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Effective assessment of use of sitters by nurses in inpatient care settings

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Abstract

Title. Effective assessment of use of sitters by nurses in inpatient care settings.

Aim. This paper is a report of the evaluation of the impact of adopting the Patient Attendant Assessment Tool (PAAT) on nurses' requests for sitters, use of restraints, and falls and fall injury rates.

Background. Staffing should be the primary issue in eliminating risks of patient falls during hospital stays.

Method. Data were collected in two acute adult medical units of a Michigan hospital from August 2005 to February 2007. Data from three sources were merged for analyses: (1) study units' monthly reports; (2) quarterly reports of the National Database of Nursing Quality Indicators and (3) PAAT reports collected from October 2006 to February 2007. The primary outcome variables were the use of sitters, number of restraints ordered and fall and fall injury rates. Independent *t*-tests and correlation analyses were used for data analyses. The data before and after adopting this tool were compared using independent *t*-tests.

Findings. The PAAT helped improve the fill/request rates for sitters. The use of soft limb holders decreased after adoption of this tool. The results also showed that if the number of sitter requests was higher, the total number of restraints would be lower but the total fall rate would be higher.

Conclusion. Hospitals should include a tool similar to the PAAT in guidelines related to provision of constant observation or use of sitters. Further investigations of the optimum combination of staffing patterns and infrastructure are needed to promote safer hospital stays.

Keywords: falls, healthcare quality, hospitals, nursing, patient safety, physical restraint

Introduction

Reducing the risk of patient harm resulting from falls is identified as one of the international patient safety goals in the *Joint Commission International Accreditation Standards for Hospitals* (Joint Commission International 2007). Yet, systematic reviews of the literature on hospital falls have not found consistent evidence for effective interventions to prevent bed-related falls. Therefore, more definitive work in this field has been recognized as a priority (Oliver *et al.* 2004). The US Joint Commission (2007) emphasizes the need to reduce the risk of patient harm resulting from falls. For illustration purposes, in 2007 with an acute hospital fall injury rate of 6·6% of total falls, these fall incidents could

result in a median of 7·5-day increase in total length of stay and a median increase of $6402 USD in total lost revenues to the hospital. There are likely to be additional costs to individual patients (e.g. loss of work days and income). A hospital fall that results in serious injury could add at least $19,398 USD (1 US$ = £0·511 = 1·059$ Australian = 0·645 Euros) to a patient's expenses as a result of increased length of stay and surgical costs (Mathers & Penm 1999, Boswell *et al.* 2001, Fonda *et al.* 2006, U.S. Department of Labor Bureau of Labor Statistics 2008).

Background

Use of sitters to prevent falls

Some hospitals in western societies use volunteers or paid sitters (also called patient attendants or companions) – who are not trained as nurses or certified nurse assistants – to stay with patients who are at high risk for falls as a fall prevention strategy (Tzeng & Yin 2007). The effectiveness of the use of sitters in preventing falls has been recognized by hospital administrators, but whether they decrease inpatient fall rates is still uncertain (e.g. Tzeng & Yin 2007, Tzeng *et al.* 2007).

In an empirical study of the extrinsic risk factors for inpatient falls in a US hospital (Tzeng & Yin 2008) it was concluded that, because sitters are not regular employees and are not professionally trained, their efforts to promote patient safety and their ability to take precautions to prevent falls were causes for concern. Researchers (Tzeng & Yin 2007, Tzeng *et al.* 2007) have also addressed issues related to involving unlicensed assistive personnel (including families, patient-hired aides, sitters and volunteers) in inpatient care. These workers have argued that, because the majority of these assistive personnel lack professional nurse education, they cannot replace nurses in preventing inpatient falls. The quality, capabilities and responsibilities of unlicensed assistive personnel may contribute to different patient outcomes according to the different levels of experience among sitters.

Giles *et al.* (2006) evaluated the feasibility of using volunteers to prevent inpatient falls in two Australian hospitals. They found that no patients at these sites suffered a fall when the volunteers were present. However, there was no statistically significant impact on the overall rate of falls at these sites. In contrast, in another Australian study (Donoghue *et al.* 2005) volunteers were used in an acute elder care unit to reduce falls. Patients assessed as being at high risk for falls were cared for in an observation room staffed by volunteers. No patient falls were reported in this room when volunteers were present. In addition, there was a statistically significant reduction of 44% in the overall rate of falls compared with the rate before implementation of this programme.

