A STUDY OF PATIENT FALLS IN A LONG TERM CARE INSTITUTION BEFORE AND AFTER THE IMPLEMENTATION OF A FALL PREVENTION PROGRAM

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by

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Abstract

A STUDY OF PATIENT FALLS IN A LONG TERM CARE INSTITUTION BEFORE AND AFTER THE IMPLEMENTATION OF A FALL PREVENTION PROGRAM

This descriptive study was conducted to assess the fall rate before and after the implementation of a fall prevention program in a local long term care facility. The sample consisted of all patients who were residents on the study units, and fell while hospitalized at the local long term care facility during the periods studied. Data regarding falls during the six months prior to the implementation of the fall prevention program, and six months following its implementation were collected, through a review of patient charts, incident report forms and the follow-up report form. Falls were categorized as accidental, anticipated and unanticipated.

The results indicated that falls were a significant problem, as 351 falls were reported during the study periods. Fall rates actually increased, although not significantly, following the implementation of the fall prevention program, but injury rates did not increase. A number of factors were felt to affect fall rates, including the implementation of a facility wide policy of least restraint and the implementation of measures that were probably inadequate to address the fall rates.

Implications for nursing practice, nursing education and nursing research arising from the results of the study are discussed.

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CHAPTER ONE

Falls pose a threat to patient safety, and are considered a clinical indicator of quality of health care and risk management. In general, falls are a serious problem in the elderly, accounting for 56% of accidental deaths in those aged 65 and over (Riley, 1992). Fall rates are high in geriatric settings, as 30% to 50% of nursing home residents fall each year (Ginter & Mion, 1992). The hospitalized elderly present a nursing challenge in that they are at a high risk of falling, but wish to remain mobile and independent.

Inquiry into the phenomenon of falls began in the 1960's, with descriptive studies. These early studies confirmed that falls in hospitals and nursing homes were a frequent occurrence, especially among the elderly, and were a significant problem because of the resultant injuries (Gryfe, Amies, & Ashley, 1977).

With an expanding knowledge base on the factors contributing to falls, it became apparent that a combination of these factors increased a person's risk of falling (Morse, Tylko, & Dixon, 1987; Tideiksaar & Kay, 1986). In the 1980's, the focus of research studies was shifted towards identifying effective measures for preventing falls (Fife, Solomon, & Stanton, 1984; Innes & Turman, 1983; Kilpack, Boehm, Smith, & Mudge, 1991; Roberts & Wykle,

1993). Study findings suggested that prevention began with the identification of the patient at risk of falling, enabling nursing staff to implement appropriate prevention strategies for the targeted patient (Hill, Johnson, & Garrett, 1988; Morse, Morse, & Tylko, 1989; Spellbring, Gannon, Kleckner, & Conway, 1988; Tack, Ulrich, & Kehr, 1987).

In recent years, researchers have tried to identify specific fall prevention strategies (Morse, 1994). Many of the prevention strategies were directed towards providing a safe environment for those at risk of falling (Campbell, 1988). Other studies identified specific strategies including medication review, patient education and physiotherapy (Barbieri, 1983). Some of these prevention strategies have been evaluated, with encouraging results, indicating further work is needed in this area to consolidate findings. Falls continue to be a problem in health care, despite concerted attempts to reduce the incidence. There is a need to continue to conduct research on falls, specifically, studies focussing on evaluation of fall prevention strategies.

Problem Statement

Patient falls in long term care settings are a significant problem (Robbins et al., 1989; Venglarik & Adams, 1985) as they decrease the quality of patient care,

result in increased morbidity and mortality (Gryfe et al., 1977) and carry a legal liability. Falls negatively affect the quality of life of patients, due to the potential for injury, decreased mobility, increased use of restraints, and increased fear of falling (Heslin, 1993; Tinetti, Lui, Marottoli, & Ginter, 1991).

The number of reported falls was a major concern for members of the Nursing Practice Committee at a local long term care institution. Eighty-three percent of all reported patient incidents at the above mentioned institution in 1991, and 76% in 1992 were fall related. In addressing the concern, the Nursing Practice Committee of this institution developed a fall prevention program, which included a fall risk assessment tool and fall prevention protocol. Both components of the program were based on a review of the literature and an examination of the characteristics exhibited by the patients who fell within the institution.

The fall prevention program was introduced on the nursing units in December, 1993. Nursing staff were instructed to complete a fall risk assessment tool weekly on all patients. If the patient was found to be at risk of falling, the fall prevention protocol was implemented. Interventions included checking the patient every 15-30 minutes. Committee members and nursing administrative personnel wanted to know if the fall prevention program had any effect on the fall rate in the institution.

Purpose of the Study

The purpose of this study was to assess the difference, if any, in the patient fall rate and the rate of injuries in a long term care institution before and after the implementation of a fall prevention program. Results of the study can be used to revise the fall prevention program as necessary and assist nurses in other institutions who wish to study the problem of falls and implement or revise fall prevention programs.

Research Questions

The following questions were formulated to direct the research:

1) What were the general characteristics of patients who fell in a selected long term care institution?
2) What injuries were incurred as a result of falls?
3) What were the numbers and rates of accidental falls, unanticipated physiological falls, and anticipated physiological falls that occurred in this institution during the study period?
4) Was there a difference in fall rates and injury rates before and after the implementation of the fall prevention program?

Summary

The number of reported falls within one local long term care institution was significant, and warranted further investigation. The members of the Nursing Practice Committee at that institution acknowledged the problem, and developed and implemented a fall prevention program. The program included an assessment tool and a prevention protocol. The purpose of this study was to determine the difference, if any, in the patient fall rate and the rate of injuries in a local long term care institution before and after the implementation of a fall prevention program.

This chapter has described the problem, the purpose of the study, and the research questions formulated to direct the study. The next chapter will focus on a review of the existing literature and describe the conceptual framework guiding the study.

CHAPTER TWO

LITERATURE REVIEW

The focus of this chapter is to present a review of the literature on patient falls. The literature review will cover the definition, classification, incidence and consequences of falls; as well as the results of research conducted to study the phenonmenon of falls, which includes factors related to falling and fall prevention strategies.

Definition of Falls

Hindmarsh and Estes (1989) defined falls as "events which lead to the conscious subject coming to rest inadvertently on the ground" (p. 2217). This definition excluded any unconscious person who experienced a fall and would exclude persons who fell as a result of fainting. Morris and Isaacs (1980) defined a fall as "an untoward event in which the patient comes to rest unintentionally on the floor" (p. 181). This definition included conscious and unconscious persons, and instances where patients were found on the floor, but were not seen to fall.

Classification of Falls

Falls were classified in different ways. Some authors classified falls as extrinsic, resulting from external factors such as wet floors or poor lighting, or intrinsic,

resulting from disease processes, physiological changes or psychological factors (Ross, 1991; Tideiksaar & Kay, 1986). Morse and colleagues proposed three classifications of falls: 1) accidental falls, which were the result of environmental factors such as wet floors or poor lighting; 2) unanticipated physiological falls which were the result of fainting spells, or unexpected weakness; and 3) anticipated physiological falls which were the result of existing individual factors such as confusion, poor balance and impaired gait. While prevention of all falls was not possible, it was felt that the greatest success would be achieved if nursing efforts were directed at preventing anticipated physiological falls, which were the most common type of fall (Morse et al., 1987).

Incidence of Falls

The methods used to calculate the number of falls varied. The most common methods included: the number of patients who fell; percentage of patients who fell in relation to the total patient population; percentage of falls relative to the total number of incident reports; falls experienced by those identified at risk of falling, and, fall rates per patient days. According to Morse and Morse (1988) the recommended measure was to report the fall rate as the number of falls/ number of patient bed days x 1000.

As the method of reporting fall incidence varied in the research reviewed for this study, comparison amongst institutions was difficult. Fall incidence was highest in geriatric settings, and was reported as 26% of patients (Sehested & Severin-Neilson, 1977); 44.9% of patients (Gryfe et al., 1977); 422 falls/1000 patients at risk (Morris & Isaacs, 1980); 1294 falls/1000 patients at risk (Venglarik & Adams, 1985); 37% of patients (Wright et al., 1990); and at 9.8% (Heslin, 1993). Falls in acute care settings occurred less frequently than in long term care settings. Fall incidence was reported as 25% of patient incidents (Kilpack et al., 1991) and at a rate of 2.3 falls per 1000 patient days (Morse, Prowse, Morrow, & Federspeil, 1985). It was noted that many of the falls reported in the acute care settings were experienced by elderly patients.

Multiple fallers: One of the factors influencing fall incidence is that a number of patients fall frequently. A number of studies reported that many patients, particularly the elderly, experienced more than one fall. Gryfe et al. (1977) reported that 198 patients in a long term care institution experienced 651 falls. Twenty-four percent of patients had two falls, and 44% of patients had three or more falls. Sehested and Severin-Nielsen (1977) reported that 134 patients in a geriatric setting had 264 falls; 54% of the population experienced repeated falls. Louis (1983) reported 253 falls experienced by 113 residents in a long

term care setting. Morse, Tylko, and Dixon (1985) noted that 20% of patients who fell in an acute care setting were multiple fallers, and that all of these patients were over 60 years of age. Other authors reported that a number of falls were experienced by patients who had multiple falls, but they did not provide specific details regarding the significance of the multiple faller group (Hill et al, 1988).

Multiple fallers posed a unique problem, for a number of reasons. When there were a large number of multiple fallers in a sample of patients, fall rates may have been artificially inflated. This can be of great significance if fall rates are being used to evaluate the effect of a fall prevention program, as multiple falls usually indicate a problem with a specific patient, and may not reflect the actual overall quality of care (Morse & Morse, 1988).

Consequences of Falling

There were a number of reported consequences of falls, including death, injury, increased use of restraint, limited mobility, increased cost to the health care system and decreased quality of life. Falls accounted for 65% of accident related hospital admissions and 56% of accident related deaths in Canadian seniors aged 65 and over; a significant finding considering that accidents were one of the leading causes of death in this age group (Riley, 1992).

