Original Article

PREVALENCE OF FALLS AND SOCIODEMOGRAPHIC CHARACTERISTICS OF ELDERLY: A CROSS-SECTIONAL STUDY IN RURAL AND URBAN POPULATION OF LUCKNOW DISTRICT

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ABSTRACT

Falls are a major health issue amongst elderly. Early identification of falls in elderly would certainly reduce morbidity and mortality. Most of the falls in elderly can be attributed to the combination of both extrinsic and intrinsic factors. A wide array of factors may be attributed to the falls in elderly. World Health Organization concept of Active Ageing could only be conceptualized if the risks of falls could be identified early in the course of an aging individual. However falls cannot be completed eliminated as risk factor of falls in elderly as it depends upon a wide array of factors. This study was conducted in the urban and rural field practice areas of Era's Lucknow Medical College and Hospital. This consists of Villages of Kakori block & mohallas of old Lucknow. People of either sex , 60 yrs of age and above residing in the field practice areas of Department Of Community Medicine constitute the study unit. It was a community based cross sectional study. The period of study was one year from October 2011 to September 2012 which was used for the development of study tools, collection of data, analysis and presentation of findings. Taking Prevalence as 50% and the value of allowable error , d to be as 5% the sample size was 400. A predesigned and pretested interview schedule was used to elicit information on sociodemographic characteristics and required information. In the present study 43.8% of the elderly males and 66.7% of the females in rural area had a fall within 12 months. However, 63.7% males and 69.7% females of urban area had a fall within 12 months. Less than one third 28.1% of males and 55.9% females in rural area had got injured due to fall within 12 months. In our study most common problem that was associated both with males and females elderly in rural areas were musculoskeletal problems that was followed by Eye problems and that was followed by cardiovascular problems. Majority of 76.4% of males and 78.4% of females of rural areas had musculoskeletal problems and 58.1% of males and 71.1% of females in urban areas had musculoskeletal problems. Overall 65.7% of males and 75.4% of females had musculoskeletal problems. India's elaborate system of Rural health care would be failing if the common problems of elderly are not addressed given to the fact that the proportion of elderly population are increasing.

KEYWORDS: Elderly, Falls, Comorbidity, Senility, Ageing, Overcrowding, Injury, Hospitalizations.

INTRODUCTION

Infact one of the greatest triumphs of humanity is healthy ageing population.Having a healthy stable ageing population is also a challenge.In some of the societies the elderly are often ignored. Ageing is a complex , multifactorial and inevitable process which

> **What is "Active Ageing"?**
> Active ageing is the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age.

begins before birth. World Health Organization has recently added one or more dimensions to ageing and that is ACTIVE AGEING (1).

There is no United Nations standard numerical criteria but the U.N agreed cutoff is 60+ years when referring to elderly populations.Consequently, given problems like high levels of morbidity (Alam, 2006; Rajan et al., 1999; World Bank, 1993) (2-4) and commensurately high health care expenses (Nyce and Schieber, 2005) (5-6), well being of the elderly have been threatened. The growth rate of the elderly population varies between

countries, but is expected to be high in Afro-Asian countries. In India the share of aged has increased from 6.5% (1981) to 7.4% (2001) and is expected to constitute about a fourth of the population by 2075.

The National Social Assistance Programme (1995) made the first attempt to provide a social security network to the elderly through the provisioning of, inter alia, a pension scheme for the elderly destitute. The National Policy on Older Persons (1999) is another major step forward in this regards. Intervention areas include financial security, health care, shelter, welfare, and other needs of elders; protection against abuse and exploitation; opportunities for developing the potential and participation of elders; and services to improve quality of life of elders. The concept of healthy aging enunciated in this policy was further reiterated in the National Population Policy of 2000. However, institutional response – in the form of developing social health care and security mechanism, old age homes, and other necessary steps - to the problem of aging has not been effective and remains inadequate and more in the nature of lip service (Bose and Shankardass, 2004; Rajan et al., 1999) (7,3).