Moreover, in a retrospective epidemiological study published by Boswell *et al.* (2001) the cost-effectiveness of a patient-sitter programme and the impact of sitters on the incidence of falls and patient satisfaction in an acute care hospital in the United States of America (USA) were examined. The cost of a sitter shift was $160. The cumulative effect of the sitters on falls and patient satisfaction was a revenue enhancement of $3·76 per sitter shift; therefore, the net expense of a sitter shift was $156·24. In other words, using sitters was not cost-effective for decreasing patient falls because the gains did not offset the direct expense related to the sitter programme.

In the current US hospital industry, some hospitals still use sitters to stay with patients who are at high risk for falls as a prevention strategy. Regardless of previous inconsistent findings, the cost-effectiveness of sitters in preventing falls is often claimed by hospital and nursing leaders. Evidence-based intervention research is needed to illustrate further the effectiveness of such fall-prevention programmes as a means to supplement nursing staff (e.g. providing constant observation and additional bedside hours).

History of the development of the Patient Attendant Assessment Tool

The Patient Attendant Assessment Tool (PAAT) was designed to provide guidance for assessment of patients' needs for sitters (see Table 1), with the goal of decreasing the use of sitters. In early August 2005, the study hospital started to partner with a human resource agency to fill the need for sitters. Since then, the use of sitters has increased. The average hourly billing rate for a sitter is $13·91 per hour. In July 2006, the hospital's nursing executives raised concern about whether sitters had been overused. In August 2006, an *ad hoc* committee comprising three clinical nurse specialists, three nurse managers, and one businesses operation administrator was formed. PAAT was developed by this committee as an initiative to improve quality and cost-efficiency.

Patient Attendant Assessment Tool was intended to be used by staff nurses to assess the needs for sitters for patients who had attempted suicide or endangered themselves, were unable to follow safety instructions, interfered with medical care or wandered. However, the outcome indicators about which the nurse executives and managers were most concerned were decreases in the number of requests for sitters, physician orders for restraint use, rates of inpatient falls and rates of injuries from falls.

Table 1 Information included in the Patient Attendant Assessment Tool

Instructions

1. Once a patient attendant (also called sitter) has been ordered, the PAAT form must be completed by the responsible nurse every shift based on the patient's current condition
2. The decision to continue or cancel the use of sitters should be made every 8 hours
3. When considering initiation of the use of sitters, the responsible nurse should remember to review the list of alternatives and document their success or failure in the patient's plan of care. Alternatives to the use of sitters include, but not limited to:
   - 3.1 Requesting the patient's family members' help
   - 3.2 Redirection or reorientation
   - 3.3 Keeping nightlight on
   - 3.4 Using door barrier
   - 3.5 Applying reminder signs or cue cards
   - 3.6 Pain management
   - 3.7 Keeping the two half side rails (near the head board) up and keeping the patient bed in the lowest position
   - 3.8 Providing back rub
   - 3.9 Using music
   - 3.10 Giving verbal reminders
   - 3.11 Requesting volunteer services to increase cognitive stimulation
   - 3.12 Having the patient seat in corridor
   - 3.13 Moving the patient to the room near the nurses' station
   - 3.14 Requesting interpreter services
   - 3.15 Providing frequent toileting assistance, food and fluids
   - 3.16 Providing a bedside commode
   - 3.17 Having the patient wear non-skid slippers at all times (including in bed)
   - 3.18 Labeling the patient's room
   - 3.19 Closing the unit's doors or placing 'STOP' signs on the unit's doors
   - 3.20 Altering or covering the placement(s) for lines or tubes
   - 3.21 Providing items for the patient to hold or other type of distraction
   - 3.22 Offering a repetitive activity (e.g. folding clothes, walking with staff)
   - 3.23 Implementing the sleep protocol to promote rest and sleep
   - 3.24 Requesting a physical therapy referral for gait assessment or assistive device(s)
   - 3.25 Reviewing medications for interactions or side effects and lab results for abnormalities
   - 3.26 Maintaining a steady light level in the patient room as evening approaches
   - 3.27 Having soothing, quiet voice and conversation
   - 3.28 Using less restrictive devices
   - 3.29 Adopting environmental modifications (e.g. adjusting lighting and stimulation, clearing the path from the bed to the bathroom, lowering the bed height)
4. Nursing judgement may dictate placing a patient with a sitter regardless of a low PAAT score (< 4 points). Nursing documentation should reflect this patient's specific rationale and clinical indications for doing so
5. If the PAAT score is < 4 points and the use of sitters is not indicated, the responsible nurse should review and implement appropriate alternatives and document in the patient's plan of care
6. It is the responsible nurse's obligation to ensure that the patient with a sitter is reassessed every shift that continued use of sitters is appropriate and the PAAT score is recorded
7. The use of sitters can be cancelled at any time during a shift
8. Sitters should not be used for clinical assessment (e.g. monitoring for seizure activity, airway management)
9. Sitters should not be used as an alternative to security

