

A Descriptive Study to Assess the Knowledge on Fall Prevention at Home among the Elderly, Attending OPDs of a Selected Tertiary Care Hospital of western Maharashtra

Deepa PR¹, Sreevidhya S², Shaliya Saleem³, Dola Banerjee⁴, Lekshmi CL⁵, Kavitha G.⁶

Abstract: ***Background:** The background of studying geriatric health stems from the demographic shift toward an aging population worldwide. About 36 million falls are reported among older adults each year resulting in more than 32,000 deaths. Each year, about 3 million older adults are treated in emergency departments for a fall injury. Identifying at-risk patients is the most important part of management, as applying preventive measures in this vulnerable population can have a profound effect on public health. **Methods:** A descriptive study was conducted among 90 elderly people in a tertiary care hospital in Pune to assess the knowledge regarding fall prevention at home. Sampling techniques used was non probability purposive sampling. **Results:** Out of 90 participants, 14 (15.6%) had poor level of knowledge regarding home based fall prevention among elderly (knowledge score below 50%), 46 (51.1%) had average level of knowledge (knowledge score between 50 – 74%) and 30 (33.3%) had good level of knowledge towards the prevention of home based fall among elderly (knowledge score more than or equal to 75%). **Conclusion:** The prevention of falls and injury is a significant health issue, and minimising harm by focussing on key factors such as frailty, cognitive impairment (dementia and delirium), poor mobility, medications and nutrition will assist in improving health outcome for older people.*

Keywords: Fall, Elderly, Knowledge, Geriatric Health, Geriatric population

1. Introduction

The geriatric group, often defined by individuals aged 60 and older, represents a diverse demographic with unique healthcare and social needs. This cohort faces challenges such as chronic conditions, cognitive changes, and a heightened susceptibility to falls. Providing comprehensive care involves not only addressing medical concerns but also recognizing the importance of social connections, mental well-being, and tailored interventions to promote a fulfilling and dignified life in the later stages. Understanding and embracing the complexities of aging are essential for creating a supportive environment that respects the rich experiences and contributions of the geriatric population.

2. Background

The background of studying geriatric health stems from the demographic shift toward an aging population worldwide. With advancements in healthcare leading to increased life expectancy, there is a pressing need to understand and address the unique challenges faced by older adults. Chronic conditions, cognitive decline, and a higher risk of falls are prominent issues affecting geriatric health.

About 36 million falls are reported among older adults each year—resulting in more than 32,000 deaths. Each year, about 3 million older adults are treated in emergency departments for a fall injury. One out of every five falls causes an injury, such as broken bones or a head injury³. Falls are a common and serious health problem with devastating consequences. Several risk factors have been identified in the literature. Falls can be prevented through several evidence-based interventions, which can be either single or multicomponent interventions. Identifying at-risk patients is the most important part of management, as applying preventive

measures in this vulnerable population can have a profound effect on public health⁴.

Aim

To assess the knowledge on fall prevention at home among the elderly, attending OPDs of a selected tertiary care hospital of western Maharashtra

Objectives of the Study

- To assess the knowledge on fall prevention at home among the elderly population.
- To determine the association between knowledge and the selected demographic variables

Operational Definition

- Knowledge:** In this study Knowledge refers to the understanding of the elderly regarding the fall prevention measures assessed by a questionnaire
- Elderly:** It refers to the adults equal and above the age of 60 years.
- OPDs:** refers to all out patient department caters elderly population.
- Fall:** Fall is defined as an unintentional loss of balance, causing one to make unexpected and unprepared contact with the ground or floor.
- Tertiary care hospital:** It refers to hospital that provides specialized care to the patients.

Globally, there were 703 million persons aged 65 or over in 2022. Eastern and South - Eastern Asia were regions with the largest elderly population, about 261 million people. Fall incidence in older adults continues to rise with ageing. Yang et al. conducted a study in the year 2022 and stated that about one-third of people older than 65 fall each year, and the incidence of falls in people above 80 is as high as 50%. Among older adults, 71.20% will have contusions, abrasions, sprains, fractures, and even death after falling. The annual

incidence of injuries caused by falls is 11.58%. Falls have become the leading cause of injury among older adults and the second leading cause of death due to injury in older adults¹¹

Abigail Roxana Nina Mamani et al in 2018 according to the criteria adopted in this study, caregivers know about falls of the elderly and its prevention. A little more than half of the participants minimally know that the fall of the aged is a frequent event and that it is at risk, identifying some causes and consequences of falls and referring to certain measures to prevent them. This result is compatible with those of other studies in which the knowledge about fall prevention presented by informal elderly caregivers was incomplete or considered minimal and superficial. Probably this is because most of the caregivers in this study started the function recently, without preparation, and due to the ways in which this knowledge was acquired¹².

