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A STUDY TO ASSESS THE EFFECTIVENESS OF AFALL PREVENTION PROGRAM ON FALL RISK AND FEAR OF FALLING AMONG ELDERLY PATIENTS AT A SELECTED HOSPITAL, CHENNAI

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Abstract

Introduction: Elderlyindividualsareatincreasedriskoffallsduetoage-relatedphysical,sensory,andcognitivedecline.Falls amongolderadultsarealeadingcauseofinjury,reducedindependence,andfearoffalling, whichfurtherlimitsmobilityand qualityoflife.Preventivestrategiessuchashourlyrounding,medicationreview,andenvironmentalmodificationsareeffective inminimisingfallrisks.ThisstudyaimedtoevaluatetheeffectivenessofastructuredFallPreventionPrograminreducingfall risk and improving fall efficacy among elderly patients in a geriatric ward setting.

Aim: AstudytoevaluatetheeffectivenessofaFallPreventionProgramonfallriskandfearoffallingamongelderlypatientsat a selected hospital, Chennai.

Methods: Atrueexperimentaldesignwasused,involving100elderlypatients(50experimental,50control)selectedbysimple randomsamplingfromageriatricwardinCoimbatore.TheexperimentalgroupreceivedaFallPreventionProgramincluding hourly rounding, medication review, and environmental modifications for 21 days (30–40 minutes daily), while the control groupreceivedroutinecare.ToolsincludedtheMorseFallScaleandthefallsefficacyScale-International(FES-I).Datawere analysed using descriptive and inferential statistics (paired t-test, Chi-square).

Results: The study findings showed that most elderly participants were aged 61–70 years (40% in the experimental group), illiterate (26% in both groups), married (60% in the experimental group), and followers of Hinduism (84%). About 42% had diabetes or hypertension,36%hadahistoryoffalls,28%usedsleepingpills,and44%hadvisionproblems.Pre-testresultsrevealednosignificant differencebetweengroupsinfallriskandfallsefficacy.Post-testfindingsshowedthat52%intheexperimentalgrouphadlowfallrisk (vs0%incontrol),and60%hadmoderatefallefficacy(vs30%highincontrol),withp<0.001.Significantassociationswereobserved for age (61–70 years), sleeping pill usage, and vision problems, proving the intervention's effectiveness in reducing fall risk and improving fall efficacy.

Conclusion: Fall Prevention Program, Hourly rounding, medication review, Environmental modifications, Fall risk, fear of falling, Morse Fall Scale, falls

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efficacy Scale–International (FES-I)

Keywords : Fall prevention Program, fall risk fear of falling, elderly patients, Morse Fall Scale , Falls Efficacy Scale International (FES-I) hourly rounding, medication review, environmental modifications

INTRODUCTION

Fallsareamajorhealthconcernamongtheelderlypopulation,oftenleadingtosever einjuriessuchaship fractures, head trauma, and long-term disability. They also increase the risk of hospitalisation and institutionalisation,thusreducingthequalityoflife.fearoffallingmayfurtherleadtolimite dmobilityand loss of independence.As life expectancy rises globally, fall-related complications have become a public health burden. Preventive strategies are critical to reduce morbidity and healthcare costs associated with elderly falls.

Falls among older adults present a complex interplay between physical decline, environmental hazards, and medication-related risks. A recent umbrella review by **Meulenbroeks et al., (2024)** evaluated a broad range of interventions across residential aged care and community settings. They found strong evidence that multifactorial programs including exercise, medication review, environmental modifications, and assistive technology—significantly reduce fall rates. Notably, tailored, context-specific interventions delivered consistently across settings yielded the most reliable outcomes, underscoring the importance of program adaptability to real-world care environments.