The most commonly reported consequence of falling in institutions was injuries. Gryfe et al. (1977) reported that 45.8% of falls, in a sample of 411 elderly residents, resulted in injury. Minor injuries were reported in 28.3% of the residents, while 17.5% were classified as severe injuries and included fractures and soft tissue injuries requiring sutures. Morris and Isaacs (1980) analyzed incident reports in a 196 bed geriatric department and reported a 25% incidence of injury. Most of the injuries were soft tissue wounds, but 1.7% were fractures. Venglarik and Adams (1985) reported a 36.2% incidence of injuries in a long term care facility, 33.3% of falls resulted in minor injuries, 2.9% were serious and required an Emergency room visit. Byers, Arrington, and Finstuen (1990) reported a 19.6% incidence of injuries in a group of 313 stroke patients, 16.83% were minor injuries such as bumps and bruises, while 4.95% were major and included fractures or head injuries that prolonged the length of hospital stay. Morse et al. (1985) analyzed 744 falls in a large teaching hospital, and reported a 30% incidence of injuries. Minor injuries such as bruises and abrasions were reported 26.5% of the time, and major injuries such as concussion or fractures were reported 3.5% of the time.

Other consequences of falling included an increased use of restraints (Tinetti et al., 1991), fear of further falls, which led to self imposed restrictions (Tideiskaar & Kay,

1986), and a lack of self confidence, which led to limited mobility and dependence (Hindmarsh & Estes, 1989). While there were no studies conducted to determine the specific cost associated with falls, a number of authors stated that falls increased cost to the health care system as a result of treatment for injuries and increased length of hospital stay (Hendrich, 1988; Morse et al., 1987).

Factors Related to Falls

Early studies on falls indicated a relationship between falling and age (Gryfe et al., 1977; Morris & Isaacs, 1980; Sehested & Severin-Neilson, 1977); environmental hazards (Cooper, 1981; Ross, 1991); disorientation (Fiest, 1978); balance (Tinetti, Williams, & Mayenski, 1986); and use of hypnotics (Barbieri, 1983). These studies did not compare patients who fell to patients who did not fall, and, therefore, drawing conclusions was difficult.

Studies using a comparison group suggested that a patient's risk to fall was influenced by a combination of several factors. One such study was conducted by Janken, Reynolds, and Swiech (1986), who used a sample of 631 patients, aged 60 and over, to determine factors related to falls in an acute care setting. Registered nurses reviewed the medical records of patients who fell to determine which of 24 predetermined patient characteristics were present at the time of the fall. Some of these included impaired

speech, depression, confusion, impaired vision, vertigo and incontinence. Chi-square analyses demonstrated that eleven of the characteristics were significantly related to falling. Multiple regression analyses indicated the strongest predictors of falling were confusion, decreased mobility of the lower limbs, general weakness, vertigo and a history of recent substance abuse.

Within an acute care hospital setting, Morse et al. (1987) compared 100 patients who fell to 100 patients who did not fall. Discriminant analysis indicated that variables found to be associated with falling included mental status, presence of a secondary medical diagnosis, impaired gait, use of walking aids, intravenous therapy and history of falls. Content analysis of the descriptive data on falls identified three major groupings - anticipated, unanticipated, or accidental. Anticipated falls comprised 78% of the sample and could be prevented through the provision of assistance, supervision and/or surveillance. Unanticipated falls comprised 8% of the sample, and were incurred by patients having fainting episodes or drug reactions. Nursing interventions for this type of fall would be aimed at preventing a reoccurrence. Accidental falls were caused by environmental hazards such as wet floors, and comprised 14% of falls. These could be prevented by the provision of a safe environment. Although this study was conducted in an acute care setting, the

patients who fell were between the ages of 65 and 89 years of age.

Byers et al. (1990) conducted a study in an acute care setting, using a sample of 313 stroke patients. A retrospective chart audit was done; 202 stroke patients who fell were compared to 111 stroke patients who did not fall. Stepwise linear regression indicated that the strongest predictors of falling were impaired decision making, history of falls, restlessness, generalized weakness and fatigue. In addition, the authors reported that falls occurred twice as often in the night as compared to the daytime, and 11.39% of the patients were restrained at the time of the fall. Even though the study was conducted in an acute care setting, the average age of the patients who fell was 66 years.

In general, the above studies indicated that falling in the elderly was the result of a combination of factors. The most common factors included confusion, balance and gait problems, history of falls, age, incontinence, visual deficits and weakness.

Fall Prevention

Establishing causes of falls encouraged researchers to investigate ways to predict, prevent and reduce falls. Provision of a safe environment, including the use of non-skid flooring and footwear, and adequate lighting, was

considered essential to prevent accidental falls (Morse et al., 1987; Ross, 1991).

In recent years, the development of fall risk assessment tools and fall prevention protocols has been the focus of much research. It was generally felt that if characteristics of patients who fell were identified, nursing interventions could be targeted to high risk individuals to reduce or prevent patient falls (Whedon & Shedd, 1989).

A number of authors reported the development of special care plans as a means to prevent falls (Easterly, 1990; Fife et al., 1984; Hernandez & Miller, 1986; Rainville, 1984). The interventions devised for the care plans were very similar, and included such actions as frequent observation and offering the patient assistance to the toilet on a regular basis. Effectiveness of the fall prevention care plans varied. Rainville (1984) described a 93% fall reduction rate following the implementation of a fall risk care plan protocol. However, at the same time, she noted that a number of patients who were not identified at risk of fall continued to fall, raising concerns about the ability of the care plan to identify those at risk to fall. Similar results were reported by Easterly (1990).

Fife et al. (1984) described a fall prevention program involving the development of a fall risk tool which was incorporated into a care plan. Hospital incident reports

were reviewed to determine which criteria affected the frequency of patient falls. These criteria included fall history and age; physical status, such as balance or gait problems, hearing impairment and vision impairment; mental status; use of medications; ambulatory devices; and restraints. The tool was piloted on a nursing unit and identified 82% of patients at risk of falling. The same tool was then implemented hospital wide, and identified 52% of the patient population at risk of falling. The authors did not indicate how many of the patients identified at risk to fall actually fell.

Brians, Alexander, Grota, Chen, and Dumas (1991) conducted a study in a 1100 bed acute medical, surgical, psychiatric and extended care facility to develop a fall risk assessment tool. In the study, an assessment tool was developed based on a review of the facility incident reports and the literature. The original tool, which identified 26 variables related to falls, was completed on all admissions to the ten units involved in the study. Pearson Product Moment Correlation Coefficient was used to determine correlations and only four of the variables were significantly related to patient falls. These variables were dizziness/ unsteady gait ($r=.26$), impaired memory or judgement ($r=.22$), weakness ($r=.20$), and history of falls ($r=.13$). Although the correlation was not high, the risk tool was incorporated into the nursing assessment form. The

authors did not provide any information regarding the effectiveness of the tool.

Morse et al. (1989) developed the Morse Fall Scale using a sample of patients from an acute care setting. A data base of fall risk factors was obtained from 100 patients who fell and compared to 100 patients who did not fall. Discriminant analysis revealed that the variables related most to falling were a history of falls, intravenous therapy, use of ambulatory aids, confusion, unsteady gait, and secondary medical diagnosis. These variables were assessed to determine their ability to correctly classify patients as fallers or non fallers. Seventy-eight percent of the fall group and 83% of the control group were correctly classified.

A number of authors suggested that falls were preventable, once the patient at risk of falling was identified and appropriate nursing interventions were implemented (Brady et al.,1993; Ross, 1991). In a number of studies, the patient at risk to fall was identified by a visual cue card, which alerted all staff to the patient's increased risk of falling (Fife et al.,1984; Hendrich, 1988; Kilpack et al., 1991).

Fall prevention strategies reported in the literature included the implementation of a combination of nursing interventions, but few studies specified exactly what interventions were the most effective. Hill et al. (1988)

implemented specific nursing care plans and a patient education program for patients at highest risk of falling. The authors reported an overall decrease in falls and attributed the decrease to the patient education program.

Widder (1985) reported that the number of falls on an orthopaedic unit were reduced by 33% following the introduction of a bed alarm system. Hendrich (1988) reported similar results in a 300 bed hospital. These studies did not use a comparison group, therefore, the results were inconclusive.

Barbieri (1983) identified a number of interventions which were directed at fall prevention including fall risk assessment, reviews of patient's medications, physiotherapy, review of staffing patterns and the use of handrails and rubber backed area carpets in locations where falls were frequent, such as the bathrooms. These interventions were identified following a study of falls in a long term care facility. Evaluation of the interventions, however, was not reported.

A number of studies were conducted in relation to the use of bed siderails, which were meant to promote patient safety. These authors recommended reducing the use of bed siderails, as patients were more prone to injury if they tried to climb over a raised bed siderail (Morris & Isaacs, 1980; Venglarik & Adams, 1985).

Falls and Improvement of Quality of Care

Quality assurance provides a method to evaluate nursing care to ensure excellence. Historically, quality assurance programs measured level of compliance with established standards (Bull, 1985). In recent years, the focus of hospital quality programs has moved from quality assurance to quality improvement. The difference between the two lies in the basic tenet of quality improvement, which is that quality improvement is a never ending process, and there is always room for improvement (Kirk, 1992). A number of authors described the use of quality improvement principles as a means to reduce falls.

McFarlane and Melora (1993) described a fall reduction program that was accomplished through the implementation of standards of care. Identification of patients at risk to fall had failed to reduce the incidence of falls. An interdisciplinary committee was formed to review the problem, which led to the development of a standard of patient safety. The standard enabled review of a number of factors related to falls, including the use of siderails and an early warning bed alert system. In the process of the review, nursing staff reported that the bed alert system did not reduce the number of falls, so the system was removed. The committee identified and implemented a number of interventions, including the recruitment of a clinical nurse specialist, rounds for the times of frequent unwitnessed

falls, and repair of bed wheels and siderails. The authors did not describe the results of their efforts, but did state that the number of falls and injuries did not increase following the discontinuation of the bed alert system.

Heslin (1993) described a multidisciplinary quality improvement team formed in an attempt to reduce falls. The team members included personnel from nursing, medicine, occupational therapy and physiotherapy. The team used flowcharting, brainstorming and focus groups to determine causes of falls and appropriate prevention strategies. A number of interventions were implemented, including the use of bed sensors, resulting in the reduction of falls in a number of areas.

Brady et al. (1993) reviewed information regarding falls on a 28 bed geriatric unit to determine the reasons for falls. Results indicated that patient activities associated with falls were toileting, returning to bed to rest or trying to obtain nutrition. Falls were also noted to peak at four points in time, which were 0600h, 0800h, 1400h, and 2200h. Prevention efforts were directed at providing assistance with toileting and offering fluids or nutrition during the peak periods. All nursing and non-nursing staff were educated regarding the program and were involved in the process. Falls were reduced by 50% for a two week period.