Falls in elderly contributes a major part of elderly problems. Majority of falls in elderly are multifactorial. These usually results from complex interplay of many predisposing and precipitating factors. Falls and their sequelae are preventable. Falls in elderly are considered a major one of Geriatric giants among confusion, incontinence, and other morbidities. Falls are commonly defined as "Inadvertently coming to rest on the ground, floor or other lower level excluding intentional change in positionto rest in furniture, wall or other objects." There is a limited research on health ageing in India. Hence it is of utmost importance to know the prevalence rate and risk factors for the falls in elderly. This would help in defining effective preventive health strategies. Hence this study was designed to know the prevalence rate of falls and the sociodemographic characteristics of the elderly in Rural and Urban population of lucknow district.

AIM & OBJECTIVES

1. To assess the sociodemographic profile of geriatric populations in Lucknow.

2. To find the prevalence of falls amongst elderly in Lucknow

MATERIAL AND METHODS

District profile

Lucknow is centrally placed district of Uttar Pradesh, spread over an area of 2528 sq kms, which constitute 0.85% of the total area of country. In 2011, the district

Lucknow has a population of about 4,588,455. There are 906 females per 1000 males. Main languages spoken in the district are Hindi and Urdu.

Geographical profile

Location

Lucknow, the capital of Uttar Pradesh, is situated 125 meter above the mean sea level. It is situated between $26^{0}30$, and $27^{0}10$, North Latitude and $80^{0}30'$ East Longitude. It is situated on the banks of the river Gomti, which flows from West to East. The district of Lucknow district presents the Gangetic plains of Uttar Pradesh, which physiographically falls under the 6th agro climatic zone i.e. central zone, also known as mid plain zone.

Climate

The climate of Lucknow district is sub-tropical. The average normal rainfall of the district is 953 mm. It receives maximum rainfall during the three months of July, August and September which accounts for 70%-75% of the total rainfall. The temperature varies from a maximum of about 45^{0} Celsius in summer to a minimum of about 5^{0} Celsius in winter season.

Demographic profile

Literacy rate of Lucknow is 79.3% (Male-84.3%, Female- 73.9%) (Census 2011).

Study area: The study was conducted in the urban and rural field practice areas of Era's Lucknow Medical College and Hospital. This consists of Villages of Kakori block & mohallas of old Lucknow.

Study unit: People of either sex , 60 yrs of age and above residing in the field practice areas of Department Of Community Medicine constitute the study unit.

Study design: It was a community based cross sectional study.

Study period: The period of study was one year from October 2011 to September 2012 which was used for the development of study tools, collection of data, analysis and presentation of findings.

$$n = z^{2} .p .q / d^{2}$$

Where   n = sample size

   z = 1.96

   p = prevalence

   q = 100 – p

   d = allowable error

Prevalence is taken as 50%[6] and the value of allowable error, d comes out to be 5%

Sample size = 400 population

Sampling technique: Multistage random sampling techniques was used to select the study unit.

Selection of Sample: The requisite sample was reached in two stages:

First stage: Firstly the sample size of 400 was divided equally into Rural and Urban areas.

Second stage:

Rural Areas

A list of total no. of villages under Rural Health Training Centre were obtained and there were 12 villages in total. Out of the 12 villages 6 villages were selected by simple random sampling.

Urban Areas

A list of total no. of mohallas under Urban Health Training Center were obtained Out of the total 20 mohallas 10 were selected for study by Simple random sampling.

Third stage

Simple random technique (using the last digit of currency) was used to select the first household for the survey. Then starting from the first household on the left side of the road all the houses , where an elderly were available ,were surveyed till the desired number of elderly met from each of the 6 villages under rural health training center and each of 10 mohallas of Urban Health Training Center.

Inclusion criteria

- Elderly residing for at least six months in the area were be considered as a resident and included in the study.

