

ASSISTIVE DEVICES USAGE IN COPING OF ELDERLY WITH FRAGILITY FRACTURE

Gayatri Prajapati* and Khwairakpam Sharmila

Research Scholar and Assistant Professor, Department of Human Development and Family Studies, School of Home Science, Babasaheb Bhimrao Ambedkar University, Lucknow -226025, Uttar Pradesh, India, Email ID: gayatriprajapati250@gmail.com
Corresponding author- Gayatri Prajapati

Abstract

Background: Osteoporosis and fragility fracture issues are multifaceted in nature, making them a multidisciplinary issue. Osteoporosis's clinical result is brittle fractures. These fractures, which most frequently happen at the hip, spine, or wrist, are a sign that there is an underlying ailment that has weakened the body's bones. Elderly adults with advanced osteoporosis frequently endure melancholy, loss of self-esteem, infirmity, and increasing physical reliance, in addition to a reduction in their ability to carry out activities of daily life and chronic low back pain. These come with a lot of pain and suffering, incapacity, and even death, not to mention a lot of financial burden on society.

Objectives: This study examined the general uses of assistive devices during fragility fracture by elderly.

Method: A self-structured questionnaire and checklist were administered to study the socio-demographic profile of the elderly and general uses of assistive devices during Fragility fracture such as; mobility devices, positioning devices, and daily living devices. Purposive random sampling design was used to select the sample and the final sample comprised of 200 elderlies (110 male and 90 female). Analysis was done using frequency, percentage, and correlation.

Result: The results showed that the elderly was more likely to have problems with activities of daily living during fragility fractures. In addition, the use of assistive devices is more common in men than in women.

Keywords: Elderly, Fragility Fracture, Independence, Mobility Devices, Osteoporosis, Quality of life

INTRODUCTION

Even though they can result in hospitalisation, incapacity, and death and incur considerable expenditures for both conservative and surgical therapy, including the recovery period and the prevention of new fractures, fragility fractures are a major public health concern (Iolascon et.al 2021). If there is no discernible trauma or only minor trauma (such as a fall from standing height), the fracture is said to be a fragility fracture (Brown and Josse 2002). Both the fracture and osteoporosis are indicated by it (Oostwaard 2018). A low intensity trauma, such as a fall from standing height or less, can cause a fracture in older adults. This is referred to as a "fragility

fracture" and is typically brought on by osteoporosis and the resulting diminished bone density. The hip fracture is among the most severe fragility fractures. By 2050, it is anticipated that 6.3 million fragility hip fractures would occur annually due to the large rise in global ageing and life expectancy (Yadav et.al; 2019). Other bones, such as the wrist, shoulder, ankle, pelvis, and spine, frequently fracture in the osteoporotic patient, albeit a hip fracture may have the most severe effects (Bukata et.al; 2011). Osteoporosis patients frequently suffer from vertebral (spine), proximal femur (hip), distal forearm (wrist), and proximal humerus fractures (Rose et.al; 1982). Up to 18% of all fractures among the elderly are wrist fractures, the third most frequent type of osteoporotic fractures (Nellans et.al; 2012), and its impact on quality of life is sometimes underestimated as a result of problems and diminished function. These distal forearm fractures are frequently "the initial" fragility fracture, then a hip or vertebral fracture may occur later (Oostwaard 2018). The prevalence of osteoporosis has increased dramatically and will continue to do so in the future due to the ageing of the global population, the rising incidence of osteoporosis with age, and changing lifestyle habits (Reginster & Burllet 2006). The prevalence and incidence of related fragility fractures will consequently rise as well. The number of hip fractures is anticipated to nearly double to 2.6 million by the year 2025 and to 4.5 million by the year 2050, assuming no change in age- and gender-specific incidence. (Gullberg et al. 2006). According to projections from 2010 and predicted demographic trends for 2040, there were 158 million people with high fracture risk (Odén et al., 2015). According to estimates, one in three women and one in five men over 50 will sustain an osteoporosis fracture over their lifetimes (International Osteoporosis Foundation 2022). The main causes of disability and infirmity are sarcopenia and osteoporosis. These diseases are linked to age-related chronic inflammation, commonly known as "inflammaging," which alters body composition (declining levels of sex hormones and growth hormones, as well as a decline in muscle mass and strength) and hormonal imbalance (Greco et.al., 2019). Elderly people who are frail are more likely to fall frequently (Cheng & Chang 2017 and Iolascon et.al 2021). Hip fractures provide a significant health concern for older persons, often with far-reaching effects for both physical health and psychosocial well-being, according to Maaik et al., (2021) in their study was reveals that Only 30-40% of patients regain their prior level of mobility, and 10-20% are unable to return home after one, demonstrating the short- and long-term functional damage and loss of independence associated with hip fractures. In patients with hip fractures, psychological perspective, depressive symptoms, anxiety, and fear of falling (FOF) are frequently observed.