Summary of the Literature Review

Patient falls are a serious problem in acute care and geriatric settings. Falls are no longer seen as a normal consequence of aging, but as a preventable occurrence. Prevention of falls begins with the identification of the person at risk to fall and the implementation of nursing interventions aimed at preventing falls. The fall risk tools identified in the literature tended to be agency specific, had not been evaluated, and were not generalizable to other institutions or health care settings. The Morse Fall Scale had shown a high degree of reliability and validity.

Fall prevention was a goal of many of the studies reviewed. While it may not be possible to prevent all falls, the literature indicated that fall prevention programs should aim to promote safety without diminishing patient activity and independence. Fall prevention strategies included the provision of a safe environment, as well as the implementation of a combination of interventions, including surveillance and frequent toileting. There was little research conducted to support specific nursing interventions. A number of studies provided conflicting results in relation to using bed sensor systems as a device to prevent falls.

The studies described in this literature review were conducted in the United States and parts of Western Canada.

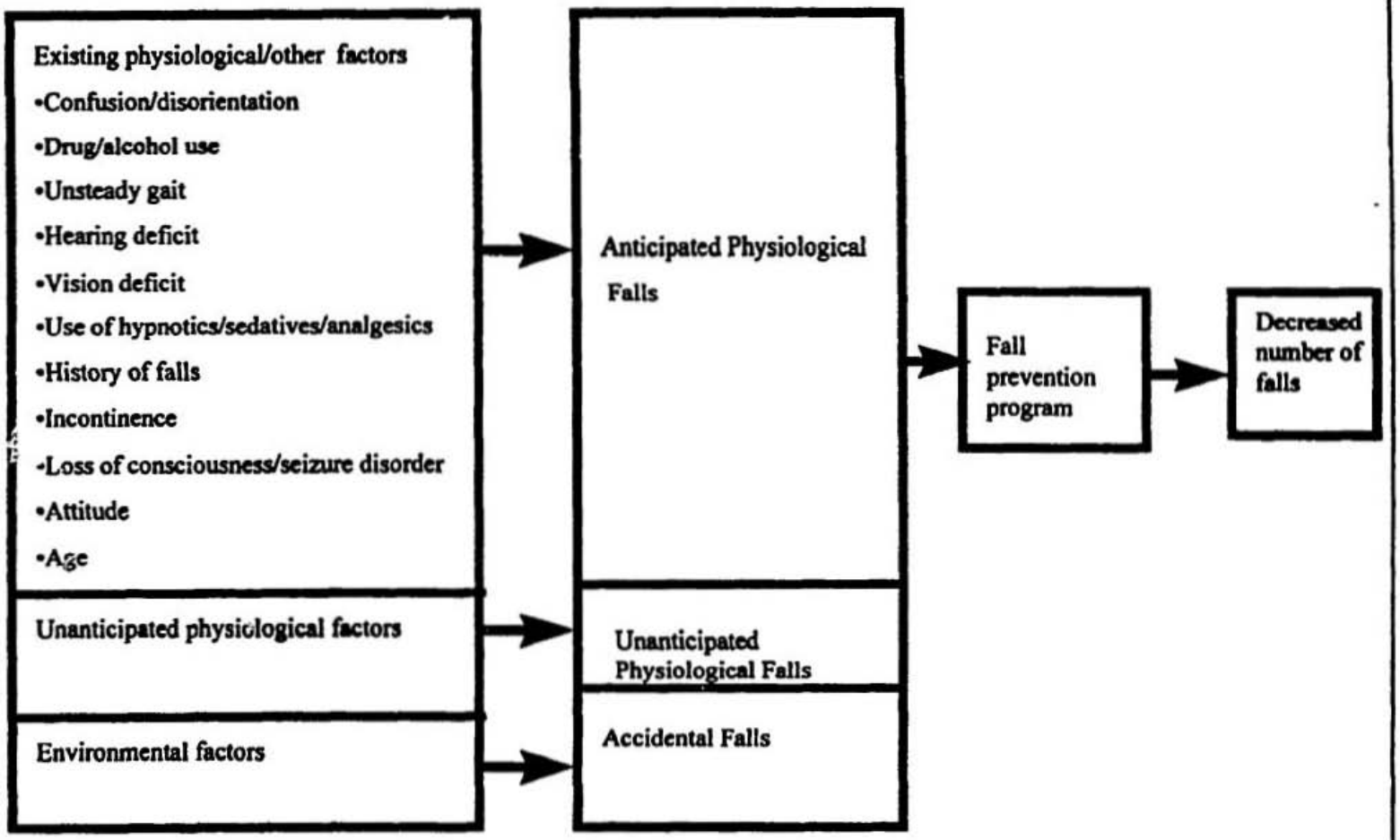
While patient falls are a concern in local long term care institutions and hospitals, there have not been any studies conducted in Newfoundland to examine this problem.

Conceptual Framework

Based on a literature review of patient falls, a conceptual framework was developed to guide the study (Figure 1). The phenomenon of interest is patient falls, which may be classified as anticipated physiological falls, unanticipated physiological falls, or accidental falls (Morse et al., 1987). The variables affecting fall risk can be grouped into three broad categories: existing physiological/other factors; unanticipated physiological factors; and environmental factors. Existing physiological/other factors include confusion/ disorientation, unprescribed drug/alcohol use, unsteady gait, hearing deficit, vision deficit, use of hypnotics/ sedatives/analgesics, history of falls, incontinence, history of loss of consciousness/seizure disorder, attitude (overestimates ability to ambulate), and age. These factors have been shown to have an impact on anticipated physiological falls (Janken et al., 1986; Morse et al., 1987; Sehested & Severin -Neilson, 1977; Spellbring et al., 1988; Tideiksaar & Kay, 1986;). The second category includes unanticipated physiological factors, such as orthostatic hypotension, which have an impact on

Figure 1

Conceptual Framework - Patient Falls



unanticipated physiological falls (Morse et al., 1987). The third category includes environmental factors, such as wet floors and poor lighting, which have an impact on accidental falls (Ross, 1991). The fall prevention program was introduced to decrease the number of falls. Once the patient is identified at risk of falling, nursing staff implement the fall prevention protocol, with the intention of decreasing the fall rate.

Definition of Terms

The following section includes definitions of the terms used in the study.

Definition of fall

In this study, Morris and Isaacs's (1980) definition of a fall was used, that is "an untoward event in which the patient comes to rest unintentionally on the floor" (p. 181). This definition included witnessed falls, where the resident was seen to fall, as well as, instances where the resident was found on the floor. In these instances, an incident report was completed by the nursing staff. Incidents where the patient was lowered to the floor by the nursing staff also resulted in the generation of an incident report, and were therefore included in the sample.

Type of fall

Morse's (1986) definition of type of fall was used and included three types:

1) **Anticipated physiological falls** - were those that occurred in patients with identified risk factors such as balance and gait problems, or confusion.

2) **Unanticipated physiological falls** - were those that occurred in patients as a result of fainting or other unpredictable physiological factors.

3) **Accidental falls** - were those that occurred when the patient slipped as a result of environmental factors, such as a wet floor, or rolled out of bed.

Patient day: Patient day was determined by the Admitting Department staff, using the patient census at midnight. If a bed was occupied at midnight, it was counted as a patient day. This statistic is commonly used by hospital staff to determine occupancy and bed utilization, and was used in this study to calculate fall rates.

Fall rate: Calculated by one or both of the following methods, overall fall rates were determined by a) using the number of falls as the numerator and the number of patient days as the denominator and b) using the number of patients who fell as the numerator and the number of patient days as the denominator. In both instances, the rate was determined by multiplying the calculated number by 1000. Fall rates were also determined, using one of the above methods, for each type of fall.

Injury rate: Injury rate was determined by dividing the numbers of injuries by the number of patient bed days, and

multiplying by 1000.

Fall prevention program: The fall prevention program included two components, the fall risk assessment tool and the fall prevention protocol (see Appendix A).

1) **Fall risk assessment tool** - was developed by members of the Nursing Practice Committee at a local long term care institution, and included the following variables.

Confusion/disorientation : if the patient was unaware of name and/or place and/or time, and/or exhibited inappropriate behaviour.

Recent history of falls : if the patient had fallen within the past 30, 60 or 90 days.

Recent history of loss of consciousness or seizure disorder: if the patient experienced loss of consciousness or seizure activity within the past 30 days.

Unsteady gait or balance : if the patient was unsteady on his/her feet while ambulating, or had an unsteady sitting balance.

Incontinent: if the patient was incontinent of bowel and/or bladder, including patients who wore incontinent briefs.

Visual deficit : if the patient had a visual impairment that was uncorrected.

Hearing deficit : if the patient had a hearing impairment that was uncorrected.

Drug or alcohol use : if the patient had ingested unprescribed drugs or ingested alcohol so as to impair

judgement or balance.

Use of hypnotics/sedatives/analgesics : if the patient had received hypnotics and/or sedatives and/or analgesics.

Attitude : if the patient was resistant to nursing care, did not follow instructions, denied risk of falling, or was impulsive.

Age : if the patient was over 70 years of age.

2) **Fall prevention protocol :** was the second component of the fall prevention program. The protocol was implemented once the patient was identified at risk to fall. A number of nursing interventions were included in the protocol (See Appendix C).

Summary

This chapter has summarized the existing literature regarding falls, and has described the conceptual framework used to guide the study. The terms used in the study were defined. The next chapter will describe the method and instruments used to conduct the study.

CHAPTER THREE

METHOD

In this chapter, the study method is presented, including information about the study design, sample, setting, instruments, data collection procedure, ethical considerations and methods of data analysis.

Study Design

A descriptive design was used to conduct this study, using the patient's health record, the patient's fall incident reports and the nurse manager's follow-up reports as sources of data collection. Data collected reflected the number of falls that occurred during six months prior to the implementation of a fall prevention program and six months following the implementation. Information related to the falls was recorded at the time the falls occurred.

