The prevalence and incidence of pressure ulcers in home care: Are patients at risk?

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With the earlier discharge from the acute care setting, there may be an increased susceptibility to the development of pressure ulcers in the home than ever before. A descriptive study was undertaken to determine pressure ulcer prevalence and incidence prior to instituting prevention and treatment protocols. Study findings are presented in this article.

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THE PROBLEM OF pressure ulcers is not new; in fact it has existed for centuries. Pare,[1] for example, treated "bedsores" in the early 1500s, and biblical references have mentioned "sore" existence, such as that found on Lazarus,[2] and "ulcers," which were found on Isaiah.[3] Ulcers continue to be a major health concern, being called an example of a "secondary condition that is . . . a principal target of health promotion and disease prevention efforts"[4(pp39,40)] for people with disabilities. As a health care problem, pressure ulcers have an impact on individuals and on society. It is estimated that, individually, one pressure ulcer can cost between $5 and $50,000 to heal and that 1.1 to 1.8 million hospitalized patients develop pressure ulcers each year.[5] These figures are estimates from acute care studies, however, and authors have suggested that costs in a hospital setting may be 35% to 60% higher than at home.[6]

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Recent changes in the health care system may have affected the scope of the problem of pressure ulcers in home care patients. High costs of hospitalization and decreased reimbursement for hospital stays may have caused a "shift" in the problem of pressure ulcers from acute care to home care. As a result of the prospective payment system based on diagnosis related groups (DRGs), earlier discharges from the acute care setting may have increased the acuity levels of patients admitted to and requiring services from home care agencies (known as the DRG ripple effect), although this fact has more anecdotal than research impact.[7] As home care patients are acutely ill and often bedbound, more of them may be more susceptible to the development of pressure ulcers than ever before.

Cotter and Stefanik[8] indicate a need for identifying patients at risk for pressure ulcers as well as a need for Medicare reimbursement for preventive ulcer care. In the home care setting, it has not been determined which patients are more likely to be at risk for pressure ulcer development, when pressure ulcers are most likely to develop, or what the extent of the problem is within the population served by home care agencies. Approximately 70% of patients served by hospital-based, Medicare-certified agencies are senior citizens.[6,9] Blaylock[5] reports that the elderly are one of the three major at-risk groups for pressure ulcers. The neurologically impaired and the hospitalized represent the other two at-risk groups. How many of these patients have pressure ulcers? To what extent is this a concern for the elderly home care population?

In most home care agencies, nurses perform a physical assessment of the patient at the time of admission to home care services. Would the completion of a risk assessment tool at this time accurately predict which patients will develop ulcers? And, once determined to be at risk, what kinds of preventive measures should be instituted? Furthermore, to what extent will prevention protocols be effective in decreasing the prevalence and incidence of pressure ulcers in the home care population?

A prospective descriptive study was undertaken in a rural midwestern setting to determine pressure ulcer prevalence (number of pressure ulcers occurring on a given day) and incidence (number of pressure ulcers acquired after admission) prior to instituting pressure ulcer prevention and treatment protocols. This study was part of a larger study that examined patient risks for pressure ulcer development in five patient care settings (acute care, rehabilitation, skilled care, home care, and hospice). This article presents the results of a literature review and discusses the study, its methodology, and its findings.

LITERATURE REVIEW

A pressure ulcer is defined in the literature as a "localized area of tissue necrosis that develops when soft tissue is compressed between a bony prominence and an external surface for a prolonged period of time."[10(p25)] Pressure ulcers may also be referred to as bedsores, pressure sores, or decubitus ulcers. In 1989, the term pressure ulcer was accepted by the National Pressure Ulcer Advisory Panel (NPUAP) as the term of choice. For this study, Shea's[11] classification system for pressure ulcers was utilized, which is consistent with the NPUAP definition. This classification system refers to a "reddened area lasting more than 30 minutes after a change in position" as a stage 1 pressure ulcer.[11]

Pressure ulcers are most commonly caused by excessive pressure over a bony

prominence.[12,13] Friction, shear, and moisture are other extrinsic factors that may cause pressure ulcer development.[5,14] Intrinsic factors, such as nutritional status, obesity, age, and mobility, also play a role in pressure ulcer development. Increased temperature, such as that created by excessive massage,[15] may also be a contributing factor.