According to the World Health Organization (2021), wheelchairs increase mobility and independence in older persons who are unable to walk due to weakness or other illnesses (such as stroke, amputation, or degenerative muscular disease) that cause tiredness and muscle weakness. According to Accessibility Medicals Equipment (2021), patients who have trouble getting up from a sitting to standing position can utilise a three-in-one toilet, raised toilet seat with handle, drop-arm toilet, or toilet transfer board (for those with severe motor deficiencies). The three in one commode is a single piece of equipment that serves three purposes: it can be used at the bedside of elderly patients who are unable to walk and use the washroom, with bathroom toilets, or as

handrails to assist the elderly person in rising and descending from a sitting position while using the toilet. For increased mobility, install accessories in the bathroom and kitchen and utilise a cane or walker. Home health services can help with environmental adjustments if they are available (Kessenich 2007). Exercise, medication, lifestyle modifications, consuming enough calcium and vitamin D, and avoiding falls are all part of the treatment for fragility fractures (Oostwaard 2018). This study aims to examine the general uses of assistive devices by elderly during fragility fracture. The study was conducted to determine whether all types of assistive devices such as mobility devices, positioning devices and daily living devices were used by the elderly during fragility fractures.

METHODS & MATERIALS

Locale of the study

The present study was conducted in Lucknow, Uttar Pradesh, India. For the current study four areas were selected which were Jankipuram, Shankar Purva, Keshari Khera, Sharda Nagar, 50-50 respondents were taken from each area. This study represented a cross-sectional population.

Selection of Sample

A total of two hundred sample were randomly selected from four different areas of Lucknow city who were suffering from fragility fractures and using assistive devices. The age group of the respondents was 60 years and above, in which 110 were male and 90 were female further classified on the basis of married, single, living with the spouse, separated or divorced, occupation constitutes, suffering from fragility fracture and use of assistive devices. The data was collected through door-to-door surveys. Out of which more than 50 percent of the elderly were having difficulty in walking due to fracture and they were not doing daily living activities well.

Tools

The questionnaire was divided into two categories, first looking at the socio-demographic profile of the elderly and then identifying the assistive devices used during fractures.

It was divided into two part which was given below;

1. To analyse the socio-demographic profile of the elderly, a self-structured socio-demographic profile sheet was used, which included characteristics like name, age, gender, marital status, occupation, income, etc.
2. A checklist on general uses of assistive devices during Fragility fracture such as; Mobility devices, Positioning Devices, and Daily living devices

Statistical Analysis

In this study, IBM SPSS 2.0 was used for statistical analysis. Demographic data were presented as Quantitative and qualitative data were presented as frequency and percentage and correlation were used for statistical significance.

RESULTS AND DISCUSSIONS

The distribution of respondents according to sociodemographic profile was shown in Table No. 1. It was evident from the table that majority (55%) of respondent was Male while 45 percent were Female respondent. A major proportion (41%) of the respondent were in the age of 60-65 years, followed by 65-70 years (24%), 20 percent of older adults falls under 70-75 years while 14 percent elderly were in the age group of above 75 years.

According to data on the educational qualifications of the elderly, the majority (40.5 percent) were illiterate, and only 25.5 percent of respondents had a secondary education while only 17 percent had a primary education. However, it was discovered that 12 percent of the older people were graduates and 5 percent had at least a PG degree and above.

