

Effectiveness of the Self-Instruction Module (SIM) on patient knowledge about contributing factors and the prevention for toileting-related adult patient falls and injuries during early morning hours.

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Abstract

Background: Falls are distressing to patients, family members, and health care providers and patient education is one approach to falls mitigation. Despite the use of fall prevention protocols, falls continue to occur in the health care organizations. The usage of call bell, to seek help, wear safe footwear, use assistive devices such as walking frames when prescribed, and avoid multi-tasking, are some ways to reduce the risk of injury. Almost half of the falls in the hospital occur during activities related in some way to toileting. **Aim:** The aim of the study was to evaluate the effectiveness of the Self Instruction Module (SIM) on patient knowledge regarding contributing factors and prevention for toileting-related patient falls and injuries. **Methods:** This pre-experimental study included 98 patients from the ward by convenience sampling methods. Data analysis was done using descriptive and inferential statistics. **Results:** In the **Pre-test**, the majority of the samples 73 (74.48 %) had poor and very few samples 5 (5.10 %) had good knowledge about contributing factors and preventions for toileting-related falls and injuries during early morning hours. In the **Post-test** the majority of the samples (81.63 percent) had good knowledge, 15 (15.31 percent) had mediocre knowledge, and 3 (3.06 percent) had low knowledge on contributing factors and preventions for toileting-related falls and injuries in the early morning hours. It was found that there was no statistically significant association between the pre-test level of knowledge and the selected demographic variables.

Conclusion: This study was found that a single training module is more effective in improving the knowledge of contributing factors and patient knowledge regarding preventions for toileting-related falls and injuries during the early morning hours

Key Words: Patient falls; Toileting related patient falls, early morning, self-instruction module (SIM), knowledge, prevention strategies

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I. Introduction:

The incidents of Patient falls and related injuries in the inpatient care area are traumatic life experiences for the patients, their family members, the allocated nurses as well as the organizations. Despite the use of fall prevention protocols, falls continue to occur in our hospital. Somehow half of the falls in the health care organization occur during the activities related to toileting 1.

Falls, a major safety concern for hospitalized patients, increase their length of stay, reduce their quality of life, and are also expensive for the patients as well as the care provider. Patient falls not only increase patients' length of stay and healthcare costs but may also trigger lawsuits resulting in settlements with huge costs due to patient injury. Not all patient falls are predictable or preventable in health care organization. Some falls are simply the result of individual physiological responses to illness or treatment in care settings in which patient ambulation is essential for recovery 2.

For instance, a nurse left a patient on the commode in her bathroom with instructions to press her call bell for assistance when she was ready to return to bed. Instead of ringing for assistance, the patient tried to move alone, fell, sustained a closed-head injury, and died 3. (Legal Eagle Eye Newsletter for the Nursing Profession, March 2005)

The study reveals that overall 34% of the falls were related to toileting, out of which at least 44% occurred during the early morning which was the highest rate of falls in our hospital. There are several reasons behind the early morning falls which are medications, co-morbidities, cognitive impairment or a history of falls giddiness, low blood pressure, mobility disorder, improper environmental surrounding, wheeled furniture, etc. The hospital should create an educational module for the patients to bring awareness among them so that we can curb the above-mentioned falls ⁴.

According to Morse, falls can be classified into 3 categories ⁵:

1. Unanticipated physiological falls occur when physical conditions cannot be predicted before falling,
2. Anticipated physiological falls occur in those individuals with an increased risk of falling; this category refer to older adults, and those anticipated physiological falls are discussed in this study,
3. Accidental falls describe falls in people who have no risk for falling and are usually caused by an external cause or by misjudgement.