While current literature regarding the prevalence and incidence of pressure ulcers is limited for any patient care setting, it is limited even more so for patients in home care settings. Authors[10,16] report home care pressure ulcer incidence as ranging from 7% to 12%. The term "home care" can, however, reflect a variety of patient populations.[17,18] Home care agencies may serve very diverse populations, and the literature is unclear as to the types of patients included when the term home care is used.

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Eighteen percent of persons who have pressure ulcers have developed them in the home.[19,20] Factors associated with a higher incidence of pressure ulcers in the home setting are self-assessed poor health, dry or scaling skin, cigarette smoking, and inactivity.[20] Persons 70 to 75 years of age have nearly a twofold incidence of pressure ulcers compared to persons aged 55 to 69 years.[19,20]

PURPOSE OF THE STUDY

Phase I of the study determined the prevalence of pressure ulcers in patients receiving skilled nursing services from a hospital-based home care agency. Phase II collected information about pressure ulcer prevalence and tested the reliability of the Braden risk assessment scale as a predictor of pressure ulcer occurrence in the home care setting. This prevalence and incidence data served as baseline data for a current study (phase III) designed to implement and assess the effectiveness of clinical skin care protocols in one home care setting. Phases I and II of this study will be discussed in this article.

TOOLS

In this study, three tools were utilized: the Braden risk assessment scale for pressure ulcer development, a demographic data form, and a skin assessment tool. The skin assessment tool contained Shea's[11] definition of pressure ulcers as adapted by the NPUAP in 1989. Demographic data included sex, age, marital status, smoking history, steroid therapy, bed and overlays, and incontinence data.

Risk assessment tools have been developed to indicate to the caregiver those patients at risk for pressure ulcer development. The risk assessment tool selected for use in this study, the Braden scale, is a prospective tool that encompasses six factors. These factors are mobility, activity, sensory perception, skin moisture, nutritional status, and friction and shear. All are related to skin breakdown.[21] A high score on this scale indicates a low risk for pressure development, while a low score reflects a higher risk.

Validity and reliability of the Braden scale were established by Bergstrom and colleagues.[22] Ideally this tool should be used by an investigator different from the one who later performs the skin assessment

of the patient in order to avoid bias. In this study, the primary registered nurse (RN) performed both the skin assessment and risk assessment score calculation due to experience gained during the pilot study. In the pilot study, difficulty was encountered in explaining the purpose of a separate investigator's visit to the home when the visit was made only to determine a Braden scale score. Additionally, the tool was designed to be utilized in the acute care setting and to be completed by a nurse who "knows" the patient. Due to the in-depth assessment information needed to complete the Braden scale, it was decided to make its performance the responsibility of the agency nurse.

METHODOLOGY

In phase I, staff nurses reported cross-sectional data related to pressure ulcer prevalence on the same day for all adult patients who had received home care RN visits during the past week. A skin assessment and a Braden scale were completed for each patient by the patient's primary RN. Demographic data were obtained from patient charts by the investigator.

In phase II, a prospective, longitudinal approach was utilized. Home care RNs (baccalaureate and master's prepared) assisted with data collection after interrater reliability had been established (r = .99). The patient's primary nurse was determined to be less threatening to the patient and family than a new nurse visiting to collect only research data. For this reason, staff nurses were hired and inserviced by the investigator as research assistants and interrater reliability was established.

Adult patients who were ambulatory or who were admitted for temporary care services (less than a week) were excluded from the study. All patients were initially assessed by the home care RN and, if no pressure ulcer was present on admission, they were included in the study and followed weekly for a 4-week time period.