Sample

The sample consisted of all patients who fell while hospitalized on the study units at a local long term care institution during the six month period prior to the implementation of a fall prevention program (June to November, 1993) and six months following its implementation (January to June,1994). Falls were identified by the completion of the institutions incident report. All falls

reported in the study periods were included in the sample, whether or not the patient had been identified at risk of falling. The number of falls was converted to a fall rate, using the number of patient days as a denominator.

The actual number of patient days for the time periods included in the study was calculated by the researcher based on the number of patient days recorded for each unit by personnel in the Admitting Department, using the patient census at midnight. There were a total of 41,638 patient days for the time periods included in the study, 20,610 patient days for the period from June, 1993 to November, 1993 and 21,028 patient days for the period from January 1994 to June, 1994.

Fall rates for the institution were previously calculated by the Quality Assurance Coordinator, and were reported as 7.43 falls per 1000 patient days in 1992, and 7.37 falls per 1000 patient days in 1993. These rates included the Alzheimer Unit.

Setting

The study was conducted in a local long term care institution, on the inpatient units, with the exception of the Alzheimer unit, which was eliminated for a number of reasons. The Alzheimer unit had a higher rate of falls than other nursing units, and all the patients suffered from dementia. It was felt that these patients required

different nursing interventions than those identified by the fall prevention protocol because of the decreased capacity to understand directions.

The five units involved in the study provided convalescent, rehabilitative, geriatric, and long term care to patients. The study units had approximately 130 beds, a fairly low turnover rate, and a patient population that was predominantly elderly with a mean age of 75. The average length of stay on the units providing convalescent, rehabilitative and geriatric care was 60 days. The long term care units had a longer length of stay.

Fall Prevention Program

The fall prevention program at the local long term care institution had two components, 1) the fall risk assessment tool and 2) a fall prevention protocol (see Appendices A, B and C).

Fall Risk Assessment Tool: The first section, the fall risk assessment tool, was developed by members of the Nursing Practice Committee of the local long term care institution, based on a) the Morse Fall Scale, b) a review of the literature and c) the observation of the characteristics of the residents of the institution who fell.

The original tool developed by Morse, Morse, and Tylko (1989) used a sample of two hundred patients from an acute care setting. One hundred patients who fell were compared

to 100 patients who did not fall. Fall risk factors in the Morse Fall Scale included a history of falls, intravenous therapy, use of ambulatory aids, mental status, unsteady gait and secondary medical diagnosis. Morse, Morse, and Tylko (1989) used Fishers linear function score to determine the fall scale weight for each variable and applied the tool to a normalized data set, using discriminant analysis. Sensitivity, or the rate of a correct decision, was determined to be 78%. Inter-rater reliability of the scale was assessed at .96 by 21 nurses. Validity was further established by reviewing patients identified as false positive, i.e., those identified as at risk of falling, but did not fall. There were 17 patients in this category, all had balance problems, 16 had abnormal gait, and six were disoriented. When the Morse study was completed, it was discovered that three patients in this group that were identified as false positive had fallen a total of 5 times, but the falls had occurred outside the study time periods. A further assessment of validity was conducted prospectively, testing the tool in three clinical settings (Morse, Black, Oberle, & Donahue, 1989). The scale was able to predict 90.1% of fallers who experienced an anticipated physiological fall. Permission to use the Morse Fall Scale was obtained from the author (see Appendix H).

A number of changes were made to the Morse tool by the Nursing Practice Committee of the local long term care

institution to reflect the characteristics of the patient population selected for this study. " Heparin lock/ Intravenous therapy " was removed from the Morse et al.'s scale as the incidence of intravenous therapy or heparin lock use in the study sample was very low. Secondary diagnosis was also removed from the tool, as most of the patients at the institution had more than one diagnosis. The use of ambulatory aids was also removed, as it was felt that the residents used ambulatory aids to assist them walking. Other factors affecting the fall rate reported in the literature were added to the tool, including :

- history of loss of consciousness/seizure disorder (Tideiksaar & Kay, 1986).
- vision deficit - (Janken et al., 1986; Lord, Clark, & Webster, 1991).
- incontinence - bladder and bowel incontinence (Janken et al, 1986; Spellbring et al., 1988).
- use of sedatives/hypnotics - administration of sedatives or hypnotics (Sehested & Severin-Neilson, 1977).
- hearing deficit -(Spellbring et al., 1988).
- attitude - the patient's overestimation of their abilities in relation to ambulation, or impulsiveness (Morse et al.,1987)
- age - over 70 (Gryfe et al., 1977; Morris & Isaacs, 1980; Sehested & Severin-Neilson, 1977).
- drug or alcohol problem - ingestion of alcohol or

unprescribed drugs have been observed in residents who fell after returning from social events where alcohol was involved. These factors, therefore, were considered as possible influencing factors affecting fall incidence.

Mental status, defined as disorientation, was included in the tool, as well as attitude, defined as overestimation of one's ability. These two factors were separated as there were patients at the institution who were not disoriented but overestimated their ability to ambulate. Conversely, there were a number of patients who were disoriented, but did not attempt to ambulate.

Each of the variables comprising the fall risk assessment tool was weighted proportional to its perceived role on patient's risk of falling. The points allocated to each variable were based on the practice experience of the members of the Nursing Practice Committee and research findings reported in the published literature. Three factors were given 15 points each: 1) confusion/ disorientation, 2) a recent history of loss of consciousness/ seizure disorder and 3) fall history - history of falls within 30 days.

The variable "fall history" was divided into three subcategories, each receiving different value. The committee felt that patients with a recent history of falls, within 30 days, were at greater risk than those who had fallen within the past 60 or 90 days. Based on this logic,

15 points were allocated for falls within the past 30 days, 10 points for falls within the past 60 days and 5 points for falls within the past 90 days. Unsteady gait and incontinence were both given 10 points, while the remaining factors were given 5 points. The members of the committee completed the assessment tool on all of the patients on one unit before finalizing the points, but interrater reliability was not established. Once a fall risk score (described below) was established, the fall prevention protocol was implemented.

Fall risk score: Patients scores were categorized as 20 to 35, 40 to 55, or 60 and above. With each scoring, specific measures were instituted to prevent falls, as described in the next paragraph.

Fall prevention protocol: The fall prevention protocol was also developed by members of the Nursing Practice Committee at the local long term care institution. The protocol was implemented following the completion and scoring of the fall risk assessment tool.

If a patient scored 20 to 35, safety measures were implemented, including:

- ensuring adequate lighting and a clutter free environment,
- notifying housekeeping of spills,
- ensuring that wheelchairs were in good working order,
- leaving beds in the low position,
- ensuring patients wore non skid footwear,

- placing the call bell within easy reach and providing instructions regarding use,
- utilizing bed rails appropriately,
- instructing the patient to use grabbars and hand rails in the hall and bathroom as appropriate.

It should be noted that these safety precautions were applicable to all residents, but more attention was given to those patients assessed to be at high risk of falling.

If a patient scored above 40, in addition to the precautions listed above, surveillance was implemented. If the patient scored 40 to 55, surveillance checks were instituted every 30 minutes, whereas if the patient scored above 60, checks were implemented every 15 minutes. The following additional measures were also implemented: a visual cue card was placed in the patients room to indicate fall risk; a red ink stamp was used to mark the patients care plan and kardex; and patients assessed to be at greater risk for falls were placed in a room near the nursing station if possible. These patients also had blood pressure measured in lying and standing position, to determine potential for orthostatic hypotension.

Patient and family education were also included in the protocol. Patient education was directed at individuals who had the capacity to comprehend. Family education was directed at helping the family members to understand why the patient was at risk of falling, and informing them of

necessary precaution measures.

The nurse clinician introduced the tool to the nursing units, and provided the nursing staff with the red ink stamp as well as written protocols. Education sessions were held for nursing staff at the unit level, and were directed at both Registered Nurses and Registered Nursing Assistants. It is not known if all staff attended the inservice, but information about the fall prevention program, including the fall risk assessment tool, fall prevention protocol and guidelines for use, were posted on the nursing units to further inform all staff.

Data Collection

A precoded data collection tool was designed for use in this study (Appendix D). It was designed to capture information about the fall, as well as the variables identified by the fall risk assessment tool. Additional information was collected on physiological factors, environmental factors, degree of injury, and whether or not the fall was witnessed. Information regarding the nursing unit where the fall occurred, as well the time of the fall were recorded by the researcher on each data collection tool. The collection of this information was felt to be essential in order to meet the objectives of the study.

Data were collected about the falls that occurred six months before the fall prevention program was implemented,

which included the months of June, 1993 to November, 1993. Data were also collected about the falls that occurred in the six month period following implementation, which was from January, 1994 to June, 1994. The fall prevention program was introduced in December, 1993, however, data regarding falls which occurred in December were not entered for analysis, as December was not a typical month. There were more recreational activities associated with Christmas occurring at this time, and as a result, there were more volunteers at the institution to provide additional supervision for the patients. In addition, some patients spent more time with family members, either within the institution or out on a pass.

Data Collection Procedure

Prior to data collection, arrangements were made with Nursing Administration to review inpatient charts. Meetings were held with Medical Records staff to discuss access to patient's charts for those who had been discharged.

Patient falls were identified by the institution's incident reports, which were kept on file in the Quality Improvement Facilitator's office. The researcher composed a list of names of the persons who fell during the study period, and submitted the names to the Medical Records department. If the patient had been discharged, the chart was accessed and the necessary information for the study was

retrieved and recorded on the data collection tool. If the patient was an inpatient, the chart was reviewed on the nursing unit. After the data were collected, the patient's name was checked off the list, and the data were entered into a computer file. No name was recorded on the data file. The individual was assigned an identification number, corresponding to their name on the chart request form. All completed data collection forms were kept in a locked file to protect confidentiality.

Most of the information needed for the study was found in the nursing admission data base, which was completed by the nursing staff on admission and updated annually for long stay residents. The history and physical examination completed by the admitting physician was also a source of information. If the resident had been discharged, the discharge summary completed by the attending physician was also used. Further information was found in the progress notes which were completed by all disciplines. Progress notes were written regarding the fall. Some notes just referred to the details of the fall itself, while others included information on possible factors responsible for the fall, such as balance and gait problems. The incident report form and the Nurse Managers follow-up report form were also used to obtain further information regarding specific details about the fall.

If the patient was a long term resident, the

information recorded on the nursing admission data base and the history and physical was not always current. In these cases, the progress notes were used to obtain information regarding the patient's current status as it related to the fall. Progress notes were written weekly on these patients and included an update of the nursing care plan, therefore obtaining the required information was not difficult.