II. Material And Methods

The research was conducted on June 2021. The research design is used to achieve the objectives of the study, is a pre-experimental one-group pre and post-test. In the present study, a pre-test was administered by the means of a Self-instruction Module (SIM) questionnaire. Before the questionnaire was given to patients consent was taken, aim and objectives were explained to them. A pre-test was taken and then structured teaching was given with the SIM regarding contributing factors and prevention of toileting-related falls was planned and implemented among adults age 45 or above patients in selected hospitals. After 2 days on day three, a post-test was conducted by using the same questionnaire. There were 18 knowledge questions for knowledge assessment regarding contributing factors and prevention for toileting-related adult patient falls and injuries during early morning hours. Each item was multiple choices in nature with four responses in each question. There was one correct response that carries one mark and the wrong response carries a zero mark. The total score was 18 for 18 items. There was no negative marking. The individual was expected to choose the correct response. The knowledge level grading criteria are considered appropriate as follows:-

Knowledge level	Scores
Poor	1-6
Average	7-12
Good	13 - 18

The data were analysed by using inferential statistics. This study was carried out on patients of the department of General Medicine, Surgery, Gastroenterology, and Oncology in Apollo Multispecialty Hospitals, Kolkata June 2021 to September 2021. A total of 98 adult subjects (both male and females mobilized patients) aged \geq 45, years.

Study Design: Pre-experimental one-group pre-test- post-test design adopted for this study

Study Location: This study was done in the department of general medicine, Surgery, Gastroenterology, and Oncology ward.

Study Duration: June 2021 – September 2021.

Sample size: 98 patients.

Subjects & selection method: The study population was drawn from all mobilized in-patients who presented to Apollo Multispecialty Hospitals, Kolkata West Bengal with age 45 years old and above. We have chosen convenience sampling methods

Variables: Independent variables: Self Instruction Module (SIM) on Adult patient's knowledge on contributing factors and prevention of toileting related falls was planned and implemented among adults age 45 or above patients in selected hospitals.

Dependent variables: Adult patients' knowledge on contributing factors and prevention of toileting-related falls was planned and implemented among adults age 45 or above patients in selected hospitals.

Inclusion criteria:

1. For patients, age 45 years and above who are admitted to the medical, surgical, oncology & gastroenterology department, the average length of stay will be more than 5 days
2. Both male and female patients are included.
3. A patient who can mobilize up to the toilet

Exclusion criteria:

1. Unconscious and critical care patient
2. Patient with confusion and disorientation
3. The patients who are not willing to participate in the study.
4. The patient who is not available at the time of data collection.

Procedure methodology:

The study design depicted in table 1 shows that, on day one, a pre-test was given in the form of a structured knowledge questionnaire regarding contributing factors and prevention for toileting-related patient falls and injuries during early morning hours among the adult patients aged 45 years and older. On day two SIM was administered. On day three, a post-test was administered to assess the knowledge gained using the same structured interview knowledge questionnaire.

Table: 1

Group	Pre-test(01) (Day one)	Nursing intervention(X) (Day Two)	Post-test (02) (Day three)
Experimental	01	X	02

Table 1 - Pre-test knowledge assessment on contributing factors and prevention for toileting-related patient falls and injuries during early morning hours among the adult patients aged 45 years and older. X- SIM on regarding contributing factors and prevention for toileting-related patient falls and injuries in the early morning among the adult patients aged 45 years and older. 02 –Post-test assessment on toileting-related patient falls aged 45 years or older in the early morning and its prevention.

Statistical Analysis

Data were analysed using SPSS. The student's *t*-test was used to ascertain the significance of differences between the mean values of two continuous variables. In addition, paired *t*-test was used to determine the difference between pre-test and post-test knowledge scores regarding contributing factors and prevention for toileting-related patient falls and injuries during early morning hours. Chi-square and tests were performed to test for differences in proportions of categorical variables between two or more groups. The level $P < 0.05$ was considered as the cut-off value or significance.

III. Results

Section a: description of the demographic variables among adult patients.

Table 2: Frequency and Percentage wise Distribution of Demographic Variables of samples age 45 or above.