*The body of the assessment tool**

1. Risk factor: *Suicide precautions* (score = 15, if this risk factor is checked)
   - 1.1 Clinical indication: the patient is identified as suicide risk
2. Risk factor: *Danger to self* (including interference with vital medical devices or pulling out vital lines or tubes) or severe behavioural or cognitive issues (sitters would be used as an alternative to restraints and the patient is not suicidal) (score = 5, if this risk factor is checked)
   - 2.1 Clinical indication(s): the patient is using: (1) an endotracheal (ET) tube or tracheostomy (Trach), (2) line(s): a central, Swan-Ganz, arterial or peripherally inserted central catheter (PICC) line, (3) drain(s): a spinal or ventricular drain, (4) haemodialysis, (5) impaired judgment, (6) agitation, (7) impulsivity, (8) other devices or observed behaviours _____
3. Risk factor: *Cannot follow safe instructions* (for paediatric patients, do not use sitters if inability is related to developmental status) (score = 3, if this risk factor is checked)
   - 3.1 Clinical indication(s): the patient is: (1) getting out of bed without notifying staff, (2) other _____
4. Risk factor: *Interference with medical care* (referring to interference(s) with non-vital medical devices or medical or surgical healing) (score = 2, if this risk factor is checked)
   - 4.1 Clinical indication(s): the patient is pulling out or dislodging: (1) tube(s): a nasogastric (NG) tube or feeding tube, (2) catheter(s): a Foley, Tenckhoff or intravenous (i.v.) catheter, (3) other devices _____
5. Risk factor: *Wanders* (for paediatric patients, consider use of a patient security device) (score = 1, if this risk factor is checked)
   - 5.1 Clinical indication: the patient is leaving his/her patient room or the inpatient unit without notifying staff

Total score: _____ (if the total score is equal or more than 4 points, this patient is a candidate for a sitter)
Action (the sitter agency, manpower, must be contacted when ordering or cancelling a sitter): ☐Sitter ordered ☐Sitter cancelled ☐Not applicable
Comments (if the PAAT score is < 4 points, indicate the reasons for maintaining the use of sitters)

Information presented here was adopted from the Patient Attendant Assessment Tool. Some wording modifications without altering the original meanings were applied.
*The responsible nurse must check/circle or fill in applicable selection(s) of the corresponding clinical indication(s) under the five identified risk factors.
PAAT, Patient Attendant Assessment Tool.

The study

Aim

The aim of the study was to evaluate impact of adopting the PAAT on nurses' requests for sitters, use of restraints, and falls and fall injury rates.

Design

A retrospective, descriptive study was carried out to assess whether PAAT was useful in managing the use of sitters and unit-level personnel costs, and whether use of sitters led to fewer patient falls.

This pilot project was conducted in two acute adult medical units in a Michigan, USA hospital during the period October 2006 to February 2007. Both units had 32 beds and a similar skill mix and staffing pattern (i.e. each unit has its own nurse manager and clinical nurse specialist). The data in these two study units were analysed separately and compared for validation purposes. We used data from August 2005 to February 2007 to evaluate the effectiveness of PAAT and the following outcome indicators: (1) use of sitters; (2) number of restraints ordered and (3) total number of falls and number of falls resulting in injury per 1000 patient days.