In general, approximately 30 minutes was spent collecting data for each person who fell, but some individual's charts required a longer time period, especially if they had frequent falls, or the admission assessment did not have the required information. There were no missing variables; the researcher was able to obtain all the required information from the chart documentation.

Fall Rates

Fall rates for the study units were calculated by the researcher, following data collection. The overall rate was calculated using the number of falls as the numerator and the number of patient days as the denominator, multiplied by 1000, a method recommended by Morse and Morse (1988). Rates were also calculated for each type of fall and each type of injury, using patient days as the denominator. Fall rates were also calculated using the number of patients who fell as the numerator and the number of patient days as the denominator, multiplied by 1000. Fall rates were also

calculated following the removal of extreme cases or outliers, i.e., patients who fell six or more times.

Ethical Considerations

This study involved a review of patient records, therefore, permission to access the records was obtained from the administration of the involved agency (Appendix G) following study approval from the Human Investigation Committee (Appendices E & F). Confidentiality was maintained by locking completed data collection files in the researcher's office, and patient names were not recorded on the computer files.

Data Analysis

Data analysis was done using the Statistical Package for the Social Sciences for Windows (Norusis, 1993). Each patient who fell was given an identification number and this number was used when the data for that individual were entered into a computer file. For the repeated faller, the same identification number was used each time the patient experienced a fall. Data related to each fall were entered as a separate case. This enabled the collection of data related to each fall, and also enabled the identification of multiple fallers. The data files were later subdivided into three subgroups, the multiple fallers, the patients who fell before the implementation of the fall prevention program,

and those who fell after implementation.

To answer the first two research questions (p.4), descriptive statistics were used. The questions were related to the general characteristics of the sample and the injuries related to falls. The characteristics of interest included the number of falls, the number of fallers, gender, whether the fall was witnessed or unwitnessed, time of fall, age, and the numbers and types of injuries.

The third research question (p.4) was answered using descriptive statistics. The numbers of each type of fall were determined, fall rates were then calculated for each type of fall, using the number of falls as the numerator and patient days as the denominator. These rates were calculated for the length of the study and subsequently for the periods before and after the implementation of the fall prevention program.

The fourth research question (p.4) was answered using descriptive and inferential statistics. In addition to the rates calculated to answer the third research question, overall fall rates were calculated using: 1) the number of falls as the numerator, and patient days as the denominator; 2) the number of patients who fell as the numerator and patient days as the denominator; and 3) the number of injuries as the numerator and the number of patient days as the denominator. Fall rates were also calculated following the removal of outliers, ie., those who fell six or more

times. The outliers were not considered to be representative of the overall patient population in the study, and it was felt that fall rates calculated following their removal would provide more accurate information. Calculation of fall rates in this manner would enable comparison with the findings reported in the literature. The difference between fall rates before and after the implementation of the fall prevention program was then assessed using inferential statistics. Following consultation with a biomedical statistician, it was decided to calculate the z-score and determine the resultant p-value. Using the event of falling as a Poisson event, the fall rates were used to calculate the z-score as follows:

$$Z = \frac{\text{rate 1 - rate 2}}{\sqrt{\text{rate 1 + rate 2}}}$$

(V. Gadag, personal communication, August 29, 1995). The p-value was then calculated using the appropriate table (Rosner, 1995). A p-value equal to or less than .05 was considered a significant difference.

Data were further analyzed to determine the numbers of multiple fallers in the group. Descriptive statistics were used to determine the numbers of multiple fallers, and the numbers and type of falls they experienced.

Summary

In summary, this descriptive study was conducted at a local long term care institution, and included the inpatient units with the exception of the Alzheimer Unit. The sample included all patients who fell while hospitalized during a specific time period. Data were collected retrospectively, using the institution's incident reports, the follow up report and the patient's chart as sources of information. Data collection took on average approximately 30 minutes per chart, depending on the number of falls the patient experienced.

Data were analyzed to answer four specific research questions. Descriptive and inferential statistics were used to analyze the data. Calculation of fall rates was also done as a part of data analysis to enable comparison of the results of this study to others.

CHAPTER FOUR

RESULTS

Information was collected regarding patient falls which occurred in a local long term care institution during the periods from June, 1993 to November 1993, and from January 1994 to June 1994. The first time period was prior to the implementation of a fall prevention program, and the second time period was following the implementation of the program. Falls which occurred in December, 1993, were not included as December was an atypical month. All falls that occurred in five inpatient units were included in the sample. The Alzheimer Unit was not included in the sample. Falls which occurred while patients were outside the institution were not included.

The result section is organized to provide answers to each of the four research questions. Data regarding the characteristics of the sample for both time periods has been combined, as there were no differences between the two groups in terms of age, gender and variables related to falls.

General Information

The first research question was related to the general characteristics of the patients who fell in the institution.

There were a total of 153 patients who fell during the

study periods. They experienced a total of 351 falls. Eighty four patients experienced falls before the implementation of the fall prevention program, and 85 patients fell following implementation. These numbers total 169, not 153, the reason for this discrepancy was 16 patients who fell were residents at the institution before and after the implementation of the fall prevention program and were counted during both time periods.

Two hundred and seventy eight of the falls were experienced by men (79.2% of all falls), while the remaining 73 falls were experienced by women (20.8%). The gender difference in the number of falls reported was not surprising, since, on average, there were more men (66%) than women in the study population. Unwitnessed falls comprised 95.7% (n=336) of all falls, while 4.3% of falls (n=15) were witnessed.

The time of the fall varied. Falls occurred less frequently in the night and appeared to rise as patient activity on the nursing units increased. The highest number of falls occurred between 1400 - 1559h, as 46 falls occurred at this time. Time of fall is illustrated in Table 1.

The age of the patients who fell ranged from 17 to 102. There were very few patients in the lower age group, as there were only nine patients under the age of fifty. The average age was 75, the modes were 73 and 79. Seventy three percent of fallers were over the age of 70. Table 2

illustrates the age and gender of the individuals who fell during the study period.

There were a number of variables identified on the fall risk assessment tool that were exhibited by the individuals who fell. The most common ones associated with falls included attitude, balance and gait problems, confusion, history of falls, and to a lesser extent, sedative use. The other variables were seen less frequently (see Table 3).

Table 1

Time of Fall

Time	Number of falls (N = 351)	Percent % of total
0001-0159	22	6.3
0200-0359	20	5.7
0400-0559	16	4.6
0600-0759	18	5.1
0800-0959	15	4.3
1000-1159	27	7.7
1200-1359	43	12.2
1400-1559	46	13.0
1600-1759	39	11.1
1800-1959	33	9.4
2000-2159	39	11.1
2200-2359	33	9.4
Total	351	100%

Table 2

Distribution of Patients Who Fell During the Study Period by Age and Gender

Age	Males (N=105)	Percent of total fallers (N=153)	Females (N=48)	Percent of total fallers (N=153)
17 - 50	5	3.3	4	2.6
51 - 60	4	2.6	0	0.0
61 - 70	22	14.4	7	4.5
71 - 80	45	29.4	16	10.5
81 - 90	24	15.7	16	10.5
91 - 100	5	3.3	4	2.6
100 +	0	0.0	1	.6
Total	105	68.7%	48	31.3%

Table 3

Variables Observed With Falls

Variable	Frequency (N=351)	Percent of total falls
Attitude	297	85
Balance/gait	292	83
Confusion	241	69
Fall history		
-past 30 days	220	63
-past 60 days	19	5
-past 90 days and over	15	4
Sedative use	148	42
Incontinence	94	27
Vision deficit	53	15
Hearing impaired	43	12
Seizure	12	4
Alcohol use	11	4

Note: Each fall may have a combination of influencing variables, therefore the total number of variables is greater than the total number of falls.

Injuries Related to Falls

The second research question was related to the number and types of injuries incurred as a result of falls. There were a total of 100 injuries (28.5% of all falls) reported as a consequence of falls during the study periods. The degree of injury as a result of the fall varied from bruises or bumps (6.3% of all falls) to fractures (1.7% of all falls). Abrasions were reported most often, and occurred in 15.7% of all falls.

Injury rates per 1000 patient days were calculated, the numbers and rates are described in Table 4. There were a total of 41,638 patient days for the study periods, which included 20,610 patient days for the period from June to December, 1993 and 21,028 for the period from January to June, 1994.

Table 4

Injuries Related to Falls

Injury	Number	Percent of total falls (N=351)	Injury rate per 1000 patient days
Bruise/bump	22	6.3	.52
Abrasions	55	15.7	1.32
Minor lacerations	13	3.7	.31
Lacerations with sutures	4	1.1	.09
Fractures	6	1.7	.14
Total	100	28.5	

Type of Fall

The third research question was related to the number and rates of accidental falls, unanticipated physiological falls, and anticipated physiological falls. The most common type of fall experienced during the study periods was the anticipated physiological fall, as 301 (85.8%) of the falls were of this nature. Forty-one (11.7%) accidental falls occurred during the study period, and there were nine unanticipated physiological falls (Table 5). The anticipated physiological fall is the one felt to be preventable and most amenable to nursing interventions.

Table 5

Type of Fall

Type of fall	Number N=351	Rate per 1000 patient day
Anticipated Physiological Falls	301	7.23
Accidental Falls	41	.98
Unanticipated Physiological Falls	9	.22

Fall Rates and Injury Rates Before and After the Implementation of the Fall Prevention Program

The fourth research question was - was there a difference in fall rates and injury rates before and after the implementation of the fall prevention program? Fall rates were calculated as recommended by Morse and Morse (1988) using the number of falls as the numerator and the number of patient days as the denominator; and the number of patients who fell as the numerator and the number of patient days as the denominator. Fall rates were also calculated for each type of fall. Injury rates were calculated using the number of injuries as the numerator and the number of patient days as the denominator. These methods of calculation were used to facilitate comparison of fall rates with those reported in the literature, and to facilitate comparison should further research be conducted at the local level.

The overall fall rate for the six months prior to the implementation of the fall prevention program was 7.57 falls per 1000 patient days. The overall fall rate for the six months following the implementation of the program was 9.27 falls per 1000 patient days.

When using the number of patients who fell as a numerator, the fall rate prior to the implementation of the program was 4.075 falls per 1000 patient days. The fall

rate post implementation was 4.042 falls per 1000 patient days. The differences pre and post implementation were not significant, as indicated in Table 6.