D) Age (N= 98)

2	Age (in years)	Frequency	Percentage
	45-55	23	23.47
	56- 65	11	11.22
	65 – 75	47	47.96
	76 & Above	17	17.35

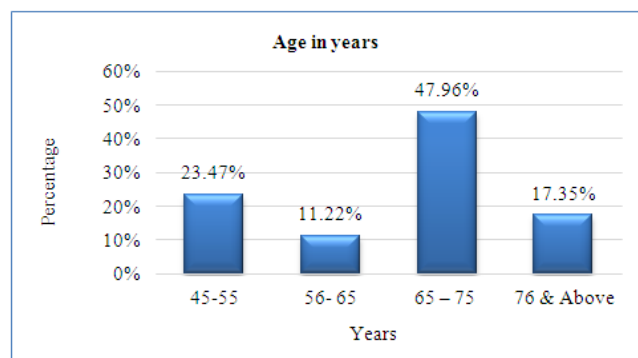


Figure: 1 Different age groups of patients

Figure 1 depicts that the frequency and Percentage wise Distribution of Demographic Variables of samples. Out of the 98 adult samples majority of the samples, 47 (47.96 %) of the study population were in the age group between 65 – 75 years. 23 (23.5 %) of the study population were in the age group between 45 – 55

years.17 (17.35 %) of the study population were in the age group above 76 years & above 11 (11.22 %) of the study population were in the age group between 56 – 65 years

II) Gender (N= 98)

3	Gender	Frequency	Percentage
	Male	54	55.10
	Female	44	44.90

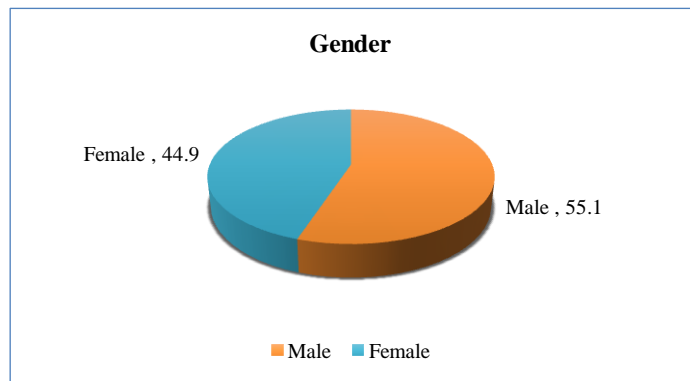


Figure: 2 Gender

Figure 2 depicts that most of the samples 54 (55.1%) were belongs to a male, 44 (44.90 %) belonged to a female

III) Educational Status (N= 98)

4	Educational status	Frequency	Percentage
	Undergraduate	12	12.24
	Graduate	57	58.16
	Post Graduate and above	29	29.59

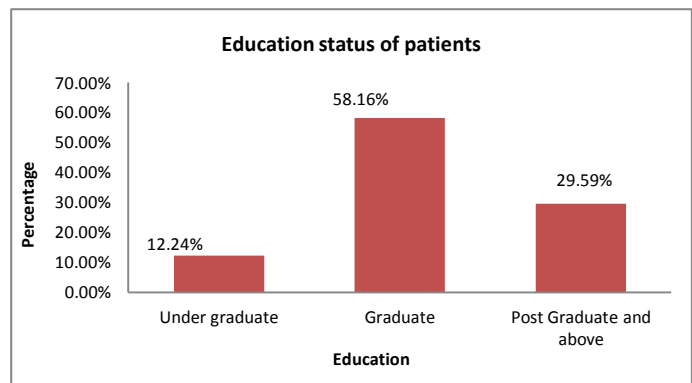


Figure 3: Education status of patients

Figure 3 depicts that the samples were Graduates 57 (58.16 %), were Postgraduates 29 (29.60 %) and were Undergraduates 12 (12.24 %).

