -Value
Locality (Ref.cat: Urban)	Rural	0.83 [0.81-0.85]	0.00
Gender (Ref.cat: Female)	Male	0.88 [0.86-0.91]	0.00
Age (Ref.cat: >= 75 Yrs)	< 75 Yrs	1.00 [0.97-1.03]	0.99
Caste (Ref.cat: General)	SC	0.70 [0.67-0.72]	0.00
	ST	0.46 [0.44-0.48]	0.00
	OBC	0.71 [0.69-0.73]	0.00

Religion (Ref.cat: Hindu)	Others	1.20 [1.13-1.28]	0.00
	Muslim	1.14 [1.09-1.20]	0.00
	Christian	0.82 [0.78-0.87]	0.00
	Sikh	1.10 [1.06-1.15]	0.00
Years of Schooling (Ref.cat: >10 Yrs Schooling)	Information not available	0.79 [0.74-0.85]	0.00
	No Schooling	0.88 [0.84-0.92]	0.00
	Up to 5 Yrs Schooling	1.06 [1.01-1.11]	0.03
	Up to 10 Yrs Schooling	1.03 [0.99-1.08]	0.15
Marital Status (Ref.cat: separated / divorcee etc.)	Not married/Gauna not performed	0.58 [0.52-0.65]	0.00
	Married	0.83 [0.80-0.85]	0.00
SES (Ref.cat: Upper)	Lower	0.74 [0.72-0.77]	0.00
	Middle	0.81 [0.78-0.83]	0.00
Chew habits (tobacco) (Ref.cat: Never Use)	Ever Use	0.92 [0.89-0.94]	0.00
Smoking habits (tobacco) (Ref.cat: Never Use)	Ever Use	1.23 [1.18-1.28]	0.00
Drinking habits(Alcohol) (Ref.cat: Never Use)	Ever Use	1.10 [1.05-1.14]	0.00

AOR=Adjusted Odds Ratio, LL=Lower Limit, UL=Upper Limit

DISCUSSION:

Using DLHS-IV data, it is found that a large proportion of elderly suffer from various types of chronic illness in India. This analysis found 25% elderly suffer from chronic illness. Descriptive analysis shows that the chronic illness were more prevalent among all the socio-demographic factors and personal habits in elderly persons residing in urban areas as compared to rural areas. Logistic regression was used to investigate the association between, sociodemographic factors, personal habits and chronic diseases. The multiple regression models adjusted for age, sex, socioeconomic status, and other risk factors previously reported in the literature for each disease of interest [15-19].

Multiple logistic regression analysis findings validates the bivariate findings that the socio demographic and personal habits risk factors are significantly associated with chronic illness among elderly persons.

Medical personnel generally use clinically/lab tested data to determine the presence of chronic illness and its association with different risk factors. Thus, this study is more appropriate for those using self-reported data. Because of this limitation, this study was restricted to see overall chronic illness and its risk factors and association between them. Due to limitations in data, it is difficult to associate individual chronic illness with selected independent variables. Multiple chronic morbidity and its prevalence can also not be determined.

However, from some previous studies which shows effects of tobacco use arises chronic problems such as cardiovascular disease, chronic lung disease, stroke, and cancers [20,21]. Adaji et al found that individuals living in rural areas were less likely to have cardiac infection [22]. Similar findings were reported in other studies [23, 24]. Similarly, Phaswana-Mafuya's study from South Africa [17] reported that greater wealth and residing in urban areas increased the risk of a chronic disease, which was consistent with the results obtained in our analysis. Finally, in keeping with other studies, we found that having a pre-existing chronic disease increases the risk of developing other chronic diseases [15, 17, 25].

This study provides an update on the association of having overall chronic illness with socio-demographic factors and personal habits among the elderly. The findings showing statistically significant association. This study are importance for on-going and prospective programmes and policies meant for addressing issues affecting the elderly.

Strengths and limitations

This study carried out on a cross sectional data (DLHS-IV), which contain self-reported information of respondents. The self-reported symptoms and diagnosed cases of a chronic illness may be problematic. There is chance of underreporting and overreporting both due to low health literacy, amnesia, forget diagnosis or misunderstood

disease. It is also possible that elders may also self-diagnose and indicate a chronic disease that has not been clinically diagnosed.

Strength of this study is that, findings of this study can be generalisable to the older population in India due to the use of multi-stage stratified sampling and adjustment of under sampling of place of residence. It also has ability to report findings of univariate as well as multivariate models which provided important evidence regarding stratified burden (univariate results) and independent associations (multivariate results) that are useful to health system policy makers.

CONCLUSION:

The burden of chronic diseases is notably high among the elderly in urban areas. Chronic diseases among elderly have a significant association with the socio-demographic factors and their personal habits. Given the high prevalence of chronic diseases among the elderly and increasing aging population, this study indicates emerging need to pay greater attention to ageing related issues and to promote holistic policies and programmes for dealing with ageing society. Emphasis on a periodic assessment of their health status and provision of required preventive as well as curative measures for a healthy elderly population should be a policy priority.

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