Further, probing the data revealed that Majority 59.5 percent of the elderly was married while 35 percent were widowed and only 4.5 percent were found to be single. Data pertaining to occupation of the elderly revealed that majority (55%) of them were not working while 27 percent of the elderly retired from service and 20 percent were in service and only 8 percent were self-employed.

Data further revealed that 50 percent of the respondent was not earning or not having any income source. while 18.5 percent were having Rs. 15,000-30,000 monthly incomes, 13 percent of the respondent were having Rs. 5,000-10,000 monthly income and 11 percent was in below Rs. 5000 monthly incomes, only 1.5 percent of them were having Rs. 45,000 and above monthly incomes. Further probing the data about the financial status of the elderly showed that 40.5 percent of the elderly were financially independent while 59.5 percent were financially dependent on someone or the other.

Data regarding, the problems faced by elderly during fragility fracture revealed that a majority (57.5%) of elderly faced problem like unable to walk properly' while 46.5 percent of respondent felt unable to sit Indian toilet. 37 percent of elderly experienced unable to sit for a long time and only 11 percent of elderly felt Unable to open water tape at bathroom for daily use.

Table no.1 Distribution of respondents as per socio- demographic profile.

(n=200)

Socio demographic Profile	Frequency	Percentage
Gender		
Male	110	55
Female	90	45
Age Group		
60-65yrs	83	41.5
65-70yrs	48	24
70-75yrs	41	20.5
Above 75yrs	28	14
Qualification		
Illiterate	81	40.5

Primary	34	17
Secondary	51	25.5
Graduate	24	12
Post-graduate & above	10	5
Marital Status		
Married	119	59.5
Divorced	2	1
Single	9	4.5
Widowed	70	35
Occupational status		
Retired	54	27
In service	20	10
Self employed	16	8
Not working	110	55
Monthly Income		
Not earning	100	50
Below 5000	22	11
5000-15000	26	13
15000-30000	37	18.5
30000-45000	12	6
45000 & above	3	1.5
Financial Status		
Independent	81	40.5
Dependency	119	59.5
Problems		
Unable to walk properly	115	57.5
Unable to sit for a long time	74	37
Unable to open water tap at bathroom for daily use	22	11
Unable to sit Indian toilets	93	46.5
Unable to wear cloth properly	15	7.5

Figure no. 1 showed that a major proportion (38.8%) women used walking sticks as mobility devices because it was easy to carry and comfortable to use, while 5.5 percent reported of using walker. An equal proportion (1.1%) have used wheelchair and orthotic and prosthetic. None of the respondent used crutches and Tricycle. Another study estimated that 16.6% of older adults used assistive devices outside (West et.al., 2015). Edwards and Jones (1998) studied a study and found that (76%) women owned one or more assistive devices compared with men (70%).

Further, the mobility devices used by male elderly and it was found that a major proportion (40%) of male elderly was used walking sticks as mobility devices while 4.5 percent have used walker. Nearly, 3.6 percent of the respondent have used wheelchair while 1.8 percent have used crutches. An equal proportion 0.9 percent of the respondent have used tricycle and orthotic and prosthetic devices in mobility devices. Our previous study found that with regard to mobility devices, more men than women were found to be using a walking stick/cane (Prajapati and Sharmila 2021). Further, according to Edwards and Jones (1998), significantly more women than men had walking frames, wheelchairs, and commodes, while more males used walking sticks.