IV) Socio Economic Status (N= 98)

5	Socioeconomic status	Frequency	Percentage
	Low	2	2.04
	Middle	55	56.12
	High	41	41.84

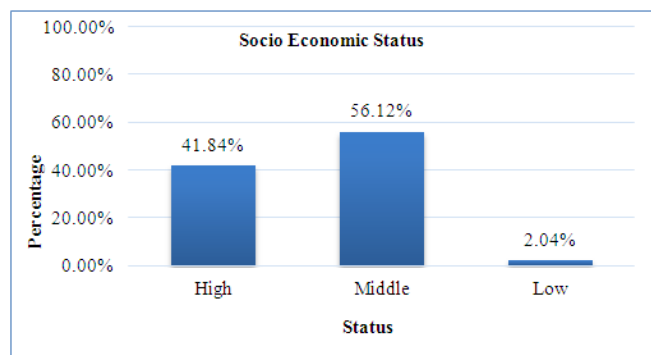


Figure: 4 Socio-Economic Status

Figure 4 depicts the majority of the sample's socioeconomic status were middle 55 (56.12 %), high 41 (41.84 %) and low were 2 (2.04 %).

V) Marital Status(N= 98)

6	Marital status	Frequency	Percentage
	Married	86	87.76
	Unmarried	6	6.12
	Widow or Divorcee	6	6.12

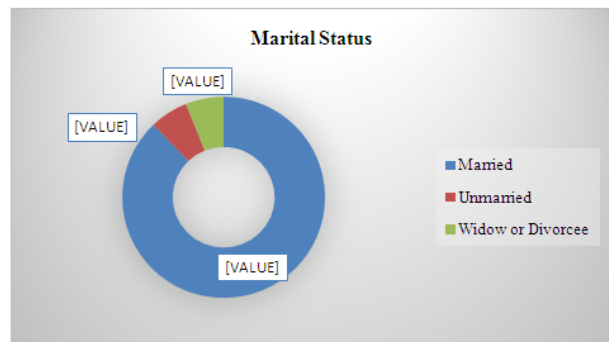


Figure: 5 Marital statuses of patients

Figure 5 depicts the most of the samples 86 (87.76 %) were married and 6 (6.12 %) were unmarried & Widow or Divorcee

VI) Type of Family (N= 98)

7	Type of family	Frequency	Percentage
	Nuclear	60	61.22
	Joint	36	36.73
	Extended	2	2.04

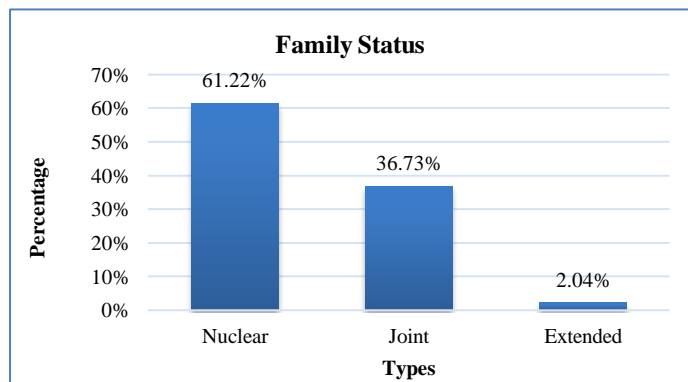


Figure: 6 Family statuses of the patients

Figure 6: The majority of the samples were belonging to nuclear family 60 (61.22 %), joint family 36 (42.5%), and extended family 2 (2.04 %)

Vii) Fall Risk Score (N= 98)

8	Fall Risk score	Frequency	Percentage
	Low	2	2.04
	Medium	55	56.12
	High	41	41.84

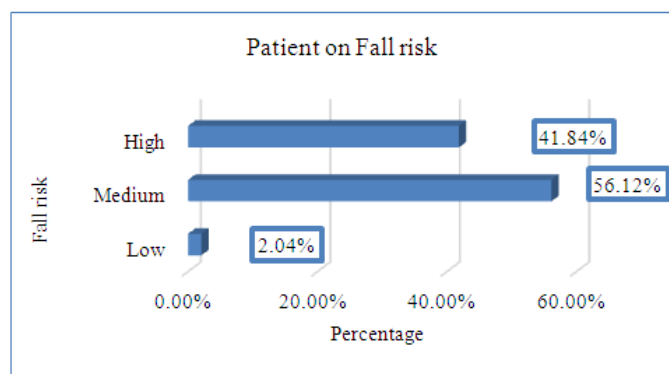


Figure7: Type of patient on fall risk

Figure 7: Majority samples had medium 55 (56.12 %) risk for falls, high risk 41 (41.84 %), and low risk was 2 (2.04 %)