Lin Wang, RN, MMD et al stated that for both the United States and China, the perception of knowledge of fall prevention was high. However, nurses from both countries were less familiar with the items not commonly included on fall risk tools, such as vertigo and vestibular dysfunction, vision, foot problems, balance, and cognitive changes. The findings have implications for practice and education and suggest a need to include important factors related to falls in education and intervention in both countries¹³.

Physiological Changes Associated with Aging and Immobility study by Yamni Nigam et al. It is generally accepted that the aging process falls physiologically into three groups of changes that occur with advancing age. The first group encompass changes in cellular homeostatic mechanisms, for example, body temperature, blood, and extracellular fluid volumes; the second group are related to a decrease in organ mass; the third and possibly the most important group of changes, in terms of their impact, involve a decline in and loss of the functional reserve of the body's systems. Loss of these functional reserves may impair an individual's ability to cope with external challenges such as surgery or trauma. Maintaining physiological function (health) in an aging population is of prime importance not only to the well - being of the aging individual, but also from a social perspective, helping to reduce the burden on medical services and systems²⁵

3. Methodology

Sample

Sample is a small portion of the population selected to participate in the research study. The subjects selected for the present study comprises of 90 adults equal and above the age of 60 years attending the OPDs of a tertiary care hospital.

Sampling technique

According to Polit and Beck (2008), "Sampling refers to the process of selecting a portion of population to represent the entire population".

Purposive sampling technique will be used for this study. Purposive sampling is a sampling technique in which the

researcher relies on his or her own judgement when choosing members of population to participate in the study.

In the present study is elderly who meets the inclusion criteria and who are available for the research study in the duration of data collection that is 04 Dec 2023 to 12 Dec 2023.

Sample size

According to Polit and Beck (2008), "Sample size is the number of subjects, events, behaviours or situation that are examined in a study".

The sample size of the present study comprised of 60 adults equal and above the age of 60 years attending the OPDs of tertiary care hospital in Pune.

Sample criteria

The researcher identified all the samples who fulfils the inclusion criteria. The criteria are set for the selection of samples are done as follows:

Inclusion criteria

All adults aged 60 yrs and above attending OPDs in tertiary hospital who can understand Hindi, English and Marathi.

Exclusion criteria

Those who are having psychiatric or mental illness.

Tool preparation

Data collection tools are the procedures or instruments used by the researcher to observe or measure the key variable in the research problem. The tool for the present study is structured questionnaire developed by researcher after extensive review of literature from books, journals, articles, published and unpublished research studies.

The investigators own experience, theoretical knowledge and guidance from the consultation and validation from 05 experts of various fields, their opinions and suggestion were considered to modify the tool for necessary correction in structured questionnaire for the study. A pilot study was also conducted to test the validity and reliability of the tool

4. Data Collection Techniques and Tools

Structured questionnaire was prepared for assessing knowledge of elderly on fall prevention at home. The investigators own experience, theoretical knowledge and guidance from the expert along with review of literature was helpful in developing the tool necessary for the study.

Description of Tool

The structured questionnaire consists of two sections - Section I and Section II

a) Section I - Sociodemographic Variables

It includes items seeking information on demographic profile of the sample (elderly) mainly age, gender, Education qualification, marital status, residence, work status, monthly income, living status, Type of housing, History of fall in the past one year.