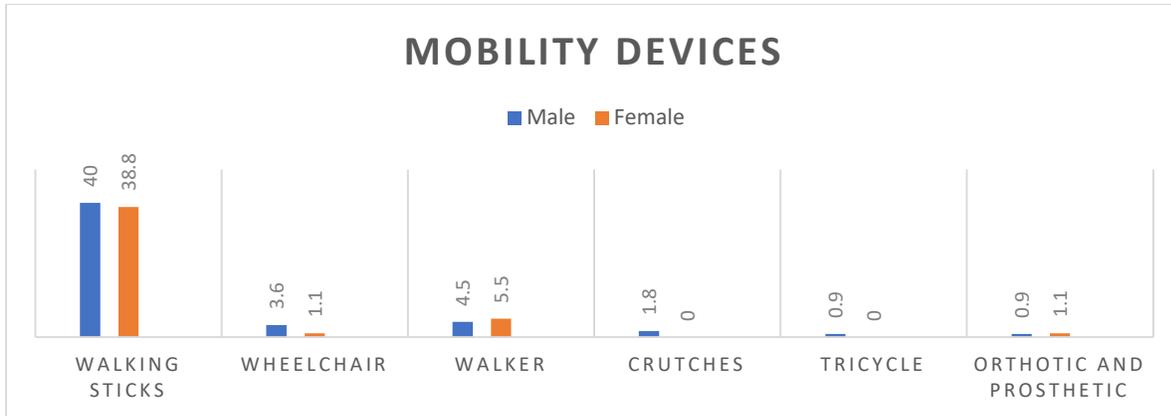


Figure no. 1 Mobility Devices used by elderly across gender

Figure no. 2 presented the distribution of positioning devices used by elderly across gender. An equal proportion (41%) of both genders have used special seat and corner chair. These devices were likely available at their homes so that they can used properly. A major proportion (29%) of male elderly have used cushion followed by female (27%) while 8.18 percent male respondent have used wedge seat because they were working or driving vehicle and only 1.1 percent female elderly have used these devices.

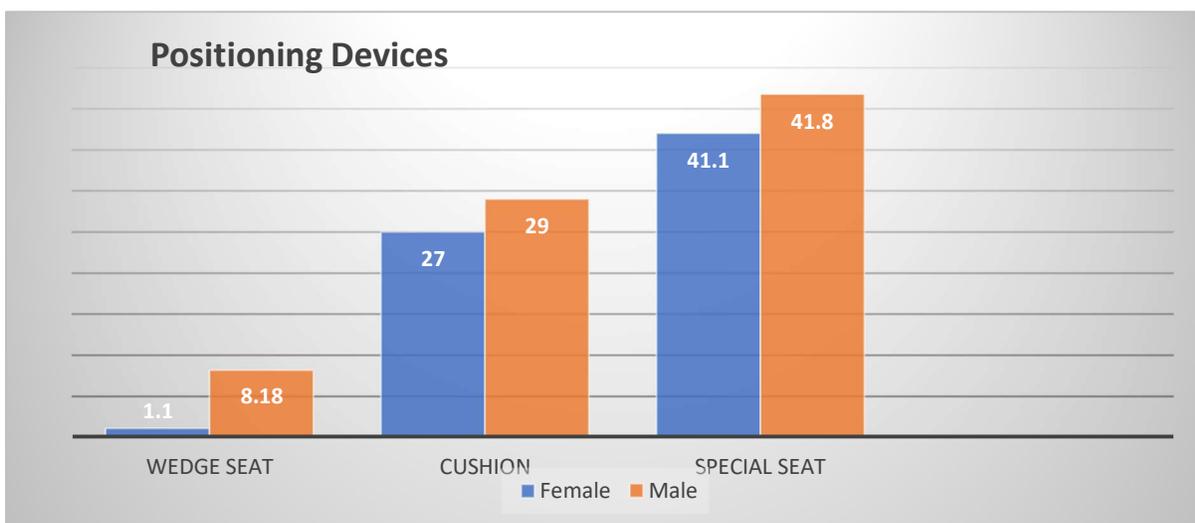


Figure no.2 Positioning devices used by elderly across gender

Figure no. 3 depicted the distribution of daily living devices used by elderly across gender. A major proportion (35.4%) of male respondents used commodes seat for toileting followed by female respondents (33%). An equal proportion 10.9 percent of the male elderly have used toilet seat frame and shower seat/ chair. Nearly, 7.7 percent of female respondents were using toilet seat frame while 6.6 percent of female were using shower seat. About, 2.2 percent of female respondents were using bed rail followed by male (1.8%). None of the respondents used dressing stick for wear cloth. Likewise, another study found that the bathroom rails were owned more often by women than men (Edwards and Jones 1998).