VIII) Current Blood Sodium Level (N = 98)

9	Sodium Level mill equivalents per liter (mEq/L)	FREQUENCY	PERCENTAGE
	< 130	5	5.10
	130 – 135	55	56.12
	136 – 145	34	34.69
	More than 146	5	5.10

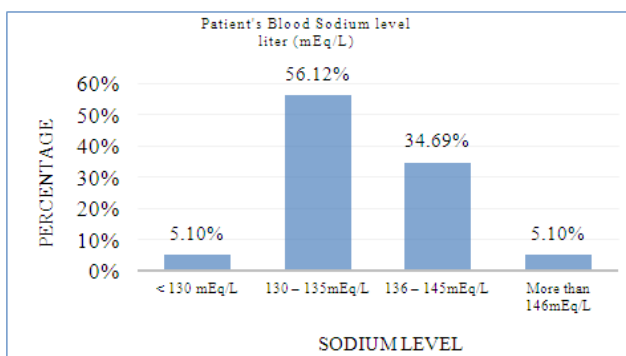


Figure: 8 Patient’s blood sodium level

Figure 8 shows that the majority of the adult patients sodium level was within the normal limit 130mEq/L (56.12 %), 34 was within 136 – 145 mEq/L (34.69 %) and low less than 130 mEq/L was 5 (5.10 %), and High more than 146 mEq / L was 5 (5.10 %). Low blood sodium is common in older adults, especially those who are hospitalized or living in long-term care facilities. Signs and symptoms of hyponatremia can lead to altered personality, lethargy, and confusion.

XI) Current Blood Glucose Level (N = 98)

10	Blood Glucose Level	FREQUENCY	PERCENTAGE
	< 70 mg /dl	2	2.04
	70 – 140 Mg/ dl	53	54.08
	141 – 200 mg/dl	36	36.73
	200-400 mg/dl	7	7.14
	□ 401	0	0.00

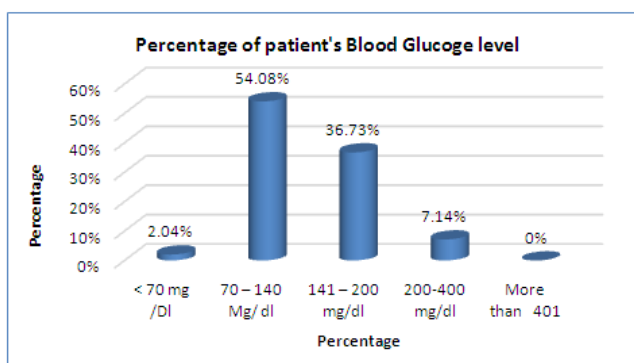


Figure 9: Percentage of patient's Blood Glucose level

Figure 9 : Majority of the samples Blood glucose level 70 – 140 mg / dl 53 (54.08 %) were within normal limit , more than normal limit was 36 patients (36.73 %) , within 200-400 mg/dl 7 (7.14 %) and low less than < 70 mg /dl were 2 (2.04 %) reported as hypoglycaemia . Hypoglycemia, one of the most feared acute complications of diabetes treatment, has been shown to increase the risk of falls. The symptoms that lead to falls in hypoglycemic patients include trembling, shakiness, a decrease in cognitive ability, and palpitations

X) Current Haemoglobin Level (N = 98)

