

Post Fall Health Consequences Among Elderly

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Abstract: Falls are one of the major problems in the elderly and are considered to be one of the “Geriatric Giants”, result from a complex interplay of predisposing and precipitating factors in a person’s environment. Fall also brings along its varied health consequences which may have an acute or chronic detrimental effect on health of elderly. The study was undertaken in the rural and urban field practice areas of Sri Guru Ram Das Institute of Medical Sciences and Research, Amritsar. A pretested semi-structured interview schedule was administered to 500 elderly from the each area. More number of rural elderly had morbidities and injuries as compared to urban elderly, but hospitalization and surgical interventions were more accessed in urban area. Bruises were the most commonly reported injury reported by both rural and urban elderly.

Key Words : Fall, Elderly, health consequences, morbidities

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I. Introduction

Fall among elderly brings varied health consequences. Annually, 1,800 falls directly result in death. Approximately 9,500 deaths in older Americans are associated with falls each year (Capezuti 1996).^[1] Dunn JE et al (1992) revealed in a study that elderly persons who survive a fall experience significant morbidity.^[2] Hospital stays are almost twice as long in elderly patients who are hospitalized after a fall than in elderly patients who are admitted for another reason. Compared with elderly persons who do not fall, those who fall experience greater functional decline in activities of daily living (ADLs) and in physical and social activities, and they are at greater risk for subsequent institutionalization(Kiel DP et al 1991).^[3] Patil, Savitha S., Suryanarayana, S.P.(2015) reported that about 81.4% elderly had one or the other form of injury after fall. . Injury rate was 82% in females and 80% in males. Statistically significant higher fall rate of 47.8% falls was seen with elderly who had fear of falling than those without fear of fall with 11.8%. Bruises, internal injuries were commonest (48.5%) and (13.8%) of injuries resulted in fractures.18.4% had difficulty in carrying out activities of daily living, deformity was observed in 12.6%, and residual disability in 10.6% of the elderly.^[4]

II. Material And Methods

This retrospective comparative study was carried out on Elderly residing at selected rural and urban field practice areas of Sri Guru Ram Das Institute of Medical Sciences and Research, Vallah.from November 2016 to June 2017. A total 1000 elderly subject (both male and females) of aged ≥ 60 , years were selected for the study. It was assumed that prevalence of falls would be around 30% in the present locality with a relative precision of 15% and confidence level of 95% the estimated sample size for the present study works out to be nearly 400 elderly persons. The above sample size was estimated employing statistical formula:

$$N = (Z \alpha)^2 * p * q / r^2$$

Where N is the required sample size, Z α is the standard normal deviate which is equal to 1.96 at 5% level of significance; p is the prevalence of falls in the elderly(30%), q is equal to 100-p (100-30=70%), r is the allowable error 15% (15% of prevalence rate =4.5)

$$N = \{1.96\}^2 p q / r^2 = \{1.96\}^2 * 30 * 70 / (4.5)^2 \\ = 414 \text{ elderly}$$

As the study being a retrospective survey, it was decided to have 500 elderly from each urban and rural area, hence constituting 1000 sample size.

Sampling technique : Systematic random sampling method was used to select elderly from target population, k was calculated. For urban area k =Total number of elderly individuals/500

k=1206/500, every 2nd subject was chosen for the study.

Similarly, for rural area

k = 2592/500, every 5th subject was selected for the study.

Inclusion and Exclusion criteria: Considering the objectives of the study, following inclusion and exclusion criteria were made

Inclusion Criteria:

- Above the age of 60yr
- Bothe males and females
- Staying in selected communities of Amritsar
- Willing to be part of study and those who will give written consent

Exclusion Criteria:

- Those who are migrants or are temporarily visiting the areas.
- Those not present on more than two consecutive visits
- Those who are not willing to be part of study.
- Those suffering from hearing disability or any Neurological or Psychiatric disorder.