Reassessments of skin and completion of Braden scales were done weekly for 4 weeks or until discharge. If the patient's expected length of care was less than 1 week, patients were excluded from the study (eg, if admitted for intravenous antibiotic therapy only). A demographic form was completed by the researcher (also a home care agency employee) for each patient after reviewing the patient's record and consulting with the primary home care nurse. Data were collected over a 7-month time period.

The nursing staff in this agency routinely performs skin assessment at each visit and gathers information contained on the Braden scale. Because no additional cares or information was needed in relation to the study, informed consent was not required for this setting. Institutional review approval was received for this study from both the university and the home care agency.

Phase III is currently underway over a 16-month time period. This phase involves the implementation of skin care protocols and postimplementation prevalence audits for pressure ulcer occurrence.

SETTING

This Medicare-certified agency provides skilled registered nurse, nursing assistant, occupational therapy, physical therapy, and social work visits to homebound patients. The agency employed approximately 13 full-time and part-time RNs at the time of the study, and the patient census ranged between 30 and 70 each day. Average annual visits numbered 14,000, a figure that has rapidly increased since the time of the study. Subjects were excluded if they were not being routinely visited by a RN.

RESULTS

Phase I: Prevalence

Of 26 patients (13 males and 13 females) receiving home care services at the time of the preliminary prevalence audit, five were found to have pressure ulcers (males = 8%; females = 31%). Seven pressure ulcers were found: two stage I ulcers, three stage II ulcers, one stage III ulcer, and one stage IV ulcer. Pressure ulcers occurred most commonly on the spinous processes of the back (n = 3). Two ulcers were noted on the foot or heel, one on the buttocks, and one in the sacral region. Of the five pressure ulcer positive (PU+) subjects, only one was incontinent of urine and feces. Three of the five subjects with pressure ulcers were taking steroids. Of the five PU+ subjects, four had a diagnosis of diabetes mellitus; four of the five also had a cardiac or vascular medical diagnosis.

Phase II: Incidence

Over a 6-month period, 30 home care patients (20 females and 10 males ranging in age from 23 to 92 years; mean age 70.7 years) were followed for a 4-week time period from admission. Of these patients, none developed pressure ulcers during the study period, although PU+ patients were admitted to the agency during this time.

A second purpose of this phase of the study was to determine a Braden risk cut-off score for this patient care setting. The cut-off score in the home care setting was computed using mean Braden scores obtained for each subject (Nancy Bergstrom, PhD, personal communication, November 1989). Using the Lilienfeld and Lilienfeld formula,[23] a cut-off score of 20 is recommended for this home care population. Patients with a risk score below 20 would be considered "at risk" for pressure ulcer development.

DISCUSSION

Small sample sizes (26 and 30 subjects) preclude any generalizable results, even though the study accurately depicts the prevalence rate of 19% in this particular setting. The 0% incidence rate compares with 20% and 10% incidence in other home care studies.[16,24] For the incidence study, the mean age of 70.7 years corresponds with data reported by other researchers for hospital-based, Medicare-certified home care agencies.

Identification of pressure ulcers on spinous processes of the back in the prevalence study was of interest, as the location of the pressure ulcers has most frequently been reported as the sacral and heel regions.[5] These patients may be more wheelchair or chairbound than bedbound, yet more attention is currently given to bedcushions than to surfaces that accommodate the patient who sits, rather than lies down, for extended periods of time. Perhaps further study needs to be done on the back support surfaces being utilized at home.

The Braden scale, as used in this study, had not been adapted to the home setting. For example, nutritional factors that are measurable by the tool in an institutional setting, rely on self-report in the home care setting. This reliance on self-report is a limitation of this study. Braden and Bergstrom have since undertaken research to address this concern.