b) Section II - Questions related to knowledge on prevention of home based falls

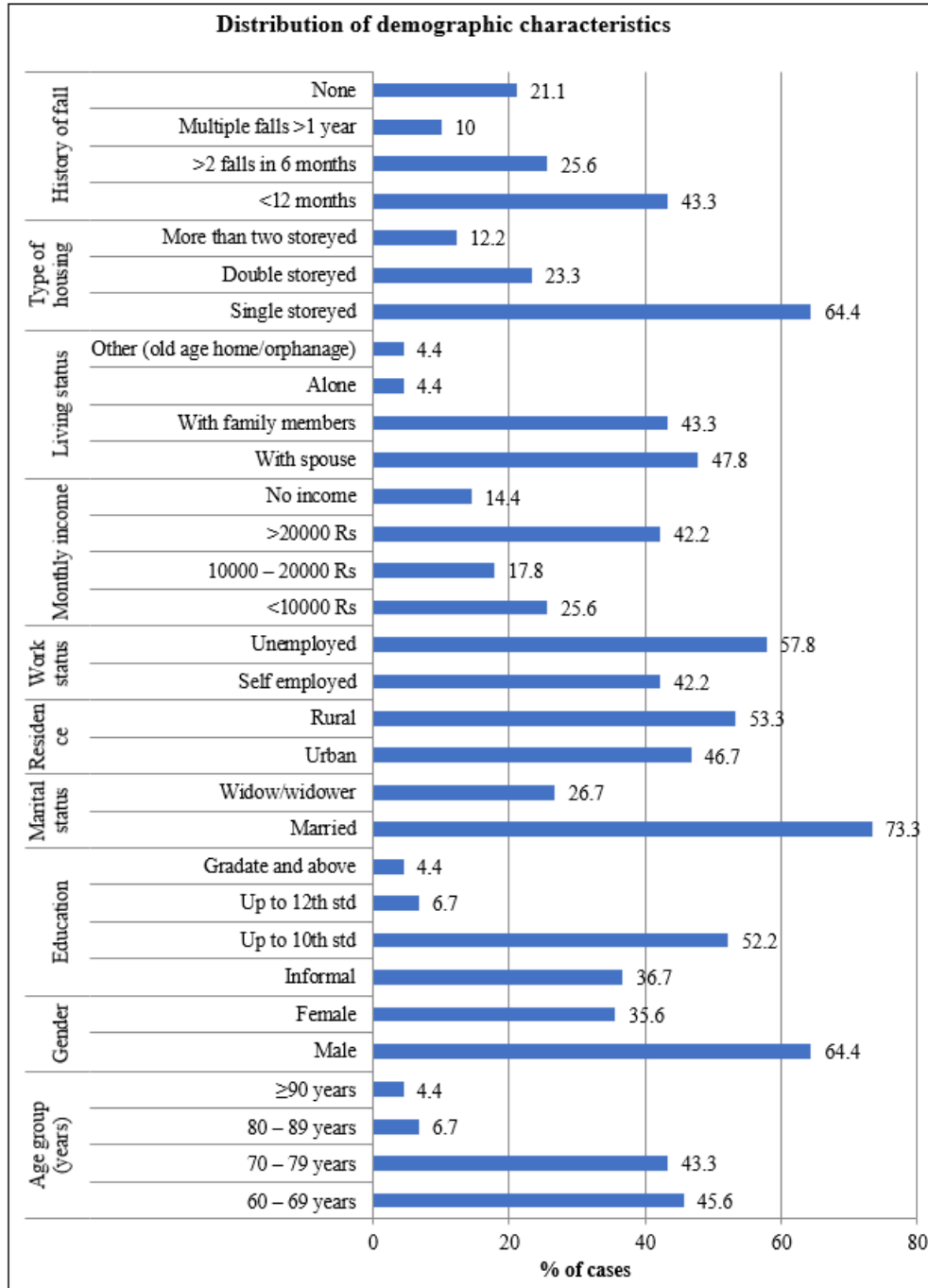
It consists of 10 multiple choice questions on knowledge of elderly regarding the prevention of home based falls.

Scoring Mode

For every correct answer 1 mark was given. There was no negative marking.

Feasibility of the study

The feasibility of the study need to be pragmatically examined. Regardless of how significant or researchable a problem may be. Pragmatic consideration such as time availability of subjects, equipment and money, experience of the researcher and any ethical consideration may cause the researcher to decide the problem is inappropriate because it lacks feasibility. The pilot study was done on 10 samples.



Section B

Assessment of Knowledge

Table 2.1: Distribution of individual responses as per knowledge regarding the cause of falls among elderly, n =90

Question no.1		Frequency (f)	Percentage (%)
What is the common cause of Falls in the elderly?	Diminished vision	38	42.2
	Decreased agility	23	25.6
	Musculoskeletal weakness & Balance problems	13	14.4
	Use of medicines	16	17.8
	Total	90	100

Table 2.2: Distribution of individual responses as per the knowledge regarding the common spot for falls at home, n=90

Question no.2		Frequency (f)	Percentage (%)
Which area in the home is a common spot for falls?	Kitchen	24	26.7
	Living room	9	10.0
	Bathroom	47	52.2
	Bedroom	10	11.1
	Total	90	100.0

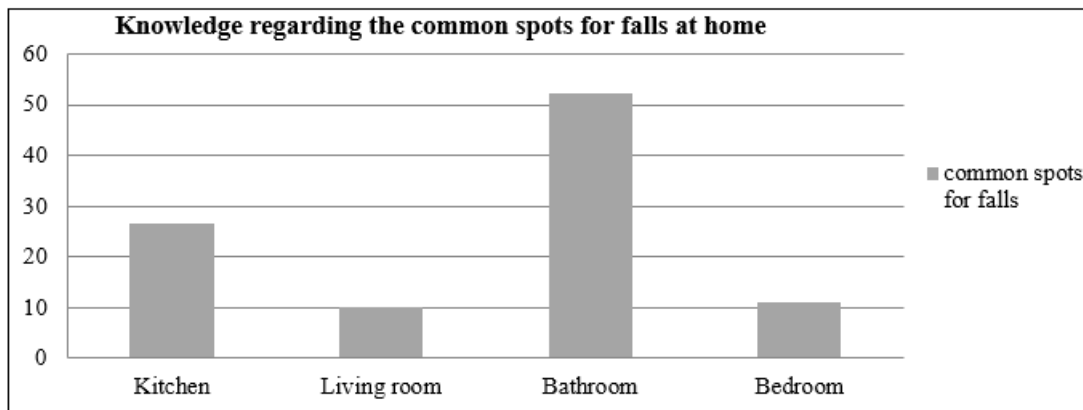


Figure 2.2: Distribution of individual responses as per the knowledge regarding the common spot for falls at home, n =90

Table 2.2 & Fig 2.2 shows that among 90 participants, majority (52.2%) agreed that the common spot for falls being Bathroom, 24 (26.7%) said it to be at kitchen, 10 (11.1%) agreed it to be at Bedroom and 9 (10.0%) said it to at living room.