- Elderly whose native place is other than present place of residence but the duration of stay was more than six months ,were included in the study

Exclusion criteria

- Those elderly living in the area for less than six months were not included in the study.

- Those elderly, who were non cooperative or refused to provide necessary information, were not included in the study.

Tools of investigation: A predesigned and pretested interview schedule was used to elicit information on sociodemographic characteristics and required information.

Pretesting of the interview schedule: The schedule was pretested in a sample of 50 elderly,25 each from urban and rural areas. Necessary modifications were made in the schedule to overcome the difficulties encountered during pretesting.

RESULTS

The present study was carried out to assess the Health and morbidity profile amongst Elderly in urban and rural field practice area of the Department of Community Medicine, Era's Medical college & Hospital, Lucknow.

In the present study, A total of 400 elderly were included in the study drawn from the villages under rural health training center and mohallas under urban health training center from lucknow through multistage sampling technique.

Age group	Rural (n=200)		Urban (n=200)		Total (n=400)	
	Male (n=89) No.(%)	Female (n=111) No.(%)	Male (n=124) No.(%)	Female (n=76) No.(%)	Male (n=213) No.(%)	Female (n=187) No.(%)
60-64	34 (38.2)	17 (15.3)	35 (28.2)	12 (15.8)	69 (32.4)	29 (15.5)
65-69	26 (29.2)	54 (48.6)	39 (31.5)	31 (40.8)	65 (30.5)	85 (45.5)
70-74	18 (20.2)	35 (31.5)	31 (25.0)	29 (38.2)	49 (23.0)	64 (34.2)
>=75	11 (12.4)	5 (4.5)	19 (15.3)	4 (5.3)	30 (14.1)	9 (4.8)

Table 1: Distribution of Elderly According to Age & Sex by Area of Residence

Table 1: shows that more than one third (38.2%) of the males and 15.3% of females of rural area were in the age group of 60-64 years , in urban areas 28.2 % of males and 15.8% of females belonged to 60-64 yrs age groups.

29.2% of males and 48.6% of females in rural areas belonged to age group 65-69 years, in urban areas 31.5% of males and 40.8% of females were of the age group of 65-69 yrs.

About one fifth (20.2%) of the males and 31.5% of females of rural areas were in the age group of 70-74 years, in urban areas 25.0% of males and 38.2% of females were in the age group 70-74 yrs.

Only 12.4% of the male and 4.5% of females in rural areas were >=75 years ,in urban areas 15.3% of males and 5.3% of females were >=75 yrs.

In total, 32.4% of the males and 15.5% of females were in the age group of 60-64 years. However, 30.5% of the males and 45.5% of females belonged to 65-69 years About one fifth (23%) of the males and 34.2% of females were in the age group of 70-74 years. Only 14.1% of males and 4.8% of females were >=75 years.