Data sources

Data were abstracted from three sources. The first data source (August 2005 to February 2007) included the study units' monthly reports of (1) use of restraints; (2) requests for sitters (total requests; requests for night, day and evening shifts); (3) rates for filling requests for sitters (number of requests filled/no. of requests $\times$ 100%; 'filling' means the number sitters actually supplied); (4) Registered Nurse hours per patient day and (5) total nursing hours per patient day. The types of physician orders for physical restraints included (a) soft limb holders, (b) bed enclosures, (c) elbow restraints, (d) belt restraints, (e) vest restraints, (f) leather restraints and (g) full side rails.

The second data source consisted of the quarterly reports of the National Database of Nursing Quality Indicators (American Nurses Association 2007) for each study unit on the number of injuries from falls and the number of total falls per 1000 patient days (the third quarter of 2005 to the first quarter of 2007).

The third data source was PAAT reports collected during the period 1 October 2006, to 28 February 2007. PAAT includes instructions for use of the tool, the tool itself, and a list of suggested alternatives to the use of sitters (e.g. moving the patient near the staff station and providing frequent toileting). The tool includes five risk factors and a designated score for each risk (see Table 1). The total score was calculated by clinical nurses; a patient with a score of four or higher would be considered a candidate for a sitter and a request for additional human resources would be made. The frequency of each risk factor and the average score per month were abstracted from the completed PAATs. A total of 417 completed PAATs from unit 1 and 545 from unit 2 were analysed.

Ethical considerations

The project was approved by a university institutional review board.

Data analyses

The Statistical Package for the Social Sciences (SPSS Inc., Chicago, IL, USA) was used for data entry and analyses. Descriptive, independent *t*-tests, Pearson and Spearman correlation analyses were used (alpha value was set at 0·05). Descriptive analyses (mean and standard deviations) were performed on all the study variables (see Table 2) separately for each study unit on the data collected before and after piloting of PAAT. The independent *t*-tests were used to compare the differences between these two study units on all study variables, using all available data points.

The primary outcome variables studied were (1) use of sitters; (2) number of restraints ordered and (3) total number of falls and number of falls resulting in injury per 1000 patient days. As a result, the data collected before (August 2005 to September 2006) and after piloting of PAAT (October 2006 to February 2007) were compared using the independent *t*-tests on the outcome variables of (1) average number of sitter requests (requests made for night shifts and for day shifts) and sitter fill/request rates, (2) average number of restraints ordered (soft limb holders, bed enclosures, elbow restraints, belt, vest, leather restraints and full side rails) and (3) total falls and injuries from falls per 1000 patient days. The data collected before and after piloting of PAAT were also compared on two staffing variables of Registered Nurse hours per patient day and total nursing hours per patient day; independent *t*-tests were used. These tests were conducted separately for each study unit.

In addition, to explore possible relationship among the study variables, Pearson and Spearman correlation analyses were conducted among the variables of average number of restraints ordered, average number of sitter requests, sitter

Table 2 Descriptive information of the studied variables before (August 2005 to September 2006) and after implementing the Patient Attendant Assessment Tool (October 2006 to February 2007)