Procedure methodology

After written informed consent was obtained, a well-designed questionnaire was used to collect the data of the recruited elderly subjects retrospectively. The questionnaire included socio-demographic characteristics such as Age, Sex, Habitat, Educational status, Marital status, Living pattern, Former occupation, current working status, Source of income, Personal income and economic dependency. The second part of questionnaire included questions related to health consequences after fall like hospitalization and during course of hospitalization whether it was managed conservatively or surgically. The elderly were also enquired about any morbidity or injury (Bruises/cuts, Sprains, dislocation of joints, Fractures, Loss of consciousness, head injury, post fall syndrome, and internal injuries) after they witnessed fall.

Statistical analysis

Data was analyzed using SPSS version 20. Chi square was employed to determine homogeneity between the rural and urban elderly. P value of <0.05 was considered significant.

III. Result

Table 1: Showing frequency and percentage distribution of rural and urban elderly in terms of Socio-Demographic Profile

N=1000

Characteristics	Rural n=500 f (%)	Urban n=500 f (%)	χ^2	df	p
Age (in Years)			03.60	3	0.30 ^{NS}
60-70	347 (69.4)	351 (70.2)			
70-80	108 (21.6)	117 (23.4)			
80-90	037 (07.4)	029 (05.8)			
90-100	008 (01.6)	003 (00.6)			
Sex			02.31	1	0.13 ^{NS}
Female	251 (50.2)	275 (55.0)			
Male	249 (49.8)	225 (45.0)			
Marital Status			00.25	2	0.88 ^{NS}
Never Married	009 (01.8)	007 (01.4)			
Married	358 (71.6)	351 (70.2)			
Widow/widower	133 (26.6)	140 (28.0)			
Divorcee/separated [#]	000 (00.0)	002 (0.04)			
Educational status			40.94	3	0.00*
Illiterate	248 (49.6)	161 (32.2)			
Elementary	173 (34.6)	198 (39.6)			
High Secondary	074 (14.8)	120 (24.0)			
Graduate and above	005 (01.0)	021 (04.2)			

Living pattern					
Living alone	009 (01.8)	012 (02.4)	07.05	3	0.07 ^{NS}
With spouse	061 (12.2)	088 (17.6)			
With children	188 (37.6)	186 (37.2)			
With spouse and children	242 (48.4)	214 (42.8)			
Former occupation			186.76	4	0.00*
Homemaker	244 (48.8)	264 (52.8)			
Labourer	054 (10.8)	068 (13.6)			
Business	019 (03.8)	056 (11.2)			
Agriculture	150 (30.0)	009 (01.8)			
Service/job	033 (06.6)	103 (20.6)			
Present work status			05.98	1	0.31 ^{NS}
Working	181 (36.2)	158 (31.6)			
Not working	319 (63.8)	342 (68.4)			
Economic dependency			29.17	2	0.00*
Fully dependent	154 (30.8)	197 (39.4)			
Partially dependent	195 (39.0)	116 (23.2)			
Independent	151 (30.2)	187 (33.8)	14.38	3	0.00*
Personal monthly income (Rs)					
Nil	142 (28.4)	184 (36.8)			
< 5000	189 (37.8)	158 (31.6)			
>10000	057 (11.4)	074 (14.8)			

Rural: Age Mean± SD =69.75±7.83, Urban: Age Mean± SD =68.73±7.04

NS –Not Significant, *Significant,# categories are clubbed Table 1 infers that in both the areas majority of the elderly were in the age group of 60-70 yrs, females, married, living with their spouse and children, homemakers and currently not working. While urban elderly was more educated, better employed and financially sound than rural elderly. Statistically also, it can be concluded that variables of Education, Former occupation, Economic dependency and personal income were found to be statistically significant between rural and urban elderly Hence, characteristics of the elderly in both the areas were considered as homogenous, except for their education and socio-economic status. Out of 1000 elderly subjects , 240 had history of fall in last one year. Prevalence of fall was higher among the rural elderly (25.8%) as compared to 22.2% in urban. These elderly were further enquired about the post fall health consequences.