Table 6

Fall Rates Before and After Implementation of the Fall Prevention Program

	Before	After	One sided P-value*	Sig.
Falls/1000 patient days	7.57	9.27	.6591	NS
Patients who fell/1000 patient days	4.075	4.042	.496	NS

* P < .05 for Significance NS: Nonsignificant

Fall rates for each type of fall were also calculated for the six months before and the six months after the implementation of the program. Again, the difference between the rates pre and post implementation was not significant.

Table 7

Fall Rates of Various Types of Falls Before and After Implementation of the Fall Prevention Program

Type of Fall	Implementation Before		After		One sided P Value*
	Number	Rate	Number	Rate	
Anticipated Physiological Falls	124	5.96	177	8.46	.7422
Accidental Falls	24	1.164	17	.808	.4013
Unanticipated Physiological Falls	5	.243	4	.190	.4681
Total	153		198		

* P < .05 for significance

Injury rates per 1000 patient days were calculated for the time periods before and after the implementation of the fall prevention program. Calculated p-values indicated that the rate of injury did not vary significantly before and after the program was implemented, as illustrated in Table 8.

Table 8

Injury Rates per 1000 Patient Days Before and After Implementation of the Fall Prevention Program.

Injury rate per 1000 patient days

	Before		After		
	Number	Rate	Number	Rate	One sided P-value
Bump/ bruise	9	.44	13	.62	.5675
Abrasions	30	1.45	25	1.19	.4364
Minor Laceration	9	.44	4	.19	.3783
Lacerations with sutures	2	.097	2	.095	.5000
Fractures	4	.19	2	.095	.4325
Total	54		46		

*P < .05 for significance

As calculated in this study, fall rates increased in the winter months, ie., January to June, 1994. To rule out the possible effect of seasonal variation on the fall rate, the latter was calculated for the winter months of the previous year (January to June, 1993). Consideration was

given to the fact that the residents spent more time on the units during the winter months, and an increase in fall rates for this period may not be unusual. The fall rate for January to June, 1993 was 6.09 falls per 1000 patient days, and for the same time period in 1994, the fall rate was 9.27 falls per 1000 patient days. The increase in fall rate indicated that seasonal variation did not contribute to the increase in the fall rate in this study.

Fall rates were also calculated following the removal of extreme cases, ie., individuals who fell 6 or more times. There were nine individuals in this category, two individuals fell six times, two fell seven times, one fell nine times, one fell eleven times, two fell twelve times and one fell 29 times.

This group of patients experienced 28 falls before the implementation of the fall prevention program, and 73 falls following its implementation. Following the removal of these cases, data analysis revealed that there were 130 falls before the implementation of the program, and 121 falls following its implementation. The fall rates were 6.31 per 1000 patient days before the implementation of the program, and 5.75 per 1000 patient days following implementation. The p-value was again calculated and the difference between the two rates was not significant.

Multiple Fallers

Data were further analyzed to determine the number of multiple fallers within the sample. Multiple falls were defined as two or more falls in one month, or three or more falls in a year (Morse, Tylko et al., 1985). There were fifty five multiple fallers in the study period, comprising 240, or 68.4% of the total falls. The number of falls ranged from 2 to 29. The mean number of falls in this group was 4.36 falls per person. The mode was three and the median was four.

The most common type of fall experienced by the multiple faller group was the anticipated physiological fall. There were six accidental falls and four unanticipated physiological falls.

One hundred and two falls were experienced by the multiple faller group before the implementation of the fall prevention program, and one hundred and thirty eight falls occurred following its implementation. Calculated fall rate for the multiple faller group prior to the implementation of the fall prevention program was 4.95 falls per 1000 patient days and that of after implementation was 6.56 falls per 1000 patient days.

Summary of Results

In summary, falls were a frequent occurrence during the study periods, as 351 falls were reported on the study units

in the long term care institution selected for this study. Most of the falls were anticipated physiological falls, especially among the patients who experienced multiple falls. The majority of patients who fell were over the age of 65, and were men. The number of falls increased during periods of patient activity on the unit, peaking at 1400h. Injuries were reported in 28.5% of the falls, and were most often minor in nature. Serious injuries, such as fractures or lacerations requiring sutures were reported in 2.8% of the falls.

The fall rate rose after the implementation of the fall prevention program, but the difference was not significant. When the numbers of fallers were compared, there was little difference between the rates (Table 6). Calculation of z-score and p-values indicated that there was no significant difference between the fall rates in general or in the fall rates of each type of fall before and after the implementation of the fall prevention program. Following the removal of extreme cases, ie., individuals who fell 6 or more times, the fall rate dropped from 6.30 falls per 1000 patient days before implementation of the program to 5.75 falls per 1000 patient days post implementation. The latter fall rate decreased slightly, but not significantly. There was no significant difference between the calculated injury rates before and after the implementation of the fall prevention program.

CHAPTER FIVE

DISCUSSION

This chapter is a discussion of the study's findings and limitations. The characteristics of the sample and the findings for each research question will be discussed and compared to the literature. The results will be examined in relation to the theoretical framework used for the study.

Characteristics of the Sample

In this study, men experienced more falls than women (68.7% and 31.3% respectively), which differs from the findings reported in the literature. A number of researchers indicated that in general, falls were more prevalent in women (Gryfe et al., 1977; Lipsitz, Jonsson, Kelly, & Koestner, 1991; Morris & Isaacs, 1980; Venglarik & Adams, 1985), however, comparison of fall rates between men and women in an institution must include a gender ratio (Morse et al., 1987). In this study, on average, 66% of the patient population on the study units were men. It is, therefore, expected that they accounted for most falls (79.2%). There was also a higher incidence of multiple fallers among the men in this study, therefore it is not surprising that more men fell than women.

Unwitnessed falls comprised the majority of all falls

(95.7%). There was little information available in the literature regarding unwitnessed falls, making comparison difficult. One study conducted in a geriatric setting by Morris and Isaacs (1980) reported a 75% incidence of unwitnessed falls. Unwitnessed falls in acute care settings have been reported as 78.2% (Morse, Prowse et al.,1985) and 44% (McFarlane & Melora, 1993). Comparison between acute and long term care settings, however, may not be appropriate as staffing levels and patient care needs in long term care institutions could influence the fall rates. One reason for the higher number of unwitnessed falls in this study may be related to reporting of all instances where the patient was found on the floor. This may not mean that the patient actually fell, but she/he may have lowered themselves to the floor. Another factor that can be considered is that there were a higher number of falls between the hours of 1400 and 1559, times when nursing staff were not always present at the bedside and could not witness the falls. The type of accommodation may also be considered as a factor in relation to the number of unwitnessed falls, as there were private and four bed rooms, but no open wards, making observation of the patients more difficult. The other studies do not describe type of accommodation, therefore comparison is not possible.

Reported age of the patients who fell was in keeping with the literature. Numerous studies conducted in long

term care settings have identified that falls are more frequent in those aged 65 and over (Barbieri, 1983; Brady et al., 1993; Craighead, Fletcher, & Maxwell, 1991; Gryfe et al., 1977; Morris & Isaacs, 1980; Sehested & Severin-Neilson, 1977).

The time of the falls reported in this study did not reveal any unusual patterns. More falls occurred between the hours of 1400-1600, which may be explained by the fact that nursing and para health professional staff may not always be present in the patients rooms at this time, as the morning care and treatments have been completed. An increased number of falls appeared to be associated with times when patients were more active, an observation noted in previous studies by Morse, Prowse et al (1985), Innes and Turman (1983), and Brady et al.(1993).

Injuries Resulting From Falls

The percentage of injuries reported in this study (28.5% of total falls) were in keeping with previously published research, which varied from 19.6% (Byers et al.,1990), to 25% (Morris & Isaacs, 1980) to 45.8% (Gryfe et al., 1977). The percentage of minor injuries reported in the literature ranged from 23.3% to 33.3%, and serious injuries ranged from 1.7% to 17.5% which were also congruent with those found in this study.

Types of Falls

The most common type of fall experienced during the study periods was the anticipated physiological fall, with 301 (85.8%) of this type. There were 41 (11.7%) accidental falls and nine (2.5%) unanticipated physiological falls.

The only other study to categorize falls in this manner was conducted by Morse et al. (1987) who reported a 78% incidence of anticipated physiological falls, a 14% incidence of accidental falls, and an 8% incidence of unanticipated physiological falls. These results vary somewhat from this study's findings. The discrepancy may be due to the difference in the patient population. Morse et al.'s study (1987) was conducted in an acute care setting, whereas this study was conducted in a long term care setting. Differences in the two populations can be seen by comparing average age, 58% of falls were experienced by patients between the ages of 65 and 85 in Morse et al's (1987) study, whereas 87.6% of the fallers in this study were over the age of 65. Another difference would be related to the acuity of the patients in the acute care setting, which may account for the higher rate of unanticipated physiological falls associated with unexpected physiological changes, such as hypotension.

Fall Rates Before and After Implementation of the Fall Prevention Program

The rate of anticipated physiological falls increased following the implementation of the fall prevention program, while the rate of accidental falls and unanticipated physiological falls decreased slightly, but the differences were not significant.

A number of possible reasons were identified to explain the increase in anticipated physiological falls. One reason was the increase in the number of multiple fallers in the time period from January to June, 1994. Another reason was related to an increased staff awareness of falls as a result of the implementation of the fall prevention program, hence increased surveillance of those identified as high risk, which led to better reporting of falls. According to Morse (1994), fall rates often rise following the implementation of a fall prevention program because staff attitude changes from feeling personally responsible for falls to questioning why the intervention did not work. All patients who fell were included in the sample, whether or not they were identified as at risk of falling. Although it is desirable to determine if all patients in the institution were correctly assessed for fall risk, it demands considerable time and effort that are beyond the scope of this study. It is therefore possible that fall rates did not change after implementation of the fall prevention program because the

assessments were not done accurately. Another possible reason for the increase in this type of fall is that the measures used in preventing falls (see Appendix C) were inappropriate to address the problem within the patient population. The interventions focused mainly on the prevention of accidental falls, and did not identify appropriate strategies to prevent the anticipated physiological falls. Documentation in the patients chart did not clearly indicate what interventions had been implemented, with the exception of surveillance. Merely implementing surveillance, i.e., observing the patient, may not be enough to prevent falls.