Many fall prevention strategies do not sufficiently leverage medication review, hourly monitoring, or environmental change in integrated, real-world workflows. Despite clear evidence of modifiable risk factors, multidisciplinary coordination remains weak. There is a clear opportunity to evaluate the combined impact of hourly rounding, systematic medication review to deprescribe high-risk medications, and structured home or facility environment assessment, all within the same program. Evidence suggests such multifaceted but practical models can bridge existing implementation gaps, enhancing both effectiveness and sustainability of fall prevention.

Statementofthe Problem

AstudytoevaluatetheeffectivenessofstructuredFallPreventionProgramonfallriskandf earoffalling among elderly patients at selected hospital, Chennai.

Objectives

1. Toassessthepreandpost-testscorefallriskandfearoffallingamongelderlypatients intheboth experimental and control groups.
2. ToimplementthestructuredFallPreventionProgramfortheexperimentalgroup.
3. ToevaluatetheeffectivenessofastructuredFallPreventionProgram,onfallriskand fearof falling among elderly patients in the experimental group.
4. Tofindouttheassociationbetweenthepost-testleveloffallriskandfearof fallinginthe experimental group and their selected demographic and clinical variables.

Hypotheses

H_1: Thereisasignificantdifferencebetweenthepre-testandpost-testscoresoffall risk amongelderlypatientsinboth groups.

H_2: Thereisasignificantdemographicbetweenreandpost-testscoresoffearoffalling amongelderlypatientsinbothgroups.

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H_3: It refers to the anxiety experienced by elderly patients while performing medicine daily activities. There is a significant association between the post-test scores of fall risk and fearof falling among elderly patients and theirselected demographic and clinical variables in both group.

METHODOLOGY

A quantitative research approach was adopted for the present study to measure and compare changes in fall risk and fear of falling among elderly patients before and after the implementation of a structured fall prevention programme. A quasi-experimental research design was used, incorporating experimental and control groups, to evaluate the effectiveness of the intervention. The study was conducted among elderly patients aged 65 years and above attending the geriatric ward and geriatric outpatient department of Sri Venkateswaraa Medcity Medical College and Hospital, Chennai. The target population comprised elderly patients, while the accessible population included those aged 65 years and above who attended the selected clinical setting during the data collection period.

A total of 100 elderly patients were included in the study, with 50 participants assigned to the experimental group and 50 to the control group. Participants were selected using a simple random sampling technique based on predetermined inclusion and exclusion criteria. The inclusion criteria comprised elderly patients aged 65 years and above who were willing to participate, able to understand Tamil or English, at risk of falling during hospitalisation, or experiencing fear of falling in the selected clinical setting. Patients who were non-cooperative or unwilling to participate in the study were excluded. The independent variable was the structured fall prevention programme, which incorporated environmental modifications and other preventive nursing interventions. The dependent variables were fall risk and fear of falling among elderly patients.

Data were collected using a structured tool consisting of demographic and clinical variables, the Morse Fall Scale (MFS), and the Falls Efficacy Scale–International (FES-I). Section A consisted of two parts. Part I included demographic variables such as age, gender, educational status, marital status, monthly family income, religion, average hours of sleep per day, and daily activities. Part II assessed clinical variables, including medical history, duration of illness, use of sleeping pills at night, history of previous falls, use of mobility assistive devices, and vision and hearing problems. Section B consisted of the Morse Fall Scale, developed by Janice M. Morse in 1989 to assess the risk of falling among hospitalised patients. It comprises six assessment items: history of falling, secondary diagnosis, ambulatory aid, intravenous therapy, gait, and mental status. The total score ranges from 0 to 125, with scores of 0–24 indicating low risk, 25–44 indicating moderate risk, and 45 or above indicating high risk of falling, requiring appropriate preventive measures. The Falls Efficacy Scale–International, developed by Yardley and colleagues in 2005, was used to assess the level of concern about falling while performing 16 everyday activities, including physical and social activities. Each item is rated on a four-point Likert scale, ranging from 1 (not at all concerned) to 4 (very concerned), with total scores ranging from 16 to 64. Scores of 16–19 indicate low concern, 20–27 indicate moderate concern, and 28–64 indicate high concern about falling, suggesting the need for appropriate intervention.