	Unit 1		Unit 2	
	August 2005–September 2006	October 2006–February 2007	August 2005–September 2006	October 2006–February 2007
Variable	Mean (SD)		Mean (SD)	
Average number of restraints ordered*	20·00 (19·29)	9·20 (10·52)	24·71 (28·37)	16·60 (16·74)
Soft limb holders	3·71 (5·12)	0·20 (0·45)	6·21 (7·82)	3·40 (4·45)
Bed enclosures	0·07 (0·27)	0·00 (0·00)	0·14 (0·36)	0·00 (0·00)
Elbow restraints	0·00 (0·00)	0·00 (0·00)	0·07 (0·27)	0·00 (0·00)
Belt	0·07 (0·27)	0·00 (0·00)	0·00 (0·00)	0·00 (0·00)
Vest	2·14 (4·45)	0·00 (0·00)	3·86 (6·16)	1·20 (1·10)
Leather restraints	0·21 (0·58)	0·00 (0·00)	0·50 (1·87)	0·60 (1·34)
Full side rails	12·00 (11·23)	7·40 (9·32)	12·36 (13·93)	9·00 (9·06)
Average number of sitter requests*	234·07 (76·58)	194·40 (51·57)	217·21 (66·02)	193·80 (44·81)
Requests made for night shifts	78·50 (25·32)	67·20 (18·65)	72·86 (23·19)	71·00 (16·19)
Requests made for day shifts	78·21 (27·00)	64·00 (13·96)	73·29 (21·98)	61·40 (17·57)
Requests made for evening shifts	77·36 (25·34)	63·20 (19·07)	71·07 (22·53)	61·40 (11·26)
Sitter fill/request rate (no. of requests filled/no. of requests × 100%)*	84·98 (8·76)	93·84 (2·49)	81·11 (9·35)	94·58 (2·92)
Registered Nurse hours per patient day*	6·35 (0·15)	6·88 (0·32)	5·87 (0·21)	6·42 (0·18)
Total nursing hours per patient day*	8·42 (0·27)	9·17 (0·43)	8·50 (0·13)	9·15 (0·22)
Injuries from falls per 1000 patient days†	0·25 (0·25)	0·59 (0·18)	0·49 (0·68)	0·58 (0·79)
Total falls per 1000 patient days†	4·75 (0·74)	4·35 (0·51)	5·13 (1·02)	4·15 (0.83)
Patient Attendant Assessment Tool				
Average scores on requests*	–	7·55 (0·83)	–	7·66 (0·70)
Risk factor: attempted suicide‡	–	9·00 (7·65)	–	11·40 (14·54)
Risk factor: danger to self‡	–	38·80 (32·23)	–	45·60 (32·61)
Risk factor: inability to follow safe instructions‡	–	57·20 (30·00)	–	77·00 (49·79)
Risk factor: interference with medical care‡	–	28·40 (15·26)	–	45·80 (30·06)
Risk factor: wanders‡	–	36·60 (23·33)	–	53·80 (41·71)

*Monthly data were used.
†Quarterly data: the period from August 2005 to September 2006 included five quarters of data. The period from October 2006 to February 2007 involved two quarters of data.
‡The average frequency for each selected risk factor.

fill/request rates, total falls and injuries from falls per 1000 patient days, average PAAT scores on sitter requests, Registered Nurse hours per patient day and total nursing hours per patient day. These tests were performed separately for each study unit at all available data points. Only the results of the independent *t*-tests and correlation analyses with an alpha value $< 0{\cdot}05$ are reported in this paper.

Results

Descriptive information on the study units

There were 19 data points (months) for both study units. Table 2 gives descriptive information about the study variables. Using all available data points, independent *t*-tests between these two units showed that unit 1 (mean = 6·49) had more Registered Nurse hours per patient day compared with unit 2 (mean = 6·02) ($t = 2{\cdot}78$, $P = 0{\cdot}01$). Based on the findings of the independent *t*-tests, there was no statistically significant difference between these two units for all the other variables studied.

Findings of the independent t-tests before and after piloting of PAAT

Independent *t*-tests before and after piloting of PAAT were conducted separately for each study unit (also see Table 2 for the pre-PAAT and post-PAAT mean values). Only the results of the independent *t*-tests with an alpha value $< 0{\cdot}05$ are reported here.

For unit 1, independent *t*-tests on the primary outcome variables showed that the frequency of using soft limb holders as restraints decreased after piloting PAAT ($t = 2{\cdot}54$, $P = 0{\cdot}02$, pre-PAAT mean = 3·71, post-PAAT mean = 0·20). The fill/request rate for sitters improved after piloting of PAAT ($t = -2{\cdot}19$, $P = 0{\cdot}04$, pre-PAAT mean = 84·98%, post-PAAT mean = 93·84%). The rate of injuries from falls increased unexpectedly after piloting of PAAT ($t = -2{\cdot}79$, $P = 0{\cdot}01$, pre-PAAT mean = 0·25, post-PAAT mean = 0·59).

For unit 1, Registered Nurse hours ($t = -5{\cdot}01$, $P = 0{\cdot}01$, pre-PAAT mean = 6·35, post-PAAT mean = 6·88) and total nursing hours per patient day ($t = -4{\cdot}57$, $P = 0{\cdot}01$, pre-PAAT mean = 8·42, post-PAAT mean = 9·17) were higher after piloting of PAAT.