Table 2.3: Distribution of individual responses regarding the knowledge of household items lead to falls, n=90

Question no.3		Frequency (f)	Percentage (%)
What are the commonly used items lead to fall in household?	Wires/ loose wiring/ Plumbing	14	15.6
	Cluttered or disorganised household	41	45.6
	Rugs/ mats	20	22.2
	Others	15	16.7
	Total	90	100.0

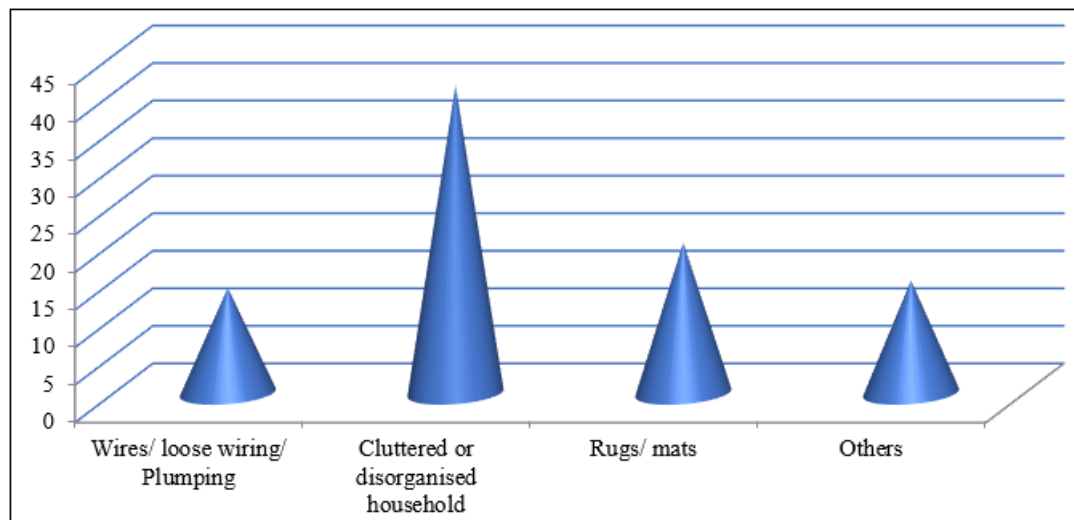


Figure 2.3: Distribution of individual responses regarding the knowledge of household items lead to falls, n =90

Table 2.3 & Fig 2.3 shows that out of 90 samples, 14 (15.6%) said that wires/ loose wiring/ Plumbing', 41 (45.6%) said that cluttered or disorganised household, 20 (22.2%) said Rugs/mats and 15 (16.7%) said it 'Others' to be the common items that lead to fall in household.

Table 2.4: Distribution of individual responses to knowledge regarding the recommended modifications to prevent falls, n = 90

Question no.4		Frequency (f)	Percentage (%)
Which of the following is the recommended modification to prevent falls?	Installing anti slippery rugs	25	27.8
	Keeping pathways uncluttered & lighted	27	30.0
	Hearing & Visual Rehabilitation	18	20.0
	Use of walking Aids	20	22.2
	Total	90	100.0