Socio-demographic	Rural(n=200)		Urban(n=200)		Total(n=400)	
	Male (n=89) No. (%)	Female (n=111) No. (%)	Male (n=124) No. (%)	Female (n=76) No. (%)	Male (n=213) No. (%)	Female (n=187) No. (%)
Religion						
Hindu	53 (59.6)	91(82.0)	46 (37.1)	50 (65.8)	99 (46.5)	141 (75.4)
Muslim	36 (40.4)	20 (18.0)	78 (62.9)	26 (34.2)	114 (53.5)	46 (24.6)
Caste						
SC/ST	5 (5.6)	3 (2.7)	2 (1.6)	0 (0.0)	7 (3.3)	3 (1.8)
OBC	70 (78.7)	103 (92.8)	83 (66.9)	67 (88.2)	153 (71.8)	170 (90.9)
General	14 (15.7)	5 (4.5)	39 (31.5)	9 (11.8)	53 (24.9)	14 (7.5)
Education						
Illiterate	70 (78.7)	106 (95.5)	101 (81.5)	72 (94.7)	171 (80.3)	178 (95.2)
Just literate	5 (5.6)	4 (3.6)	4 (3.2)	1 (1.3)	9 (4.2)	5 (2.7)
Primary-junior high school	5 (5.6)	0 (0.0)	3 (2.4)	0 (0.0)	8 (3.8)	0 (0.0)
High school-Intermediate	8 (9.0)	1 (0.9)	8 (6.5)	0 (0.0)	16 (7.5)	1 (0.5)
Graduate+	1 (1.1)	0 (0.0)	8 (6.5)	3 (3.9)	9 (4.2)	3 (1.6)
Occupation						
Unemployed	35 (39.3)	98 (88.3)	83 (66.9)	67 (88.2)	118 (55.4)	165 (88.2)
Unskilled	10 (11.2)	6 (5.4)	6 (4.8)	1 (1.3)	16 (7.5)	7 (3.7)
Semi-skilled	10 (11.2)	2 (1.8)	8 (6.5)	1 (1.3)	18 (8.5)	3 (1.6)
Skilled	0 (0.0)	0 (0.0)	3 (2.4)	0 (0.0)	3 (1.4)	0 (0.0)
Clerical/Shop owner	9 (10.1)	1 (0.9)	10 (8.1)	1 (1.3)	19 (8.9)	2 (1.1)
Farmer	23 (25.8)	4 (3.6)	9 (7.3)	4 (5.3)	32 (15.0)	0 (0.0)
Semi-professional	2 (2.2)	0 (0.0)	3 (2.4)	0 (0.0)	5 (2.3)	8 (4.3)
Professional	0 (0.0)	0 (0.0)	2 (1.6)	2 (2.6)	2 (0.9)	2 (1.1)

Table 2: Distribution of Elderly According to Socio-demographic Characteristics by Area of Residence

Table 2: Shows that 59.6% males and 82% females in rural area belonged to Hindu community while in urban areas, 37.1% were male and 65.8% were females. In all, 46.5% of the males and 75.4% of females were Hindu.

Majority of the males (78.7%) and females (92.8%) of the rural areas belonged to OBC category while in urban area, 66.9% males and 88.2% females were of OBC category. Overall, 71.8% of the males and 90.9% of the females were OBC category.

Most of the males (78.7%) and females (95.5%) of the rural areas were illiterate. Similarly, 81.5% of the males and 94.7% of the females of the urban areas were illiterate. In all, 80.3% of the males and 95.2% of the females were illiterate.

Most of the males (Rural=39.3%, Urban=66.9%) and females (Rural=88.3%, Urban=88.2%) of both rural and urban were unemployed. In all, 55.4% of the males and 88.2% of the females were unemployed.

Socio-economic status	Rural (n=200)		Urban (n=200)		Total (n=400)	
	Male (n=89) No. (%)	Female (n=111) No. (%)	Male (n=124) No. (%)	Female (n=76) No. (%)	Male (n=213) No. (%)	Female (n=187) No. (%)
I	2 (2.2)	1 (0.9)	1 (0.8)	3 (3.9)	3 (1.4)	4 (2.1)
II	6 (6.7)	9 (8.1)	6 (4.8)	9 (11.8)	12 (5.6)	18 (9.6)
III	6 (6.7)	12 (10.8)	20 (16.1)	15 (19.7)	26 (12.2)	27 (14.4)
IV	18 (20.2)	11 (9.9)	19 (15.3)	6 (7.9)	37 (17.4)	17 (9.1)
V	57 (64.0)	78 (70.3)	78 (62.9)	43 (56.6)	135 (63.4)	121 (64.7)

Table 3: Distribution of Elderly According to Socio-economic Status by area of Residence