For unit 2, independent *t*-tests on the primary outcome variables found that only the fill/request rate for sitters improved after piloting of PAAT ($t = -3{\cdot}12$, $P = 0{\cdot}01$, pre-PAAT mean = 81·11%, post-PAAT mean = 94·58%).

For unit 2, the Registered Nurse hours ($t = -5{\cdot}17$, $P = 0{\cdot}01$, pre-PAAT mean = 5·87, post-PAAT mean = 6·42) and the total nursing hours per patient day ($t = -7{\cdot}78$, $P = 0{\cdot}01$, pre-PAAT mean = 8·50, post-PAAT mean = 9·15) increased after piloting of PAAT.

Findings of the correlation analyses

Only the results of correlation analyses with an alpha value $< 0{\cdot}05$ are reported here. For unit 1, correlation analyses showed that, if the number of requests for sitters per month was higher, the total number of restraints would be lower (Pearson $r = -0{\cdot}57$, $P = 0{\cdot}01$). Where Registered Nurse hours (Pearson $r = -0{\cdot}55$, $P = 0{\cdot}02$) and total nursing hours per patient day (Pearson $r = -0{\cdot}62$, $P = 0{\cdot}01$) were higher, total fall rate was lower. However, where Registered Nurse hours (Spearman $r = 0{\cdot}48$, $P = 0{\cdot}04$) and total nursing hours per patient day (Spearman $r = 0{\cdot}47$, $P = 0{\cdot}04$) were higher, the rate of injuries from falls was higher. For unit 2, where the number of sitter requests was higher, the total fall rate was higher (Pearson $r = 0{\cdot}49$, $P = 0{\cdot}04$).

Discussion

Most limitations of this study were related to its retrospective nature. A limited number of variables were included and no control group was used. Also, we were unable to conduct validity and reliability analyses of PAAT retrospectively, and to evaluate systematically the compliance of clinical nurses with the PAAT instructions. However, intensive and thorough efforts were devoted to merge the data from three different sources.

We used data collected from August 2005 to February 2007 to evaluate the effectiveness of adopting PAAT to assess patients' needs for sitters. Although the two study units were similar, the findings showed some discrepancies. PAAT helped improve the fill/request rates for sitters and the use of soft limb holders decreased after adopting PAAT. However, the rate of injuries from falls increased after piloting the PAAT. In addition, if there were more sitter requests, the use of restraints decreased. Conversely, more sitter requests were associated with a higher total fall rate.

In fact, sitters or physical restraints are used interchangeably in practice to promote patient safety during hospital stays. A study by Stanley *et al.* (2003) on the impact of piloting practice guidelines for alcohol withdrawal syndrome (pharmacotherapy decisions about administering lorazepam, clonidine or haloperidol to patients) showed that adopting the guidelines statistically significantly decreased the number of hours that sitters and restraints were used. Consequently, use of sitters arguably may not be appropriate to replace restraints.

Our findings were not conclusive in terms of whether better fill/request rates for sitters would lead to fewer restraints being ordered. Moreover, a better fill/request rate did not result in a lower number of total falls and injuries from falls per 1000 patient days. We deduced that, when more personnel (e.g. nurse, nursing attendant and sitter) share the caring responsibility for a patient, the negative outcome, such as a patient's tendency to fall, can be aggravated. The responsible nurse may need to spend more time coordinating care, the work flow for delivery of care may become fragmented and become less efficient and effective in promoting safe hospital stays.

As a result, we suggest that hospital and nursing leaders focus on the human factors related to staffing patterns. Managing and manipulating the abilities, efforts and working attitudes of paid staff are difficult. Promoting safe hospital stays through human resource strategies (e.g. offering on-the-job training) takes time, and outcomes are often obscure. However, this is the ultimate approach and there is no instant solution.

The saying that 'Everybody's business is nobody's business' reveals a side of human nature that deems the promotion of teamwork among nursing personnel to be a 'mission impossible'. Instead, clarifying the job responsibilities between licensed and unlicensed nursing personnel should be the focus. This approach is often overlooked in management of hospital human resources, especially in executive- and managerial-level decisions about nurse staffing patterns and skill mix.

What is already known about this topic

- Sitters, who are not regular employees and are not professionally trained, may be used to provide constant observation of inpatients.
- Sitters' efforts to promote patient safety and their ability to take precautions against falls have been causes for concern.
- Using sitters has not been found to be cost-effective in decreasing patient falls because the gains do not offset the direct expense related to the sitter programme.