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For the main study, data were collected from 100 eligible elderly patients selected through simple random sampling and assigned equally to the experimental and control groups. After obtaining the necessary ethical clearance and administrative permissions, the researcher established rapport with the participants, explained the purpose and procedures of the study, and obtained written informed consent. During the pre-intervention phase, baseline levels of fall risk and fear of falling were assessed using the Morse Fall Scale and Falls Efficacy Scale–International. Approximately 10–15 minutes were allotted for the assessment. Subsequently, the experimental group received the structured fall prevention programme for 28 consecutive days under nursing supervision. The intervention included hourly rounding to assess patients' needs and mobility, medication review to identify medications associated with increased fall risk, and environmental modifications such as improving lighting, removing obstacles, maintaining clear walking pathways, and providing appropriate safety aids. Each intervention session lasted approximately 30–40 minutes. Meanwhile, the control group continued to receive routine nursing care without the additional structured intervention. On the 28th day, post-intervention assessments were conducted in both groups using the same tools under similar conditions to evaluate changes in fall risk and fear of falling.

The collected data were analysed using descriptive and inferential statistical methods. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used to summarise the demographic and clinical characteristics of the participants and their fall risk and fear of falling scores. The effectiveness of the structured fall prevention programme was assessed by comparing pre-intervention and post-intervention scores using appropriate t-tests. The chi-square test was used to examine the association between selected sociodemographic and clinical variables and the levels of fall risk and fear of falling. The statistical significance level was set at $p < 0.05$.

RESULTS

Description of Socio-Demographic and Clinical Characteristics of Elderly Patients

The socio-demographic characteristics of the elderly patients revealed that, in the experimental group, the majority of participants (40%) belonged to the 65–70 years age group, followed by 30% in the 71–80 years age group, 20% in the 81–90 years age group, and 10% above 90 years. In the control group, 36% were aged 65–70 years, 32% belonged to the 71–80 years age group, 24% were aged 81–90 years, and 8% were above 90 years. Regarding gender, 52% of the experimental group were females and 48% were males, whereas 52% of the control group were males and 48% were females. With respect to educational status, the highest proportion of participants in the experimental group (26%) and control group (26%) were illiterate, followed by 24% and 20%, respectively, who had completed primary school education. Regarding marital status, the majority of participants were married, accounting for 60% in the experimental group and 58% in the control group. In terms of monthly family income, 40% of the experimental group and 36% of the control group had an income between ₹41,000 and ₹50,000. Hinduism was the predominant religion, representing 84% of the experimental group and 82% of the control group. Concerning average sleep duration, the majority of participants in both groups reported sleeping for 6–8 hours