Table 3: Shows that more than half of the males (64.0%) and females (70.3%) of the rural areas belonged to SES V. Similarly, 62.9% of the males and 56.6% of females of urban areas belonged to SES V. In all, 63.4% males and 64.7% females belonged to SES V (Table-3).
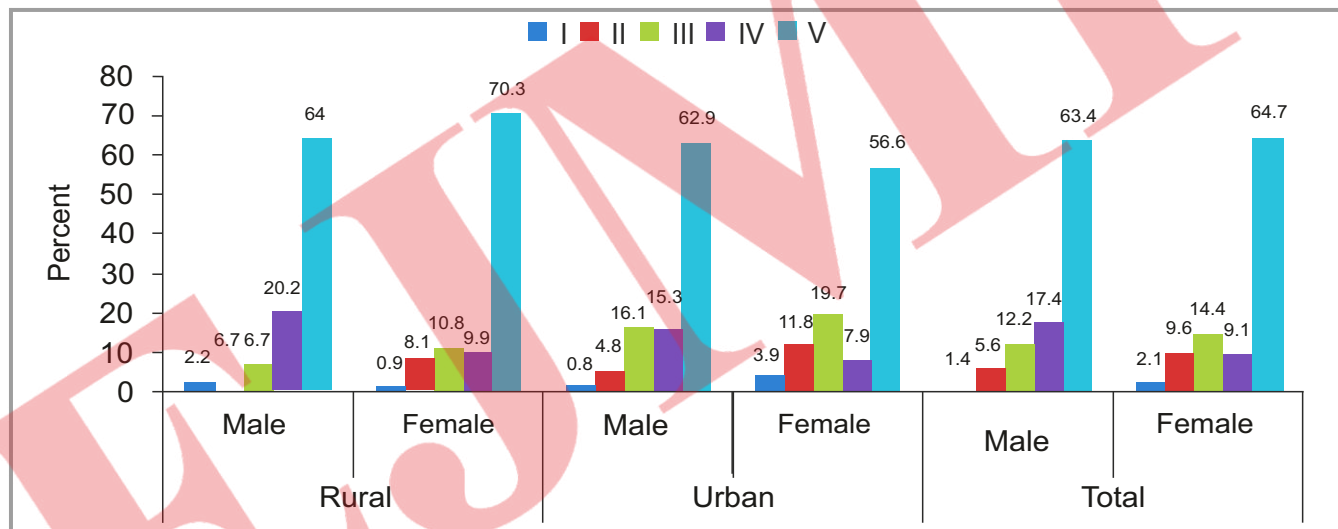

Fig 1: Distribution of Elderly According to Socio-economic Status by area of Residence

Falls and Injuries	Rural(n=200)		Urban(n=200)		Total(n=400)	
	Male (n=89) No. (%)	Female (n=111) No. (%)	Male (n=124) No. (%)	Female (n=76) No. (%)	Male (n=213) No. (%)	Female (n=187) No.(%)
Fall within 12months	39 (43.8)	74 (66.7)	79 (63.7)	53 (69.7)	118 (55.4)	127 (67.9)
Injuries within 12 months	25 (28.1)	62 (55.9)	55 (44.4)	44 (57.9)	80 (37.6)	106 (56.7)

Table 4: Distribution of Elderly According to Falls and Injuries by area of Residence

Table 4: Shows more than one third (43.8%) of the males and 66.7% of the females in rural area had a fall within 12 months. However, 63.7% males and 69.7% females of urban area had fall within 12 months. Less than one third (28.1%) of males and 55.9% females in rural area got injured within 12 months. However, 44.4% males and 57.9% females in urban area were injured within 12 months. In all, 67.9% had a fall and 56.7% get injured within 12 months.