Another factor that may be considered to explain the increase in the fall rates post implementation is that the institution introduced a policy of least restraint in November, 1993, which would result in a decrease in the number of restraints used in the facility. One of the most common reasons given by health professionals for use of restraint was prevention of falls (Hall & Marr, 1993; Morse & McHutchion, 1991; Tinetti et al, 1991). These authors did not advocate the use of restraint as a method of fall prevention, but reported it as the perceived reason for using restraint given by health professionals. Powell, Mitchell-Pederson, Fingerote, and Edmund (1989) reported an increase in the number of falls following the implementation of a restraint reduction policy, as the fall rate rose from

7.2 falls per 1000 patient days to 12.5 falls per 1000 patient days. Restraint use was not a focus of this study, and further research is needed before any definite conclusions can be drawn, but reduction of restraint use could have had an impact on the fall rate in the facility.

There was a slight decrease in the rate of accidental falls following implementation of the fall prevention program, but it was not significant. The possible reasons could be an increased staff awareness in relation to safety and fall prevention, which was a result of the implementation of the fall prevention program. Another factor that could influence the rate of accidental falls was the interventions associated with the fall prevention program. If implemented, these interventions were directed at providing a safe environment, and generally focused on external factors.

There were no significant differences between the calculated injury rates before and after the implementation of the fall prevention program, even though there was an increase in the number of falls.

In general, the fall rates did not change significantly following the implementation of the fall prevention program, an observation shared by McFarlane and Melora (1993).

Relevance of Results to the Conceptual Framework

The conceptual framework used to guide this research

was adapted specifically for this study, using the fall classification developed by Morse et al. (1987). The relevance of the results of the study in relation to the framework is examined.

The results partially supported this conceptual framework, as the factors felt to have an influence on the anticipated physiological falls were in fact seen in the patients who fell in this study, in varying degrees. There was also support for the concept that accidental falls were affected by environmental factors, as the results indicated that environmental factors were present in all but two cases of accidental falls. Unexpected physiological factors were seen in the cases of unanticipated physiological falls, as patients experiencing this type of fall experienced hypotension or fainting episodes at the time of the fall.

It should be noted that the sample did not include patients who did not fall, therefore conclusions could not be made with much confidence that the variables identified affected falls.

It was expected that the introduction of the fall prevention program would result in a decrease in the rate of falls, but there was no support for this part of the framework in this study. This may be related to either the degree of accuracy of the fall risk assessment or the adequacy of the interventions implemented.

This study did not specifically evaluate the nursing

interventions that were implemented to prevent falls. It merely reports the fall rates before and after the implementation of a fall prevention program. The increase in the rate of anticipated physiological falls following the implementation of the fall prevention program may indicate either ineffectiveness of the fall prevention program or the existence of compounding factors, or both. Further research using a prospective, randomized controlled trial method is necessary to accurately measure the impact of the interventions on fall prevention.

Limitations

There were a number of limitations associated with this study, which must be acknowledged.

Convenience sampling was used to obtain the necessary data, however, all patients who fell were included in the sample. Although the results are not generalizable beyond the local long term care institution involved in this study, the sample can be considered representative of the patient population at that institution.

Data were collected from the patient's chart, the researcher was not able to directly assess the patients to determine which factors were present, but had to rely on the documentation that was done by the team members caring for the patients. The completeness and quality of the documentation varied, and it was sometimes time consuming to

obtain the necessary information, but all information was obtained and there were no missing variables. The researcher was able to scrutinize the multidisciplinary progress notes to obtain this information.

The fall risk assessment tool had not been tested for validity and reliability. The quality of orientation given to the nursing staff regarding use of the assessment tool and protocol was unknown. There was little documentation to describe the implementation of nursing interventions to prevent falls, therefore it was unclear as to which of the interventions were implemented, with the exception of surveillance.

Falls were identified by the institution's incident report, which was completed by the person witnessing or discovering the fall. It is difficult to determine if all falls were reported.

Summary of Discussion

In summary, this study indicated that falls were a frequent occurrence at the selected long term care institution during the study periods. The most common type of fall was the anticipated physiological fall.

Fall rates did not differ significantly following the introduction of a fall prevention program, in fact the rate of anticipated physiological falls rose. This may have been related to a number of factors, including an increased

awareness of falls, the introduction of a policy of least restraint, the quality of the orientation given to the nursing staff regarding the use of the fall risk assessment tool and fall prevention protocol, and the implementation of inappropriate nursing interventions.

The rate of accidental falls dropped slightly, and may be related to the implementation of the fall prevention protocol, which focused on environmental safety. However, as the documentation regarding the implementation of interventions was incomplete, it is not possible to draw definite conclusions. While fall rates rose after the implementation of the fall prevention program, the injury rate decreased slightly. The changes in both fall and injury rates were, however, insignificant.

Some findings of this study (the general characteristics of the patients who fell, injuries related to falls, and multiple fallers) were in keeping with the findings reported in the literature. However, the absence of significant change in the fall rates following the implementation of the fall prevention program was not congruent with that reported in some published studies (Fife et al., 1984; Janken et al., 1988; Hill et al., 1988). This may be related to a number of factors, as previously mentioned. There was a high incidence of unwitnessed falls in this study, a finding that may be explained by the type of setting that was used for the study.

CHAPTER SIX

SUMMARY, IMPLICATIONS AND RECOMMENDATIONS

This chapter summarizes the results of the study and presents the implications for nursing practice, education and research.

Summary of the Study

The number of falls among men and women in this study were proportional to the gender and age of patients in the study units. More falls occurred during the day, associated with periods of increased patient activity on the units. Injuries related to falls were reported in 28.5% of falls, and were mostly of a minor nature. The most common type of fall was the anticipated physiological fall.

The fall rates rose, but not significantly, following the implementation of a fall prevention program. The actual number of patients who fell before and after the implementation of the program did not vary significantly. The lack of difference in fall rates before and after the implementation of the fall prevention program might have been due to a number of factors, including the number of multiple fallers, better reporting of falls, the implementation of a policy of least restraint, the quality of orientation given to nursing staff regarding the fall prevention program and the use of interventions which may

not be entirely appropriate for all types of falls. Many of the interventions identified on the fall prevention protocol focused on the provision of a safe environment, and included such activities as ensuring adequate lighting, placing beds in the lowest position and removing unnecessary equipment from patient rooms. If implemented, these types of interventions would be aimed at preventing accidental falls. Documentation of the interventions was unclear, therefore definite conclusions cannot be made. Injury rates before and after the implementation of the fall prevention program did not vary significantly.

Implications for Nursing Practice

Patient falls are a complex and serious problem in many long term care settings. Falls adversely affect the patient's quality of life and can have legal implications for involved institutions. Injuries resulting from falls lead to increased hospital costs associated with treatment required or increased length of hospital stay.

Results of this study indicate that the interventions used to prevent falls may need some modification. A common strategy is to ensure a safe environment, but this strategy will only be effective in decreasing the number of accidental falls. Additional nursing interventions must be directed at reducing the number of anticipated physiological falls, which was identified as the most frequent type of

fall in this study and in those reported in the literature. Once the patient is identified at risk of falling, nursing staff should attempt to identify individual risk factors, especially in patients who experience multiple falls. Strategies such as frequent toileting, walking programs and surveillance may be implemented in an attempt to reduce the number of falls. Surveillance may need to be increased at times to correspond with the peak times of falls. Surveillance, i.e., observing the patient, may not be enough, and may need to be combined with other interventions such as assessing the patient every hour to determine their needs. One of the variables seen most often in the frequent faller group was attitude, which was defined as overestimation of ones abilities. Patient and family education is one strategy that could be implemented in an attempt to change patient's attitude. Furthermore, interventions must be documented to facilitate coordination of care and effective evaluation of such interventions.

The results of this study indicated a non significant increase in the fall rates following the implementation of a fall prevention program. The initial reaction of nursing staff may be to discard the program, as it was not effective in reducing fall rates. However, the results of this study must be examined. Despite the small rise in fall rates, injury rates did not increase following the implementation of the fall prevention program. The results of the study

indicate a need to examine the interventions identified in the fall prevention protocol. Changes must focus on interventions to prevent the anticipated physiological fall. Even if the fall rates are not reduced, it is still possible to reduce the risk and/or degree of injury to the patient.

As nursing staff are members of the interdisciplinary team that provide care to the patients, the formation of interdisciplinary project teams to study the problem of patient falls is also recommended. Nurses should work collaboratively with other disciplines, such as medicine, physiotherapy and recreational therapy within their institutions, and use the principles of quality improvement to study the causes of falls, and identify means to prevent them. A number of authors, including Heslin (1993), have reported success through the formation of quality improvement teams.

Documentation of the fall risk assessment was consistent throughout the study. Nursing staff documented fall risk using the assessment tool, but there was little documentation regarding nursing interventions directed at reducing the numbers of falls. This is not to say that interventions were not implemented, but the documentation was not reflective of this. Once the patient is identified at risk of falling, nursing staff have a responsibility to implement appropriate interventions to meet the safety needs of patients. As well as documenting the assessment, there

is a need to document the interventions and whether or not the interventions were effective. This documentation is not only an expected nursing standard (Association of Registered Nurses of Newfoundland, 1984) but a necessary component of risk management. Deficiencies in documentation can be corrected through staff education. It may be necessary to incorporate a safety checklist with the surveillance checklist to ensure documentation of the implemented interventions.

Administrative nursing personnel who direct nursing practice must examine the problem of falls thoroughly, and establish realistic goals. A number of fall rates must be calculated to establish a baseline and enable comparison with the other research, which would give an indication of the seriousness of the problem. Classification of falls as accidental, unanticipated physiological or anticipated physiological falls may be helpful to determine where problem areas lie. This in turn would provide direction for the implementation of specific nursing interventions.

Implications for Nursing Education

The numbers of elderly in our population is increasing, resulting in an increase in the numbers of elderly requiring care. Falls are a recognized problem in the elderly, and nurses are in an ideal position to intervene and reduce the number of falls and resultant injuries.

Nursing curriculae now include physiological changes associated with aging. This focus should be expanded and include the phenomenon of falls, including epidemiology of falls, causes and prevention strategies. Students must be taught that falls are not always an expected problem of aging, but a potentially preventable occurrence. All nurses should be made aware of the impact of falls, and should be encouraged to report them, and investigate the causes in an attempt to decrease the incidence of falls.