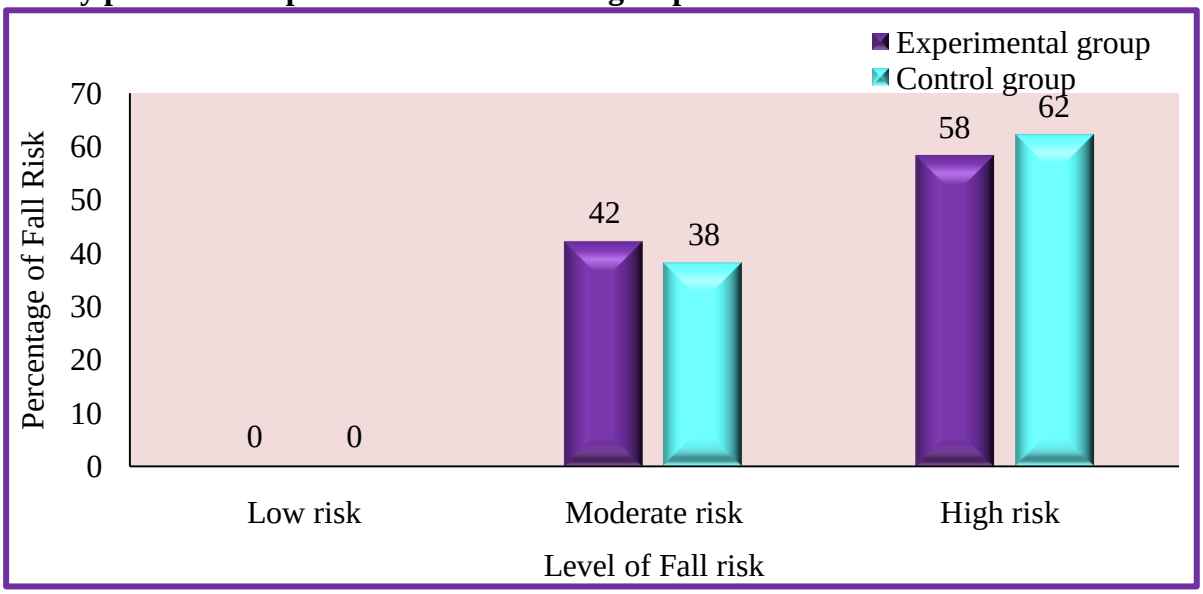
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per day (70% and 66%, respectively). Regarding daily activities, watching television was the most commonly reported activity, accounting for 40% of the experimental group and 42% of the control group. These findings indicate that both groups had relatively comparable socio-demographic characteristics.

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The clinical characteristics revealed that diabetes mellitus was the most frequently reported medical condition in both the experimental group (24%) and the control group (26%), followed by hypertension (20% and 18%, respectively). Regarding the duration of medical illness, 40% of the experimental group and 42% of the control group had a history of illness for less than 10 years. Concerning the use of sleeping pills at night, 28% of the experimental group and 30% of the control group reported using sleeping pills, while the remaining participants did not use them. With regard to previous falls, 36% of the experimental group and 40% of the control group reported a history of previous falls. Regarding the use of assistive devices for mobility, the majority of participants did not use any assistive devices (56% in the experimental group and 54% in the control group), while others used walking sticks, walkers, or wheelchairs. Vision problems were reported by 44% of the experimental group and 48% of the control group, whereas hearing problems were reported by 40% and 38%, respectively. Overall, the clinical characteristics indicate that participants in both groups had several potential risk factors associated with falls, including chronic medical conditions, previous falls, use of sleeping medication, mobility limitations, and sensory impairments.

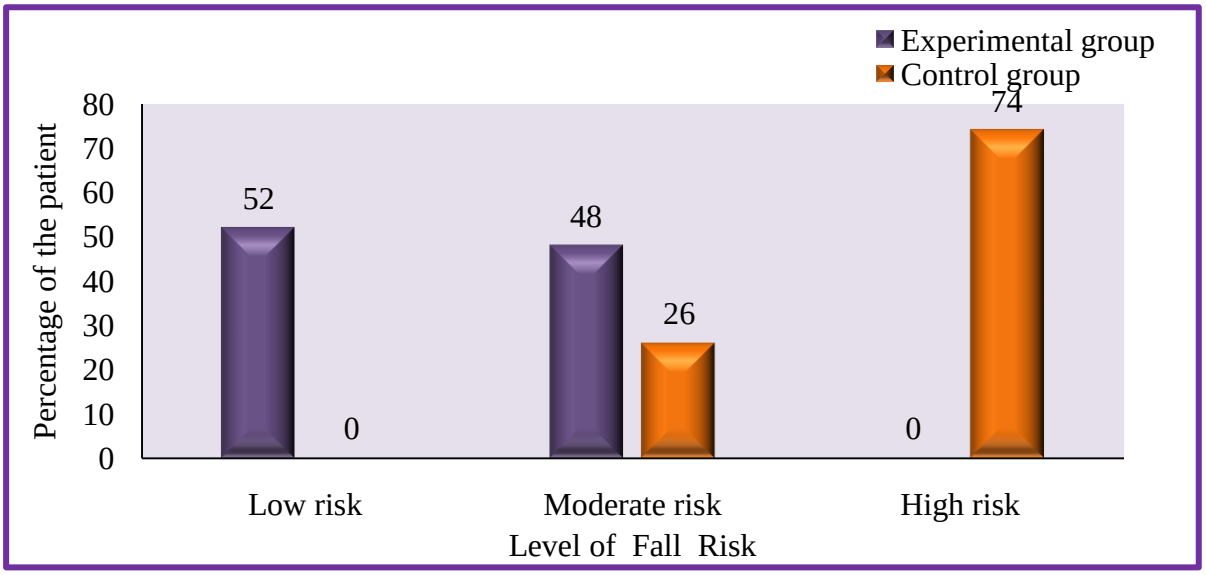
SECTION II : Assessment of pre-test level of fall risk and fear of falling among elderly patients in experimental and control groups