Systems	Rural (n=200)		Urban (n=200)		Total (n=400)	
	Male (n=89) No. (%)	Female No. (%) (n=111)	Male (n=124) No. (%)	Female (n=76) No. (%)	Male (n=213) No. (%)	Female (n=187) No. (%)
Eye	61 (68.5)	81 (73.0)	64 (51.6)	51 (67.1)	125 (58.7)	132 (70.6)
Ear	14 (15.7)	30 (27)	19 (15.3)	16 (21.1)	33 (15.5)	46 (24.6)
Respiratory	42 (47.2)	29 (26.1)	35 (28.2)	16 (21.1)	77 (36.2)	45 (24.1)
CVS	36 (40.4)	49 (44.1)	45 (36.3)	30 (39.5)	81 (38)	79 (42.2)
GIT	37 (41.6)	40 (36)	39 (31.5)	29 (38.2)	76 (35.7)	69 (36.9)
Genitourinary	25 (28.1)	39 (35.1)	15 (12.1)	20 (26.3)	40 (18.8)	59 (31.6)
Musculoskeletal	68 (76.4)	87 (78.4)	72 (58.1)	54 (71.1)	140 (65.7)	141 (75.4)

Table -5: Distribution of elderly according to systems by area of residence

Table 5: Shows that 76.4% of males and 78.4% of females of rural areas had musculoskeletal problems and 58.1% of males and 71.1% of females of urban areas had musculoskeletal problems. Overall 65.7% of males and 75.4% of females had musculoskeletal problems .

More than half of the males (68.5%) and 73% of females in rural area had symptoms of eye problem. However, 51.6% males and 67.1% females of urban area had problems of eye. Overall 58.7% of males and 70.6% of females had eye problems.

47.2% of males and 26.1% of females of rural areas and 28.2% of males and 21.1% of females of urban areas had problems of respiratory systems. Overall 36.2% of males and 24.1% of females had respiratory problems .

41.6% of males and 36% of females in rural areas and 31.5% of males and 38.2% of females of urban areas had problems of gastrointestinal tract. Overall 35.7% of males and 36.9% of females had gastrointestinal problems.

DISCUSSIONS

Background characteristics of the study population

In this study about 38.2% of the males and 15.3% of females of rural area were in the age group of 60-64 years and in urban areas 28.2 % of males and 15.8% of females belonged to 60-64 yrs.

However, 29.2% of males and 48.6% of females of rural areas were between 65-69 years and 40.8% of males and 31.5% of females of urban areas were in age group 65-69 yrs and about one fifth (20.2%) of the males and 31.5% of females of the rural areas were in the age group of 70-74 years . Only 12.4% of the males and 4.5% were females of rural areas were >=75 years.

In our study most of the elderly belonged to age group of 65-69 yrs and this corresponds with the findings reported by Singh et al(2005) (8).

59.6% of the males and 82% of the females belonged to Hindu community. 40.4 % of males and 18.0% of females belonged to muslim community in rural areas. While in urban areas 37.1% of males and 65.8% of females belonged to hindu community and 62.9% of males and 34.2% of females belonged to the muslim community. In all, 46.5% of the males and 75.4% of females were Hindu.

As per NFHS-3 (9), 82.6% of households in Uttar Pradesh were Hindus and 16.3% Muslims.So our study findings are nearly consistent with NFHS-3 data.

In our study Majority of the males (78.7%) and females (92.8%) of the rural areas belonged to OBC. 66.9% of males and 88.2 % of females of urban areas belonged to OBC category. In all, 71.8% of the males and 90.9% of the females were OBC.

64.0% of males and 70.3%females of the rural areas belonged to SES V. Similarly, 62.9% of the males and 56.6% of females of urban areas belonged SES V. In all, 63.4% males and 64.7% females belonged to SES V. About 20% of the males and females of both rural and urban areas belonged to SES I, II, III and IV.

32.6% of males and 47.7% of females of rural areas were living in Kaccha houses. However, 10.5% of males and 36.8% females of urban areas were living in Kaccha houses. 47.2% of the males and 32.4% of females of rural areas were living in Pucca houses. Similarly, 82.3% of the males and 46.1% females were living in Pucca houses in urban areas. In all, 67.6% males and 38%

females were living in Pucca houses followed by Kachha (Male-19.7%, Female=43.3%) and semi-pucca (Male-12.7%, Female-18.7%). As per NFHS-3 (9), 71.9% of urban population lives in pucca house while only 12.2% in the rural population live in pucca house.