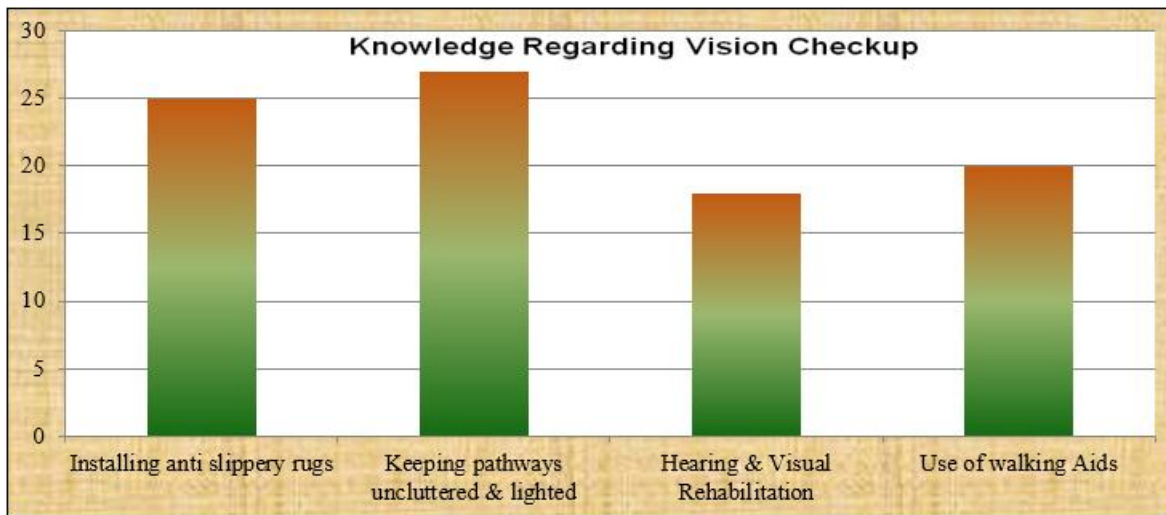


Figure 2.4: Distribution of individual responses to knowledge regarding the recommended modifications to prevent falls, n=90

Table 2.4 & Fig 2.4 reveals that out of 90 participants, 25 (27.8%) revealed that Installing anti slippery rugs reduces the fall among elderly. 27 (30.0%) said that keeping pathways uncluttered & lighted, 18 (20.0%) had the opinion that Hearing & Visual Rehabilitation and 20 (22.2%) said use of walking Aids as the recommendation for the modification to prevent falls.

Table 2.5: Distribution of individual responses based on the knowledge regarding vision check ups, n=90

Question no.5		Frequency (f)	Percentage (%)
How often the elderly person have their vision checked to reduce the risk of falls?	Annually	36	40.0
	More than 1 year	19	21.1
	Only when vision issues occurred	27	30.0
	Not required	8	8.9
	Total	90	100.0

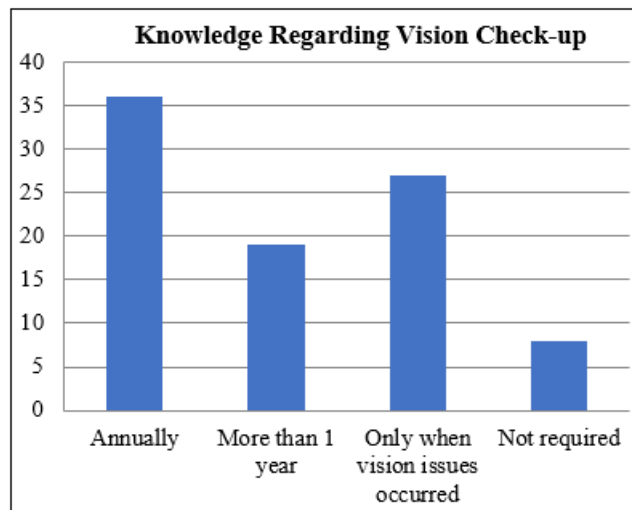


Figure 2.5: Distribution of individual responses to knowledge based on the knowledge regarding vision check – up, n = 90

Out of 90 participants, 36 (40.0%) had an opinion that vision check - up has to be done annually, 19 (21.1%) said that it is not necessary to be done in every year. 27 (30.0%) done vision checkups only when vision issues occurred and 8 (8.9%) said that such vision checkups are not required

Table 2.6: Distribution of individual responses on the knowledge regarding the recommended way to store commonly used items to prevent tripping hazards, n=90

Question no.6		No. of participants	% of participants
What is the recommended way to store commonly used items to prevent tripping hazards?	Keep them neatly organized in designated areas	31	34.4
	Place items within hand reach	50	55.6
	Hang them in the walls/ceilings	8	8.9
	Others (specify)	1	1.1
	Total	90	100.0

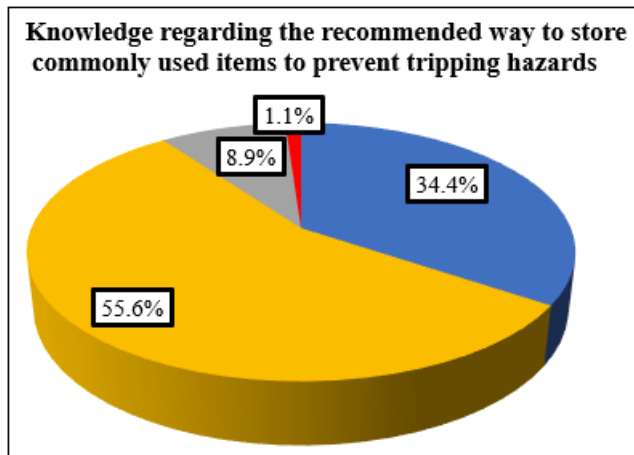


Figure 2.6: Distribution of individual responses to knowledge regarding the recommended way to store commonly used items, n=90

Out of 90 participants, 31 (34.4%) said that Keep them (items) neatly organized in designated areas prevent tripping hazards, 50 (55.6%) had the opinion that Place items within hand reach is safe, 8 (8.9%) said that the items should hang in the walls/ceilings and 1 (1.1%) gave some other recommendations to store commonly used items to prevent tripping hazards.