SECTION III

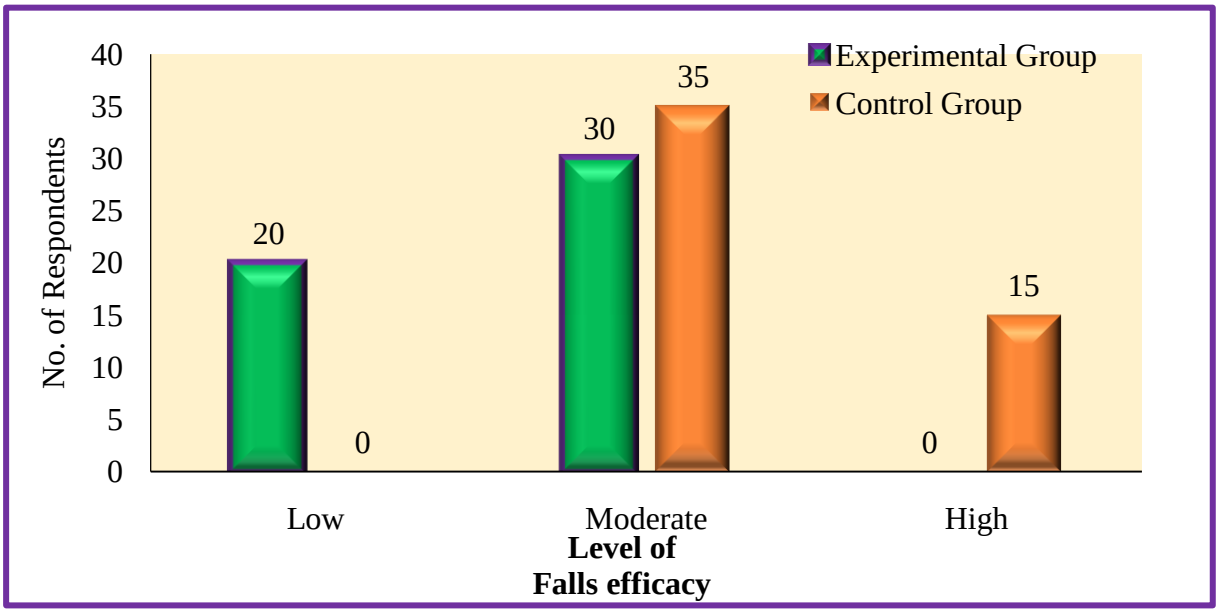
Evaluate the effectiveness of fall prevention program on fall risk and fear of falling among elderly patients in the experimental group.