The overcrowding in the house was present in 61.8% elderly male families and 47.7% in elderly female families of rural areas.

6.3 FALLS IN ELDERLY:

In the present study 43.8% of the elderly males and 66.7% of the females in rural area had a fall within 12 months. However, 63.7% males and 69.7% females of urban area had a fall within 12 months. Less than one third 28.1% of males and 55.9% females in rural area had got injured due to fall within 12 months.

However, 44.4% males and 57.9% females in urban area had got injured due to fall within 12 months. In all, 67.9% had a fall and 56.7% got injured due to fall within 12 months. In a similar study by Joshi et al(2003) (10) about 51.5% of subjects had a fall. Injuries had occurred in about 80% population. Similar studies conducted by Johnson et al (2006) (11) examining the frequency and nature of falls and fall related injuries among older women >60 yrs reported 45% of females had a fall and of those who fell 64% have reported injuries.

In our study the percentage of falls in the elderly is almost equal to those reported by other studies however the percentages of injuries reported are less this may be due to increased minor falls without injuries.

CONCLUSIONS

The present study was carried out to assess the prevalence of falls and sociodemographic profile amongst Elderly in urban and rural field practice area of the Department of Community Medicine, Era's Medical college & Hospital, Lucknow.

In the present study, A total of 400 elderly were included in the study drawn from the villages under rural health training center and mohallas under urban health training center from lucknow through multistage sampling technique.

The analysis of the data led to the following conclusions:

In this study about 38.2% of the males and 15.3% of females of rural area were in the age group of 60-64 years and in urban areas 28.2 % of males and 15.8% of females belonged to 60-64 yrs.However, 29.2% of males and 48.6% of females of rural areas were between 65-69 years and 40.8% of males and 31.5% of females of urban areas were in age group 65-69 yrs and about one fifth (20.2%) of the males and 31.5% of females of the rural areas were in the age group of 70-74 years . Only 12.4% of the males and 4.5% were

females of rural areas were >=75 years.59.6% of the males and 82% of the females belonged to Hindu community. 40.4 % of males and 18.0% of females belonged to muslim community in rural areas. While in urban areas 37.1% of males and 65.8% of females belonged to hindu community and 62.9% of males and 34.2% of females belonged to the muslim community. In all, 46.5% of the males and 75.4% of females were Hindu. In our study majority of the males (78.7%) and females (92.8%) of the rural areas belonged to OBC. 66.9% of males and 88.2 % of females of urban areas belonged to OBC category. In all, 71.8% of the males and 90.9% of the females were OBC.64.0% of males and 70.3%females of the rural areas belonged to SES V. Similarly, 62.9% of the males and 56.6% of females of urban areas belonged SES V. In all, 63.4% males and 64.7% females belonged to SES V. More than one third (43.8%) of the elderly males and 66.7% of the females in rural area had a fall within 12 months. However, 63.7% males and 69.7% females of urban area had a fall within 12 months. Less than one third 28.1% of males and 55.9% females in rural area had got injured due to fall within 12 months. However, 44.4% males and 57.9% females in urban area had got injured due to fall within 12 months.

In all, 67.9% had a fall and 56.7% got injured due to fall within 12 months.

In our study most common problem that was associated both with males and females elderly in rural areas were musculoskeletal problems that was followed by Eye problems and that was followed by cardiovascular problems. Majority of 76.4% of males and 78.4% of females of rural areas had musculoskeletal problems and 58.1% of males and 71.1% of females in urban areas had musculoskeletal problems. Overall 65.7% of males and 75.4% of females had musculoskeletal problems.

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