Time restraints and staff involvement with data collection may also have impacted the study results. Even though the agency was committed to the project and staff interrater reliability was established, there were patients who were admitted to the agency during the course of the study that were not followed to determine pressure ulcer incidence. This omission was re-

lated to priority needs of the patients at admission, staff time constraints at the time of admission, and paperwork demands of the agency at the time of admission. In some cases, patients did not need a visit on a weekly basis, so it was not possible to obtain scores and assessments on a weekly basis. In other cases, patients were discharged sooner than expected. The incidence of 0% is accurate, however, for the 30 patients that were followed during the 4-week time period from admission over the 7-month time period of the study.

Perhaps the 4-week postadmission period is not the most critical time for pressure ulcer development; or perhaps these patients were seen to be at risk and their ulcers were prevented by nursing measures provided by the home care staff. Further study is needed to confirm which is the case. It may be that patients need to be more carefully assessed when a change in any of the conditions on the Braden scale occurs (eg, when the patient becomes bedbound, incontinent, or has a change in nutritional habits) or on a biweekly or monthly, rather than weekly, basis for this population.

The specificity and sensitivity of the Braden scale for home care could not be determined due to the 0% incidence in this study. Braden cut-off scores are noticeably higher for this population than other populations previously studied (20 as compared with 16.88 for acute care and 17.88 for rehabilitation settings).[25] This finding could reflect a lower acuity level in the more mobile home care patients in this setting, could be attributed to the calculation method for determining risk as patients were pressure ulcer negative, or is perhaps due to the need for adaptation of the tool for this setting. This finding supports the recommendation by Lucas[26] that tools be developed for assessing risk factors for pressure ulcers that are applicable to a wider range of populations and settings.

Several patients were admitted to the agency with pressure ulcers. Questions arise such as: In what setting did these ulcers develop? At home prior to receiving home care services? In the hospital? This area also needs further study.

It is troubling that reimbursement is not yet provided for preventing the progression of pressure ulcers in the home care setting, especially when one considers that hospitalization is often ultimately required.

In home care, stage I or II pressure ulcers cannot alone constitute reason for a skilled nursing visit. Yet, one might think that the discovery of a stage I or II ulcer, followed by effective treatment, is far less costly than treating a stage III or IV ulcer. Patients with stage I or II ulcers may simply need pressure-reducing devices and education. Such remedies are not as costly as the pressure-relieving devices, dressings, supplies, and nursing time required for pressure ulcers in stages III and IV. It is troubling that reimbursement is not yet provided for preventing the progression of pressure ulcers in the home care setting, especially when one considers that hospitalization is often ultimately required, and these costs can be quite high. It is estimated that one pressure ulcer in the inpatient setting can cost from $2000 to $30,000.[10] Daily inpatient costs for pressure ulcers range widely; they are estimated to exceed $80 per day[27] in the acute care setting, but are significantly lower in the long-term care setting.[28] Studies are needed that explore the differences between preventing and treating ulcers at

home versus treating ulcers on an inpatient basis.

Studies of this nature reveal the need for a way to classify various populations served by home care providers, both as a way of predicting and reporting results and of learning how to manage the problems that may occur within each population. Further studies that universally classify the types of patients served, whether by nursing or medical diagnosis,[29] or by the three categories proposed by Hughes[18] in 1985: of traditional home care, expanded home care, and case management. Classification would permit more accurate data collecting and reporting procedures in the home care setting.

Finally, the way in which research is done in the home care setting needs to be carefully explored before commencing a research project. The issues of invasion of the privacy of patients' homes, type of paperwork involved in the home care setting, and time involved in the admission process all need to be addressed. The need for establishing patient trust within the home setting may preclude the introduction of a research study at the time of the admission process. Perhaps a retrospective study may be the better approach to gathering incidence data, even though scores for instruments such as the Braden scale cannot be obtained in this fashion.

Protocols have been established in the home care agency studied. Hopefully, prevention measures, as well as protocols for each ulcer by stage, will serve to minimize the scope of the pressure ulcer problem. Recently, the NPUAP published national guidelines for pressure ulcer management.[30] Dissemination of these guidelines, as well as research regarding their effectiveness, is necessary to further eliminate the problem of pressure ulcers for those clients most at risk.

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