Table 2: Showing frequency and percentage distribution of post fall Health consequences among rural and urban elderly

n=240		
Health consequences	Rural n=129 f (%)	Urban n=111 f (%)
Hospitalization	29 (22.50)	32 (28.80)
Range of number of days	2-30	2-25
Surgical interventions	09 (07.00)	12 (10.80)
Morbidities/injuries	98 (75.26)	68 (61.26)
Bruises/cuts	34 (26.35)	29 (26.12)
Sprains	26 (20.15)	13 (11.71)
Dislocation of joints	07 (05.42)	04 (03.60)
Fractures	22 (17.05)	15 (13.51)
Loss of consciousness	03 (02.32)	0 (00.00)
Head injury	05 (03.87)	04 (03.60)
Post fall syndrome	04 (03.10)	02 (01.80)
Internal injuries	06 (04.65)	06 (05.40)

Table 2 reveals reported post fall health consequences among rural and urban elderly. It shows that 29 (22.5%) of the rural elderly were hospitalized for 2-30 days after having fall, while, nearly one fourth i.e. 32 (28.8%) of the urban had undergone hospitalization with 2-25 days after fall. More number of elderly had undergone surgical interventions in urban area as compared to rural area as evident by 12 (10.8%) and 9 (7%) in urban and rural area respectively. Regarding morbidities and injuries reported, more number of rural elderly had reported injuries i.e.98 (75.26%) as compared to 68 (61.26%) in the urban area. Table 18 and Fig 17 shows that most common injury in both areas was bruises/cuts i.e. 34 (26.35%) and 29 (26.12%) in rural and area respectively followed by sprains, 26 (20.15%) and 15 (13.51%). Fractures were reported to occur among 22 (17%) and 15 (13.51%) rural and urban elderly respectively. Dislocation of joints was experienced by 7 (5.42%) rural and 4

(3.6%) urban elderly. Six (4.65% and 5.4%) elderly in each area reported to suffer from internal injuries after fall. Nearly 3% (5 and 4 rural and urban respectively) in each area had head injury after fall. Post fall syndrome was also reported by 4 (3.1%) of the rural and only 2 (1.8%) of the urban elderly. Three elderly (2.32%) in rural area also had loss of consciousness after fall while none of the elderly in urban area had witnessed loss of consciousness. Hence, table infers that more number of rural elderly had morbidities and injuries as compared to urban elderly, but hospitalization and surgical interventions were more accessed in urban area.

IV. Discussion

Falls can be disruptive to the lives of elderly, even when they do not result in injuries severe enough to require medical attention (Berg WP).^[5] There are varying reports of fall related injuries and treatment required (Tinetti ME et al^[6], Niino N^[7], Kudisch et al^[8], Tinetti ME & Powell L^[9]). In the present study, Consequences of the falls among elderly revealed that 75% of the rural and 61% of the urban elderly had post fall injury, similarly a study by Chacko TV depicted that 147 (73.8%) suffered injury following the fall^[10], Aniket Sirohi et al, also reported that in rural Haryana 62.9% elderly sustained injuries after fall. Most common type of injury was bruise and contusion (60.5%)^[11] while another study reported that 59% falls resulted in injuries (Sebestina A) and sprains/strains (28.4%) were the most common followed by abrasions or bruises (22%)^[12], while present study revealed bruises/cuts (26% for both rural and urban) followed by sprains 20% in rural elderly. Fractures account for 13% of the injuries in the urban elderly, which is similar to study by Joshi et al in Northern India.

In the present study, a considerably high percentage of injuries sustained required hospitalization after fall, 22% in the rural and 28.8% in urban area while it was 18.9% in the study conducted by Sebestina A et al in Manipal.^[12] The hospitalization is more in urban as compared to rural area, that could be due to readily availability of health services. A significant amount of expense may be incurred in hospital admissions and prescribed medications, which may be a problem for older adults with low income and for older adults living alone. In India, medical expenses are commonly borne by the older adults themselves or by their families and fall related serious injuries may impose financial burdens. Long term physical and financial dependence may increase risk of abuse, neglect and depression among elderly (Sebestina A et al).^[12]

V. Conclusion

More number of rural elderly had morbidities and injuries as compared to urban elderly, but hospitalization and surgical interventions were more accessed in urban area, which could be attributed to frequent availability of health services in urban as compared to rural area. It is suggested that community health nurses and other health professionals should carry out a detailed physical and home environmental assessment of the elderly to identify the high risk individuals. Further, there is a need for developing a comprehensive programme for providing preventive, curative and rehabilitative services to the elderly.

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