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Post-test level of falls efficacy score in the experimental and control groups



Compare the pre-test and post-test levels of fall risk and fear of falling among elderly patients in experimental and control groups

n=100

S. No.	Assessment	Group	Mean ± SD	t-value	p-value	Significance
1	Pre-test	Experimental Group	45.20 ± 3.10	t = 0.00	p = 1.000	Not Significant
		Control Group	45.20 ± 2.95			
2	Post-test	Experimental Group	26.80 ± 4.60	t = 16.25	p < 0.001***	Significant

Comparison of falls efficacy score betweenexperimental and control groups

S. No.	Assessment	Group	Mean ± SD	t-value	p-value	Significance
1	Pre-test	Experimental Group	39.70 ± 4.20	t = 0.96	p = 0.34	Not Significant
		Control	38.35			

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		Group	± 4.10			
2	**Post-test**	Experimental Group	21.10 ± 3.80	t = 11.27	p < 0.001***	Significant

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DISCUSSION

The socio-demographic findings revealed that the majority of elderly participants belonged to the 61–70 years age group, accounting for 40% of the experimental group and 36% of the control group. Regarding gender distribution, females constituted 52% and males 48% in the experimental group, whereas males accounted for 52% and females 48% in the control group. With respect to educational status, 26% of participants in both groups were illiterate, while only 4% in the experimental group and 6% in the control group had completed graduate or postgraduate education. The majority of participants were married, representing 60% of the experimental group and 58% of the control group, followed by widows and widowers at 26% and 24%, respectively. Regarding monthly family income, 40% of the experimental group and 36% of the control group belonged to the ₹41,000–₹50,000 income category, while 28% and 26%, respectively, had a monthly income above ₹50,000. Hinduism was the predominant religion, accounting for 84% of the experimental group and 82% of the control group. Most participants reported an average sleep duration of 6–8 hours per day, representing 70% of the experimental group and 66% of the control group. Watching television was the most commonly reported daily activity, accounting for 40% of the experimental group and 42% of the control group.

Regarding clinical characteristics, the findings revealed that diabetes mellitus and hypertension were the commonly reported medical conditions, accounting for 42% of the experimental group and 40% of the control group, while 18% and 14%, respectively, had no reported medical illness. The majority of participants had experienced medical conditions for less than 10 years, representing 40% of the experimental group and 42% of the control group. The use of sleeping pills at night was reported by 28% of the experimental group and 30% of the control group. A history of previous falls was present among 36% of participants in the experimental group and 40% in the control group. Regarding the use of assistive devices for mobility, 52% of the experimental group and 54% of the control group did not use any assistive devices, whereas 24% and 26%, respectively, used walking sticks. Vision problems were reported by 44% of the experimental group and 48% of the control group, while hearing problems were identified among 40% and 38%, respectively. These findings indicate that both groups had several clinical and environmental risk factors that could contribute to falls among elderly patients.

The pre-intervention assessment of fall risk revealed that 42% of elderly participants in the experimental group had moderate fall risk and 58% had high fall risk. Similarly, in the control group, 38% had moderate fall risk and 62% had high fall risk. None of the participants in either group belonged to the low-risk category. The chi-square analysis revealed no statistically significant difference between the experimental and control groups, indicating that both groups had comparable baseline levels of fall risk before the intervention.

The pre-intervention assessment of falls efficacy revealed that 28% of participants in the experimental group had moderate concern about falling, while 72% had high concern. In the control group, 34% had moderate concern and 66% had high concern about falling. None of the participants in either group demonstrated low concern about falling. The chi-square test indicated no statistically significant difference between the groups, suggesting that the baseline levels of concern about falling were comparable before the implementation of the structured fall prevention programme.

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The post-intervention assessment of fall risk demonstrated considerable improvement in the experimental group. Among the participants, 52% had low fall risk and 48% had moderate fall risk, while none remained in the high-risk category. In contrast, the control group demonstrated no participants in the low-risk category, with 26% having moderate fall risk and 74% having high fall risk. The chi-square value was 66.27, with a p-value of less than 0.001, indicating a highly statistically significant difference in fall risk levels between the experimental and control groups. These findings suggest that the structured fall prevention programme was effective in reducing fall risk among elderly patients in the experimental group.