11	Blood Glucose Level	Frequency	Percentage
	Within Normal range	70	71.43
	< 10 mg / dl	28	28.57

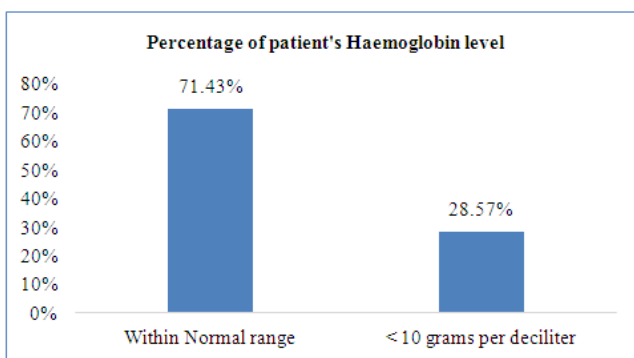


Figure 10: Percentage of patient's Haemoglobin level

Figure 10: The majority of the adult patients Blood Haemoglobin level was normal limit range 70 (73.43 %) and less than < 10gm g /dl was 28 (28.57 %). There is a correlation between anaemia and falls, and specifically that patients with lower haemoglobin levels are more likely to fall.

Assessment of the level of knowledge regarding contributing factors and prevention for toileting-related patient falls and injuries during early morning hours amongst the adult patients aged 45 years and above.

Table 12: Frequency and percentage-wise distribution of Pre-test and post-test of the level of knowledge regarding contributing factors and prevention for toileting-related patient falls and injuries during early morning hours among the adult patients aged 45 years and above.

Level of knowledge	Pre-test			Post-test		
	Frequency (N)	Percentage (%)	Mean Standard Deviation	Frequency (N)	Percentage (%)	Mean Standard Deviation
Poor (Scores Between 1- 6)	73	74.48	5.33±3.381	3	3.06	14.21±2.88
Average (Scores Between 7 – 12)	20	20.42		15	15.31	
Good (Scores Between 13 – 18)	5	5.10		80	81.63	
Total	98	100		98	100	

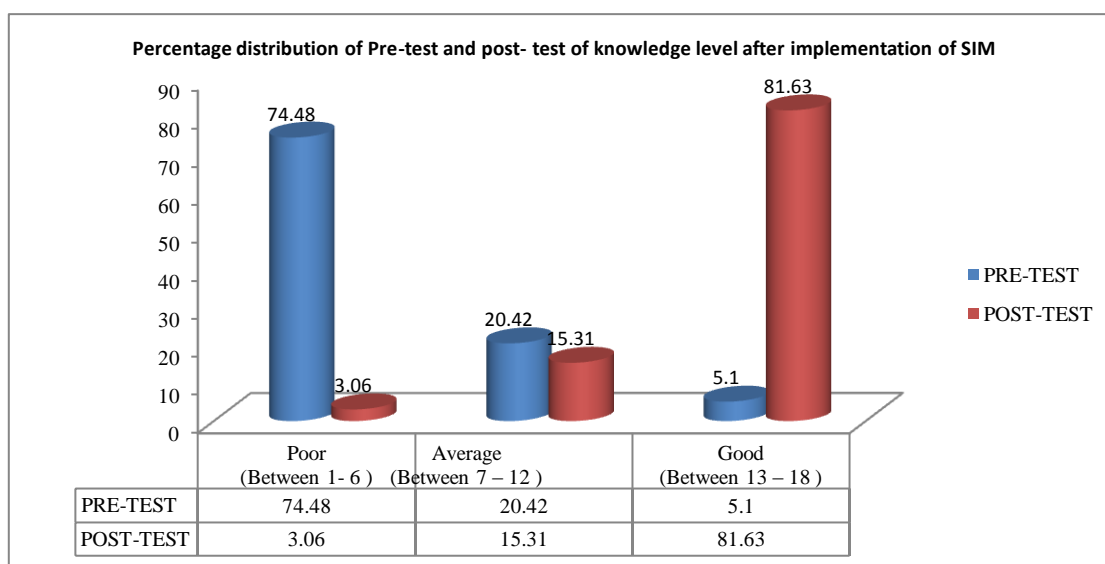


Figure 11: Percentage distribution of Pre-test and post-test of knowledge level after the implementation of SIM