Age and level of knowledge

Distribution of level of knowledge towards risk of fall and prevention of fall of the elderly is significantly associated with various age groups of the participants included in the study (P value<0.05). Significantly higher proportion of participants with older age had higher level of knowledge and vice - versa (P value<0.05).

Gender and level of knowledge

Distribution of level of knowledge towards risk of fall and prevention of fall of the elderly is significantly associated with gender of the participants included in the study (P - value<0.05). Significantly higher proportion of female participants had higher level of knowledge compared to group of male participants (P value<0.05).

Educational status and level of knowledge

Distribution of level of knowledge towards risk of fall and prevention of fall of the elderly is significantly associated with educational status of the participants included in the study (P - value<0.05). Significantly higher proportion of

participants with relatively higher level of education had higher level of knowledge and vice - versa (P - value<0.05).

Marital status and level of knowledge

Distribution of level of knowledge towards risk of fall and prevention of fall of the elderly is significantly associated with marital status of the participants included in the study (P - value<0.05). Significantly higher proportion of married participants had higher level of knowledge compared to widow/widower group of participants (P - value<0.05).

Residential status and level of knowledge

Distribution of level of knowledge towards risk of fall and prevention of fall of the elderly is not significantly associated with residential status of the participants included in the study (P - value>0.05). Distribution of level of knowledge towards risk of fall and prevention of fall of the elderly did not differ significantly between group of participants who stay in urban area and group of participants who stay in rural area (P - value>0.05).

Employment status and level of knowledge

Distribution of level of knowledge towards risk of fall and prevention of fall of the elderly is significantly associated with employment status of the participants included in the study (P - value<0.05). Significantly higher proportion of unemployed participants had higher level of knowledge compared to self employed group of participants (P - value<0.05).

Monthly income status and level of knowledge

Distribution of level of knowledge towards risk of fall and prevention of fall of the elderly is significantly associated with monthly income of the participants included in the study (P - value<0.05). Significantly higher proportion of participants with relatively higher monthly income had higher level of knowledge and vice - versa (P - value<0.05).