The post-intervention assessment of falls efficacy revealed that 40% of participants in the experimental group had low concern about falling and 60% had moderate concern, while none demonstrated high concern. In comparison, the control group had no participants in the low-concern category, 70% had moderate concern, and 30% had high concern about falling. The chi-square value was 35.38, with a p-value of 0.001, indicating a statistically significant difference between the experimental and control groups. This finding demonstrates that the structured fall prevention programme contributed to reducing concern about falling and improving confidence in performing everyday activities among elderly patients.

The comparison of mean fall risk scores between the experimental and control groups revealed that, during the pre-intervention assessment, the experimental group had a mean score of 45.20 ± 3.10, while the control group had a mean score of 45.20 ± 2.95. The calculated t-value was 0.00, with a p-value of 1.000, indicating no statistically significant difference between the groups before the intervention. However, during the post-intervention assessment, the experimental group demonstrated a considerable reduction in the mean fall risk score to 26.80 ± 4.60, whereas the control group continued to have a higher mean score of 47.90 ± 2.70. The calculated t-value was 16.25, with a p-value of less than 0.001, indicating a highly statistically significant difference between the groups. These findings support the effectiveness of the structured fall prevention programme in reducing fall risk among elderly patients.

Similarly, the comparison of falls efficacy scores revealed that the experimental group had a pre-intervention mean score of 22.80 ± 2.65, while the control group had a mean score of 23.00 ± 2.55. The calculated t-value was 0.40, with a p-value of 0.689, indicating no statistically significant difference between the groups before the intervention. Following the intervention, the experimental group demonstrated a reduction in the mean score to 17.80 ± 2.80, whereas the control group showed an increase in the mean score to 24.20 ± 2.40. The calculated t-value was 11.14, with a p-value of less than 0.001, indicating a highly statistically significant difference between the groups. Since lower FES-I scores indicate less concern about falling, this improvement suggests that the intervention enhanced participants' confidence in performing daily activities without fear of falling.

The association between selected demographic and clinical variables and fall risk scores in the experimental group revealed statistically significant associations with age (61–70 years), use of sleeping pills at night, and the presence of vision problems. These findings indicate that elderly patients belonging to these categories may have greater vulnerability to falls. Similarly, the association between selected demographic and clinical variables and falls efficacy scores revealed statistically significant associations with age (61–70 years), use of sleeping pills, and the presence of vision

problems. These findings suggest that these factors may influence older adults' confidence in performing daily activities and their concern about falling. Other demographic and clinical variables did not demonstrate statistically significant associations.

CONCLUSION

The present study demonstrated that a structured Fall Prevention Program, comprising hourly rounding, medicationreview,andenvironmentalmodifications,washighlyeffectiveinreducingfall riskandfearof falling among elderly patients. The findings also emphasize the importance of early risk identification usingstandardizedassessmenttoolsandindividualizedcareplanningbasedonpatientneeds. Incorporating strength and balance training, along with patient and caregiver education, further enhanced patient confidence and mobility. Continuous monitoring, proper use of assistive devices, and ensuring a safe hospital environment contributed significantly to fall reduction. The study also highlights the role of multidisciplinary collaboration, including nurses, physicians, and physiotherapists, in achieving better outcomes.Moreover,regularstafftrainingandadherencetofallpreventionprotocolsimpr ovedthequality of care and patient safety. Overall, the intervention not only reduced fall incidence but also promoted independence,reducedhospitalstay,andimprovedthequalityoflifeamongelderlypatient s,indicatingthe need for implementing such evidence-based practices in routine clinical settings.

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ConflictofInterest:Theauthorsdeclarethattheyhavenoconflictsofinterest.