Figure 11: Percentage distribution of Pre-test and post-test of knowledge level after the implementation of SIM. In the pre-test, the Majority of the adult patients 73 (74.48%) had a poor level of knowledge and 20 (20.42%) had an average and 5 (5.10) had a good level of knowledge. The mean and standard deviation of the level of knowledge regarding the contributing factors and prevention for toileting-related patient falls and injuries during early morning hours amongst the adult patients aged 45 years and above was (5.33±3.381). **In post-test**, the Majority of the patients 80 (81.63 %) had a good level of knowledge and 15 (15.31%) had an average and 3 (3.06 %) had a poor level of knowledge. The mean and standard deviation of level of knowledge regarding contributing factors and prevention for toileting-related patient falls and injuries during early hours of morning amongst the adult patients aged 45 years and above was (14.21±2.88).

Evaluate the effectiveness of self-instruction module on knowledge regarding the contributing factors and prevention for toileting-related patient falls and injuries during early hour’s morning amongst the adult patients aged 45 years and above

Table –13: Comparison of the Pre-test and post-test of the level of knowledge regarding contributing factors and prevention for toileting-related patient falls and injuries during early morning hours amongst the adult patients aged 45 years and above.

Sl. No	Level of knowledge regarding contributing factors and prevention for toileting-related patient falls and injuries during early morning hours amongst the adult patients aged 45 years and above	Mean	Standard Deviation	't' value	'p' value
1	Pre-test	5.33	3.381	-21.18	p is < .00001
	Post-test	14.21	2.88		

The *t*-value is -21.18511. The *p*-value is < .00001. The result is significant at *p* < .05.

Table -13 shows that the mean score of effectiveness in the pre-test was 5.33 ± 3.381 and the mean score in the post-test was 14.21 ± 2.88 respectively. The calculated **paired 't' test the value of t = - 21.18** shows a statistically highly significant difference between the comparison of the Pre-test and post-test level of knowledge regarding contributing factors and prevention for toileting-related patient falls and injuries during early morning hours amongst the adult patients aged 45 years and above

Association between the Pre-test of the level of knowledge regarding contributing factors and prevention for toileting-related patient falls and injuries during early morning hours among the adult patients aged 45 years and above. Table: 14 N = 98

SL. NO	DEMOGRAPHIC VARIABLES	PRE-TEST					
		LEVEL OF KNOWLEDGE					
		Poor		Average		Good	
		N	%	N	%	N	%
1	Age (in years)						
	45-55	96	97.94	1	1.02	2	2.04
	56- 65	96	97.94	2	2.04	1	1.02
	65 – 75	89	90.82	7	7.14	2	2.04
	76 & Above	93	94.90	4	4.08	1	1.02
The chi-square statistic is 6.9193. The <i>p</i> -value is .328375. The result is <i>not</i> significant at <i>p</i> < .05.							
2	Gender						
	Male	88	89.72	9	9.17	1	1.02
	Female	89	90.82	8	8.16	1	1.02
The chi-square statistic is 0.0643. The <i>p</i> -value is .968338. The result is <i>not</i> significant at <i>p</i> < .05.							
3	Educational status						
	Undergraduate	96	97.96	1	1.02	1	1.02
	Graduate	96	97.94	2	2.04	1	1.02
	Post Graduate and above	90	91.84	6	6.12	2	2.04
The chi-square statistic is 5.3827. The <i>p</i> -value is .250235. The result is <i>not</i> significant at <i>p</i> < .05.							
4	Socio-Economic						
	Low	96		1		1	
	Middle	90		16		3	
	High	93		5		2	
The chi-square statistic is 6.0345. The <i>p</i> -value is .196589. The result is <i>not</i> significant at <i>p</i> < .05.							
5	Marital status						
	Married	90	91.83	6	6.12	4	8.08
	Unmarried	96	97.95	1	1.02	2	2.04
	Widow or Divorcee	0	0	0	0	0	0
The chi-square statistic is 4.5001. The <i>p</i> -value is .105393. The result is <i>not</i> significant at <i>p</i> < .05.							
6	Type of Family						
	Nuclear	90	91.83	6	6.12	4	8.08
	Joint	94	95.92	2	2.04	2	2.04
	Extended	0	0	0	0	0	
The chi-square statistic is 2.8602. The <i>p</i> -value is .239283. The result is <i>not</i> significant at <i>p</i> < .05.							