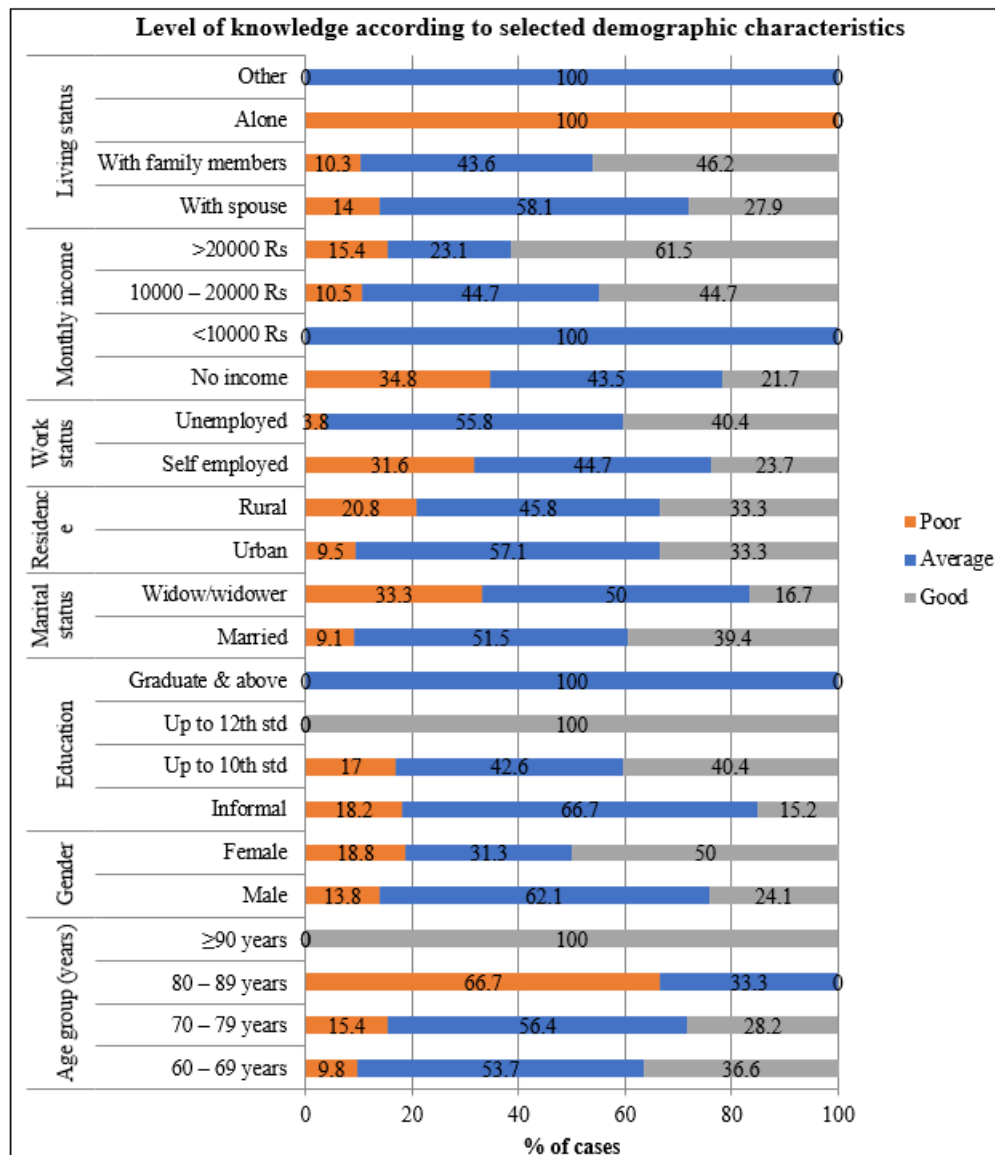
Living status and level of knowledge

Distribution of level of knowledge towards risk of fall and prevention of fall of the elderly is significantly associated with the living status of the participants included in the study (P - value<0.05). Significantly higher proportion of participants who live with the family members had higher level of knowledge compared to the participants who live with spouse or who live alone or who live in old age or orphanage (P - value<0.05).

Variable		Level of knowledge						Total		P - value
		Poor		Average		Good		n	%	
Age group (years)	60 – 69 years	4	9.8	22	53.7	15	36.6	41	100.0	0.001***
	70 – 79 years	6	15.4	22	56.4	11	28.2	39	100.0	
	80 – 89 years	4	66.7	2	33.3	0	0.0	6	100.0	
	≥90 years	0	0.0	0	0.0	4	100.0	4	100.0	
Gender	Male	8	13.8	36	62.1	14	24.1	58	100.0	0.016*
	Female	6	18.8	10	31.3	16	50.0	32	100.0	
Education	Informal	6	18.2	22	66.7	5	15.2	33	100.0	0.001***
	Up to 10 th std	8	17.0	20	42.6	19	40.4	47	100.0	
	Up to 12 th std	0	0.0	0	0.0	6	100.0	6	100.0	
	Graduate & above	0	0.0	4	100.0	0	0.0	4	100.0	
Marital status	Married	6	9.1	31	51.5	26	39.4	66	100.0	0.009**
	Widow/widower	8	33.3	12	50.0	4	16.7	24	100.0	
Residence	Urban	4	9.5	24	57.1	14	33.3	42	100.0	0.301 ^{NS}

	Rural	10	20.8	22	45.8	16	33.3	48	100.0	
Work status	Self employed	12	31.6	17	44.7	9	23.7	38	100.0	0.001***
	Unemployed	2	3.8	29	55.8	21	40.4	52	100.0	
Monthly income	No income	8	34.8	10	43.5	5	21.7	23	100.0	0.001***
	<10000 Rs	0	0.0	16	100.0	0	0.0	16	100.0	
	10000 – 20000 Rs	4	10.5	17	44.7	17	44.7	38	100.0	
	>20000 Rs	2	15.4	3	23.1	8	61.5	13	100.0	
Living status	With spouse	6	14.0	25	58.1	12	27.9	43	100.0	0.001***
	With family members	4	10.3	17	43.6	18	46.2	39	100.0	
	Alone	4	100.0	0	0.0	0	0.0	4	100.0	
	Other	0	0.0	4	100.0	0	0.0	4	100.0	

P - value by Chi - Square test. P - value<0.05 is considered to be statistically significant. *P - value<0.01, **P - value<0.01, ***P - value<0.001, NS – Statistically non - significant.



5. Discussion

Our study aimed at the assessment of knowledge on fall prevention at home among the elderly. Our sample size was 90 adults aged more than 60 years who are attending OPDs of a tertiary care hospital of Western Maharashtra. Majority of the participants were male (64.4%) and were in the age group of 60 to 69 years.

Concerning education level, the present study results indicated that more than half of the participants (52.2%) had education up to 10th class had significantly higher level of knowledge (P value<0.05) which is congruent with a study conducted by Manirajan. et al at Gemas Malaysia found that increased knowledge significantly improves the perceptions about fall prevention²⁶.

Yuting Y, Qiong, Y E (2022) conducted a study at China to assess the home based fall prevention knowledge levels among old adults concluded that urban elderly had better

knowledge about fall prevention which is contrary to our study where there is no significant relationship between the residential status and the knowledge levels (P value >0.05)²⁷.

The present study revealed that female participants had higher level of knowledge compared to group of male participants (P value <0.05) which goes in the same line with what was reported by Yan Yu, Ning Gao et. al (2019) who conducted study on association between health beliefs and fall related behaviour and its implications for fall among Chinese elderly with men generally having lower fall prevention knowledge compared to women²⁸.