Graduate students should be encouraged to study the phenomenon of falls and identify effective interventions that can be incorporated into nursing care plans or fall protocols. Graduate students should be encouraged to identify researchable problems in relation to patient falls, and pursue these problems as topics for thesis or course assignments.

Implications for Nursing Research

This study described the fall rates before and after the implementation of a fall prevention program in a long term care setting.

It is suggested that further research be conducted in this area. Ideas for possible research projects emerged from this study, including:

1) a study to determine if the fall risk assessment tool used in this program identifies patients at risk of falling

and whether those not identified at risk of falling fell.

2) a study to determine the validity and reliability of the fall risk assessment tool.

3) a study to implement specific fall prevention strategies for various types of falls and evaluate their effectiveness.

4) a study to identify the factors affecting falls.

5) a study to determine the financial cost of falls to the health care system.

Conclusion

This study has described the fall rates before and after the implementation of a fall prevention program in a long term care setting. The topic for this research arose from nursing practice, as nursing staff were concerned about the number of falls in their institution. Results of this study are currently being used by an interdisciplinary team to revise the fall risk assessment tool, and the related interventions to prevent falls. Further studies regarding the phenomenon of falls are necessary to add to the growing body of nursing knowledge and enable the implementation of appropriate interventions.

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Appendix A

THE GENERAL HOSPITAL
Dr. Leonard A. Miller Centre

Fall Risk Assessment Tool

Criteron	
Confused/Disoriented	15
Recent history of falls: within 30 days	15
within 60 days	10
within 90 days	5
Recent history of loss of consciousness/ seizure disorder	15
Unsteady gait (ambulatory)	10
Incontinent	10
Vision deficit (uncorrected)	5
Hearing deficit (uncorrected)	5
Drug or alcohol problem	5
Use of hypnotics/analgesics/sedatives	5
Attitude (overestimates ability to ambulate)	5
Age (over 70 years)	5

Score 20 or more: Institute Protocol

Score 40 or more: Institute surveillance checks every 30 minutes

Score 60 or more: Institute surveillance checks every 15 minutes

***Any patient in a restraint must be placed on Q15 minute surveillance.**

Date					
Score					
Signature					
Date					
Score					
Signature					
Date					
Score					
Signature					
Date					
Score					
Signature					
Date					
Score					
Signature					

GUIDELINES FOR FALL RISK ASSESSMENT
L.A. MILLER CENTER

1. Confused/Disorientated:

If the patient is unaware of name and/or place and/or time and/or exhibits inappropriate behaviour. — Score 15 points

2. Recent History of Falls:

If the patient has fallen within 30 days — Score 15 points

If the patient has fallen within 30-60 days — Score 10 points

3. Recent History of Consciousness or Seizure Disorder:

If the patient has experienced loss of consciousness or seizure activity in past 30 days — Score 15 points

4. Incontinent:

If the patient is incontinent of bowel and/or bladder, including patients who wear incontinent briefs/catheters. — Score 10 points

5. Unsteady Gait/Use of Ambulatory Aids:

If the patient is unsteady on his feet while ambulating or transferring from a wheelchair. — Score 10 points

6. Visual Deficit

If the patient has a visual deficit deficit that is uncorrected. — Score 5 points

7. **Hearing Deficit**

If the patient has a hearing deficit that is uncorrected. — Score 5 points

8. **Use of Hypnotics/Analgesics/Sedatives**

If the patient is receiving hypnotics and/or analgesics and/or sedatives. Score only when the person has actually received these medications. — Score 5 points

9. **Attitude**

If the patient is resistant to nursing care and/or does not follow instructions and/or denies risk of falling and/or is afraid of falling. — Score 5 points

10. **Age:**

If patient is 70 years of age or older. — Score 5 points

PROTOCOL: HIGH RISK FOR FALL PRONE PATIENTS
DEPARTMENT OF NURSING - L.A.M.C.

1. Remove unnecessary equipment from room to ensure clutter free environment.
2. Ensure adequate lighting.
3. Notify housekeeping of spills immediately.
4. Ensure wheelchairs and beds have working wheels.
5. Place beds in low position when not providing nursing care.
6. Place call bell within reach and provide instructions regarding use.
7. Utilize bed rails as is appropriate.
8. Instruct patient to use grabrails and handbars in hall and bath as appropriate.
9. Identify fall prone patients by cue cards.
10. Inform patient and family of risk of falling and reinforce safe practices.
11. Institute surveillance checks according to the assessment tool.
12. Assign fall prone patients to rooms near the nursing station **if possible**.
13. Perform lying, sitting, standing - blood pressure on admission to determine potential for Orthostatic hypotension, Systolic B/P changes of >20 mm. Hg. between lying and standing may indicate this.
14. Restrain as necessary **only** after careful assessment and according to the policy of the institution.
15. Establish a schedule to check on patient and offer toileting assistance.
16. Ensure patient has non-skid soles on footwear, if possible.
17. Enter the fall-prone status on computer on admission and update as necessary.

Appendix D

Data Coding Tool

Name MCP Date

Confused/ Disoriented	No - 1 Yes - 2	
History of falls	None - 1 Within - 30 days -2 - 60 days -3 - 90 days -4	
History of loss of consciousness/ seizure disorder	Within 30 days No - 1 Yes - 2	
Unsteady gait	No - 1 Yes - 2	
Vision deficit (uncorrected)	No - 1 Yes - 2	
Incontinence	None - 1 Urine - 2 Urine & Feces - 3	
Use of sedatives or hypnotics	Received sedatives or hypnotics No - 1 Sedatives - 2 Hypnotics - 3 Both - 4	
Hearing deficit (uncorrected)	No - 1 Yes - 2	
Attitude	Overestimates/ forgets limitations - 1 Oriented to own ability - 2	
Age	50-59 - 1 60-69 - 2 70-79 - 3 80-89 - 4 90-99 - 5	
Drug or alcohol problem	Ingestion of alcohol/ non prescription drugs No - 1 Yes- 2	

Physiological factors	Presence of orthostatic hypotension, history of fainting No - 1 Faint - 2 Hypotension - 3	
Environmental factors	None - 1 Wet floor - 2 Broken chair - 3 Tipped wchair- 4 Other - 5	
Sex	Male - 1 Female - 2	
Injury	None - 1 Bump - 2 Abrasion - 3 Laceration -4 Sutures - 5 Fracture - 6 Death - 7	
Fall witnessed	No - 1 Yes - 2	

Comments _____

Memorial
University of Newfoundland

Human Investigation Committee
Office of Research and Graduate Studies (Medicine)
Faculty of Medicine, The Health Sciences Centre

13 May 1994

Reference #94-53

Ms. Sharon Smith
c/o School Nursing
Faculty of Medicine

Dear Ms. Smith:

At the meeting of the Human Investigation Committee held on May 5, 1994, your application entitled "Impact of a Fall Risk Assessment Tool in a Long Term Care Setting" was considered and approval was recommended.

We take this opportunity to wish you every success with your research study.

Sincerely yours,

Bruce Sussex
Acting Chairman
Human Investigation Committee

cc Dr. K.M.W. Keough, Vice-President (Research)
Dr. Ford Bursey, General Hospital Representative, HIC
Dr. Eric Parsons, Medical Director, General Hospital
Lan Gin, Supervisor

emoria
University of Newfoundland

Human Investigation Committee
Office of Research and Graduate Studies (Medicine)
Faculty of Medicine, The Health Sciences Centre

17 May 1994

TO: Ms. Sharon Smith

FROM: Dr. Verna M. Skanes, Assistant Dean,
Research and Graduate Studies (Medicine)

SUBJECT: Application to the Human Investigation Committee #94-53

The Human Investigation Committee of the Faculty of Medicine has reviewed your proposal for the studies entitled **"Impact of a Fall Risk Assessment Tool in a Long Term Care Setting"**.

Full approval has been granted from point of view of ethics as defined in the terms of reference of this Faculty Committee.

It will be your responsibility to seek necessary approval from the hospital(s) wherein the investigation will be conducted.

Notwithstanding the approval of the HIC, the primary responsibility for the ethical conduct of the investigation remains with you.

Verna M. Skanes, Ph.D.
Assistant Dean

cc Dr. K.M.W. Keough, Vice-President (Research)
Dr. Ford Bursey, General Hospital Representative, HIC
Dr. Eric Parsons, Medical Director, General Hospital
Lan Gin, Supervisor

GH
THE GENERAL HOSPITAL

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Dr. L. A. Miller Centre
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1994 06 24

TO: Ms. Sharon Smith

FROM: Chief Executive Officer & Medical Director

SUBJECT: "Impact of a Fall Risk Assessment Tool in a Long Term Care Setting", #94-53.

This letter is to formally inform you that the Board of Directors of the General Hospital has recently approved your above investigation on recommendation of the Medical Advisory Committee.

The General Hospital in cooperation with Memorial University is implementing the proposal where contract research will be assessed an amount for indirect costs to the institutions. The approval to conduct this research is contingent on the preparations of formal budgets and when the investigation is being done on the request of a pharmaceutical company and others where responsibility and ownership of the data is their's these indirect costs (overhead) will be charged. You may be contacted in the near future by a representative of the hospital or university for review of your budgets and possible assessment.

ERIC R. PARSONS, MD,CCFP,
Chief Executive Officer
& Medical Director

ERP/sh

31 Mackenzie Street
St. John's
Newfoundland, Canada
A1A 2V4

Dear Dr. Morse ,

I am a candidate in the Master of Nursing Program at Memorial University of Newfoundland in St. John's, Newfoundland, Canada. My thesis topic is patient falls, and I am proposing a study to determine the effectiveness of a fall risk assessment tool. I am particularly interested in the Morse Fall Risk Assessment tool developed by you and your colleagues in Alberta. I plan to use the tool in an acute care setting to determine it's ability to predict patient falls.

I am writing to request permission to use the tool. I would also like to have a copy of the tool, including any guidelines for use. If you need further information from me, you can write me at the above address. I can also be reached by telephone by day at 709-737-7127, or after hours at 709-754-1343. I can also be reached by fax at the General Hospital, 707-737-6400.

Thankyou very much for your attention to this matter.

Sincerely,

Sharon Smith

Permission granted — Please send me a copy of your results

Janice Morse

Good luck!