Table 14 depicts that the demographic had not shown statistically significant association with the Pre-test of the level of knowledge regarding contributing factors and prevention for toileting-related patient falls and injuries during early morning hours with their selected demographic variables.

IV. Discussion

The present study was aimed to assess the knowledge of adult patients regarding contributing factors and prevention for toileting-related patient falls and injuries during early morning hours. A quasi-experimental research approach was used which is pre-experimental one group pre-test and post-test design was adopted. The population for the study was selected from The Apollo Multispecialty Hospitals, Kolkata. This population was selected by convenience sampling technique. The total samples under the study were 98 patients. In this study data collection was made through a self-instruction module questionnaire. The present study findings were revealed in terms of the objectives for the study. Most of the adult patients (81.63 %) had not heard about early morning giddiness or orthostatic hypotension and few of the patients (40.80 %) heard about toileting-related patient falls during early morning hours. In the pre-test only 5 (5.10 %) patients had good knowledge, 20 (20.40 %) patients had average knowledge and 73 (73.48 %) patients had poor knowledge. In post-test mostly (81.63 %) patients had good knowledge, few (15.31%) patients had average knowledge and 3(3.06 %) patients had poor knowledge regarding contributing factors and prevention for toileting-related patient falls and injuries during early morning hours. The self-instruction Module helped out significantly our patient population under this study in improving their knowledge of reading contributing factors and prevention for toileting-related patient falls and injuries during early morning hours. In the calculated paired-sample 't' (-21.18) test we have found p (<.00001) value was much lower than 0.05 means highly statistically significant. The present study findings reveal that knowledge of adult patients increased after administering structured teaching programme on contributing factors and prevention for toileting-related patient falls and injuries during early hours, this finding was in agreement with the findings of the study conducted by Megan L Kuhlenschmidt (2016), A study was conducted to Tailoring Education to Perceived Fall Risk in Hospitalized Patients With Cancer. A statistically significant difference existed in the proportion of patients who perceived themselves to be at high risk for falls pre-and post-intervention (p = 0.01). Results suggested that tailoring education to the patients' perceived risk for falls can help patients become more aware of fall risk.¹⁷ Another qualitative study "Understanding the Prevalence of Inpatient Falls Associated with Toileting in Adult Acute Care Settings" conducted by Tzeng, Huey-Ming (*Journal of Nursing Care Quality: January 2010 - Volume 25 - Issue 1 - p 22-30*) determined the prevalence of inpatient falls that were associated with toileting in a Michigan community hospital. Of all falls, 45.2% were related to toileting. The most common theme was falling on the way from the bed or chair to the bathroom. Our nurses giving emphasis on safe patient transfers and on using the completed risk assessment and develop an individualized prevention education plan for each patient based on their needs.³ Our research findings about effectiveness are consistent with previous reviews on inpatient toileting-related falls during early morning hours.

V. Conclusion

In this study, a fall prevention education programme was developed and implemented and the effects of the developed education programme were assessed. Thus, the fall prevention knowledge was increased among the adult patients, and the rate of toileting-related patient falls during early morning hours was reduced. Teaching methods and materials, fall prevention reminders, and individualised easy falls prevention guidance were all factors that aided understanding and adherence to falls prevention education. We learned from this study that toileting activities are a significant risk factor for adult patient falls.

VI. Nursing Implications

Nursing interventions should focus on informing families about the increased risk of falls in the hospital, as well as what actions are successful in preventing falls. Because the hospital is a new environment with unfamiliar surroundings and equipment. When completing activities such as going to the restroom and getting out of bed, who are hospitalised should be continuously supervised and assisted.

There is mounting evidence that hospital falls prevention interventions that include patient education can minimise falls. Despite the fact that no single approach of patient education has been found to be beneficial for everyone, this scoping research has revealed some essential elements.

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Conflicts of Interest and Funding

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