In the present study majority of the participants (42.2%) revealed that diminished vision is the main cause of fall in elderly followed by use of medications (17.8%) and decreased agility (14.4%). These findings were consistent with the study conducted by Tromb, A. M, Pluijm et. al (2010) in Netherlands identifies common cause of falls such as impaired vision, medication side effects and chronic health conditions emphasizing the multifactorial nature of falls²⁹.

The study identified that bathroom as the commonest spot for fall among elderly, while cluttered and disorganised household increases the risk of home based falls.

Goenka A D, Bedekar N S, Dabadghav R P, Sancheti P K (2023) conducted a study among community dwelling elderly in Maharashtra showed that majority of the participants (70%) are aware of non slippery floors while 62% are aware of the railing at the staircase as the prevention methods of elderly falls at home, whereas 27 (30.0%) participants of the present study said that keeping pathways uncluttered & lighted, 25 (27.8%) participants revealed that Installing anti slippery rugs reduces the fall among elderly³⁰.

The present study highlighted the need of annual vision check ups in prevention of home based falls among elderly which goes in line with the study conducted by Lord, S. R Et. al at United Kingdom (2010) on 'vision impairments and risk of falls: The Role of regular eye examination'³¹.

A prospective study done on Impact of medication compliance on fall among older adults by Liu Y, Wang Y and Chen (2019) underscores the importance of adhering to doctors prescription to reduce fall risk associated with medication non compliance goes in hand with the present study where majority (51.1%) participants have the knowledge that medications should be consumed as per doctor's prescription only (P value <0.05)³².

Out of 90 participants, 14 (15.6%) had poor level of knowledge regarding home based fall prevention among elderly (knowledge score below 50%), 46 (51.1%) had average level of knowledge (knowledge score between 50 – 74%) and 30 (33.3%) had good level of knowledge towards the prevention of home based fall among elderly (knowledge score more than or equal to 75%). These findings were consistent with the study done by Ali H A et. al (2023) at Holi Karbala City, Iraq, were participants had fair level of knowledge about fall prevention in elderly³³.

6. Conclusion

The conclusion drawn from the findings of the study were as follows:

The demographic variables showed that majority of subjects were in age group 60 - 69 years and majority had high school qualification. Majority (51.1%) participants have the knowledge that medications should be consumed as per doctor's prescription only and elderly females were having better knowledge when compared to the males. The study concluded that more than half of the population (51.1%) had average level of knowledge and 30 (33.3%) had good level of knowledge towards the prevention of home based fall among elderly.

The study on fall prevention in the elderly underscores the critical importance of health education and multifaceted intervention strategies to reduce the incidents of falls in this population. Key findings indicate that a combination of physical exercise, home safety modifications, medication review and family support significantly lowers fall risk.

Implication

The findings of the study have implications for Nursing practice, Nursing Education, Nursing Administration and Nursing Research.

Nursing Practice

Nursing Profession is developing very fast in a unique way. The ultimate goal of nursing education endeavours is the preparation of practitioners who deliver excellent nursing care.

This research guides the educator to prepare nurses who will promote and maintain wellness and care for illness. Nursing personnel need to understand the importance and need for prevention of home based falls in elderly, as it affects their quality of life.

Nursing Education

Quality research in nursing education is vital to establish best practices in teaching and learning and provide scientific basis of practice. This research guides the development of future program of nursing education dedicated to the generation before and translation of evidence that builds best teaching and learning practice in geriatric nursing care.

Nursing Research

The application of nursing research findings is one of the most important indicator of development in the nursing profession, which leads to providing efficient and effective patient care and improving quality of nursing care. Nursing Research also has a tremendous influence on current and future professional nursing practice, thus rendering it as a essential component of educational process. The findings of the present study suggests that education and administration should encourage nurses to read, discuss and conduct research to improve knowledge of population regarding elderly issues and fall prevention strategies.

Encouragement to disseminate knowledge, attitude and practice by publication and organisation of journal clubs,

workshops, seminar and conferences for better outcomes is also indicated by the findings.

Nursing Administration

Nursing administration and hospital leadership should sanction the practice of distributing brochures, posters and booklets with easy to understand information and practical tips on fall prevention. The administration has to take appropriate measures to train elderly volunteers to act as peer educators, who can then share information and provide support within the communities.

7. Recommendation

- A similar study can be conducted on large sample for making a broad generalisation.
- An experimental study can be conducted to implement the effect of structured teaching programme.
- The knowledge regarding home based fall prevention can be strengthened by conducting CNE, workshop, symposium etc.
- The practice of distributing brochures, posters and booklets can be done in the OPDs for the benefit of elderly and their care givers.

8. Limitations

The study is limited to:

- Two weeks of data collection
- Elderly population attending the OPDs in the selected tertiary care hospital
- Only selected demographic variables were included
- Small sample size

Delimitations

The study is delimited to

- Elderly persons available at the time of data collection
- Only some aspects of the falls has been discussed

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