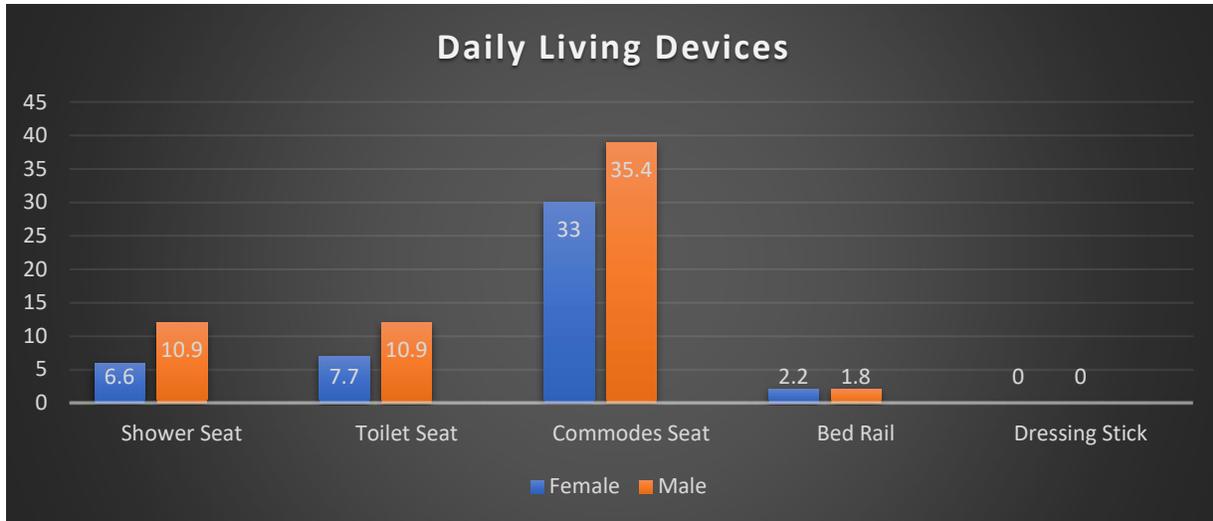


Figure no. 3 Daily living devices used by elderly across gender

Table no. 2 indicated the relationship between age of the respondents and general uses of assistive devices during fragility fracture. It was shown in the table that as the age increases, so does the dependency on the assistive device of the people. Elderly people were more dependent on mobility devices during fragility fracture, they mainly faced arthritis problem as well as some other problems due to which deficiency of calcium and phosphorous increases. Statistically also there exist a strong correlation between DLD and Mobility and positioning devices. Age of the respondents and positioning devices were positive correlated with each other and older people's dependency on daily living devices increases with age. Daily Living Devices (DLD) such as; toilet frame, commode seat, shower seat etc. were used by elderly to improve their quality of life. Further, Mobility devices were positively correlated with Positioning devices and Daily Living Devices. Mobility devices and Daily living devices were highly significant at the level of 0.01. Another study revealed that older persons who use assistive devices frequently experience balance and/or mobility issues, were fragile, and were therefore more likely to fall and sustain injuries (West et.al 2015).

Table no. 2 Correlation between Age of the respondents and uses of assistive devices

Age of the respondents	Mobility Devices	Positioning Devices	Daily Living Devices
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Age of the respondents	1			
Mobility Devices	.541**	1		
Positioning Devices	.070	.082	1	
DLD	.170*	.193**	.333**	1

Note: *Correlation at the level of 0.5, ** Correlation at the level of 0.01.

CONCLUSION

Fragile fractures are a cause of chronic disease. Despite the fact that some fracture-related complications can result in mortality, fragility fractures were significantly more prevalent than other diseases that often attract elderly attention. All of these fractures have major consequences on the quality of life of the elderly as they cause considerable pain and disability, result in loss of independence, and increase the risk of morbidity and mortality. The study found that older men had a higher use of assistive devices during fractures than women. And as they got older, there was more use of assistive devices during fragility fracture that had a positive impact on their quality of life.

Conflict of Interest: The authors declared that there is no conflict of interest regarding the publication of paper.

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