What this paper adds

- The Patient Attendant Assessment Tool may help clinical nurses to assess patients' needs for sitters and to better judge whether to request scarce resources for nursing services.
- This tool helped improve the fill/request rates for sitters so that patients who really needed constant observation would receive the necessary personnel resources.
- The use of soft limb holders decreased after adopting this tool but the rate of injuries from falls did not decrease.

Conclusion

We suggest that hospitals should include an assessment tool similar to the PAAT in guidelines related to provision of constant observation or use of sitters. However, given the contradictory nature of some of the results presented here, such tools should be piloted in at least two inpatient units to assess their feasibility and functionality before including in guidelines as a standard practice.

From the perspectives of nursing practice and management in hospitals, reducing the risk of patient harm resulting from falls is one of the most commonly-shared patient safety goals. Consequently, our findings and recommendations are applicable to international nursing practice.

In addition, to promote safe hospital stays, research on eliminating risks of patient falls is a priority, especially in the area of staffing as related to sustaining a safe nursing practice environment. Further investigations on the optimum combination of staffing patterns and infrastructure for acute inpatient settings are needed to promote safer hospital stays. For example, it is important to examine the impacts of one-to-one constant observation versus placing patients at high risk for falls in an observation room staffed by sitters. In fact, hospital policies in clinical settings often change according to market values and the status quo. Innovative managerial ideas may be implemented before a research proposal is developed. Involving experienced scholars as consultants to or members of hospital committees or initiatives related to patient safety may further promote evidence-based practice.

Author contributions

HMT, JG and CYC were responsible for the study conception and design. HMT and JG performed the data collection. HMT and CYC performed the data analysis. HMT were responsible for the drafting of the manuscript. HMT made critical revisions to the paper for important intellectual content.

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Commentary: Use of sitters and volunteer observers in health care: effective assessment of use of sitters by nurses in inpatient settings

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Maintaining safety in hospitals has always been a challenge in health care. Despite the considerable effort that has been invested in interventions that promote safety, falls and fall-related injuries continue to occur. A large number of fall prevention strategies have been implemented as part of this effort, but with mixed results. One of the earliest strategies to manage people who posed a safety risk was through the use of physical restraint. Ironically however, the evidence now suggests that the use of restraint may in fact increase the risk of harm (Evans *et al.* 2003). With the growing recognition of patient rights, the use of physical restraint is now discouraged in many countries.

With the better understanding of factors that influence the risk of falls during hospitalization, there have been many attempts to develop assessment tools that can identify people at greater than normal risk of falling. These assessment tools have allowed strategies to be developed that target specific risk factors. While this approach has achieved some success, determining what works has been hampered because many interventions have been implemented without adequate evaluation, and there also has been a lack of quality research.

More recently there has been a major shift in thinking, with the focus turning to injury prevention. The rational for this is that it is the injury that is the critical concern, not the fall. With this change of focus to injury prevention, hip protectors, low-beds and floor surfaces have become subject to greater scrutiny. Again, however, the lack of rigorous evidence has made it difficult to identify best practice in injury prevention.

Recently, there has been another shift in thinking in a few countries with the introduction of observers into some healthcare organizations. The sitter or volunteer-companion has been defined as an unpaid person who provides companionship and observation of patients identified as being at high risk of falling (Donoghue *et al.* 2005, Giles *et al.* 2006). Using sitters is an attempt to improve safety through the provision of continuous surveillance by volunteers (or paid observers). Through this surveillance, sitters are able to alert healthcare workers when a patient is at risk of falling or injury. However, as noted by Tzeng, Yin and Grunawalt, current evidence on the effectiveness of this strategy is contradictory.

At a time of nursing shortages internationally, the use of sitters may offer a promising approach to falls and injury prevention. The study by Tzeng, Yin and Grunawalt provides important information to guide the use of these observers. However, some caution is needed before this approach is widely implemented because of the limited evidence on the effectiveness of sitters and observers. While this strategy may hold promise, it needs further investigation to determine its impact on falls and injuries. In addition, reliable evidence is also needed about which patient populations would benefit from this type of constant observation.

There are also broader issues that must be addressed before widespread implementation of paid and unpaid observers

