The Factors that Affect the Frequency of Vital Sign Monitoring in the Emergency Department

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Introduction: Vital signs are an important component of the nursing assessment and are used as early warning signs of changes in a patient's condition; however, little research has been conducted to determine how often vital signs are monitored in the emergency department. Additionally, it has not been determined what personal, social, and environmental factors affect the frequency of vital sign monitoring. The purpose of this study was to examine what factors may influence the time between recording vital signs in the emergency department.

Methods: We performed a descriptive, retrospective chart review of 202 randomly selected adult ED patients' charts from representative times to capture a variety of ED levels of occupancy in an urban, Midwestern, teaching hospital. Descriptive and hierarchical regression analyses were used.

Results: The strongest predictor of the increased time between vital signs from the personal health factors was lower patient acuity (Emergency Severity Index). This relationship remained strong even when social factors and environmental factors were included. Increased length of stay and fewer routes of medications also had significant relationships to the increased time between vital sign monitoring.

Discussion: These findings are clinically important because greater time between vital sign recordings can lead to errors of omission by not detecting changes in vital signs that could reveal changes in the patient's condition. The findings of this study provide direction for future research focusing on determining whether higher frequency of vital signs surveillance contributes to higher quality care and linking quality of care to missing vital signs/inadequate monitoring.

Key words: Vital signs; Emergency department; Monitoring; Frequency of vital signs; Emergency Severity Index; Crowding

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Vital signs are simple measurements of physiologic parameters that represent a set of objective data used to determine general parameters of a patient's health and viability. These values influence the doctors' and nurses' interpretation of a patient's overall condition and affect the course of treatment for each patient individually. Historically, vital signs have been considered as an integral part of the nursing assessment and as an early warning sign of patient deterioration.[1,2] Vital sign monitoring also may be used as a marker of nursing vigilance or frequency of direct patient observation to evaluate the patient's condition or responses to interventions.

Vital signs are recorded at least once for every emergency patient and are monitored in the emergency department because changes can herald an imminent adverse change in the patient's condition.[3] Although vital sign monitoring is the most commonly performed task in emergency departments, there is limited information regarding the optimal frequency with which vital signs should be monitored. The majority of the literature addressing the

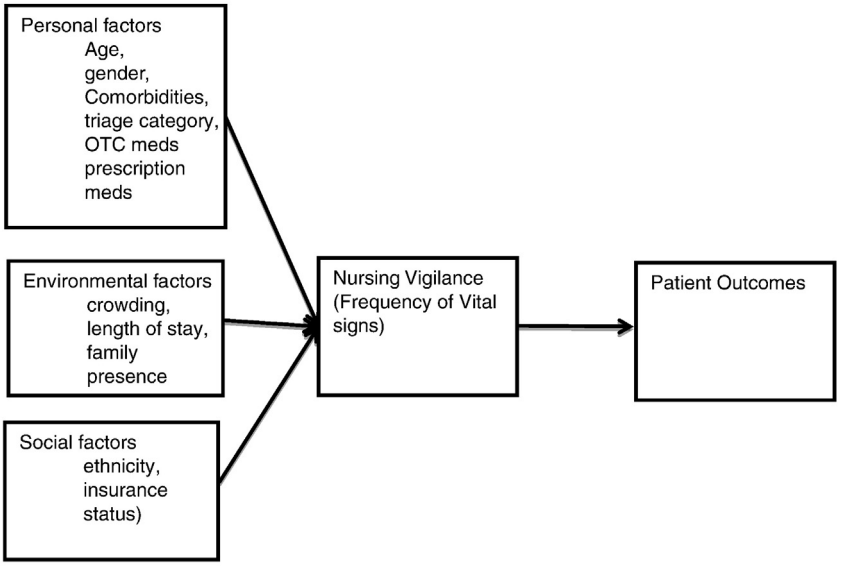

FIGURE
Model of nursing vigilance in emergency department.

frequency of vital sign monitoring is focused on inpatients and is inconsistent in nature. Only 4 studies could be located that addressed vital sign monitoring in the emergency department.[4-7]

The frequency of obtaining vital signs depends on hospital policy, nursing judgment, or written physician order and is commonly based on the patient's acuity and chief complaint. For example, primary stroke centers have guidelines that require vital sign monitoring every 15 minutes during the acute phases of care, and most intensive care units require a minimum of hourly recorded vital signs. A report on rural ED care in the United States suggests that in trauma admissions, vital sign monitoring should occur hourly[8] and the Trauma Nursing Core Course guidelines recommend the ongoing assessment of vital signs. However, there are no published standards of care or guidelines on the recommended frequency of obtaining vital signs for the general ED population. No research has been published that examines the frequency of vital sign monitoring by emergency nurses.

It has been suggested that social factors may affect variations in patient care. Previous research reports that female patients wait longer for and receive less pain medications.[9] Other studies report that female patients receive a larger quantity and stronger dose of medication than their male counterparts.[10] Mills et al[11] found that nonwhite patients waited longer for and received less medication than their white counterparts. There are no data about the impact of insurance (Medicare, Medicaid, private, self-pay) in published reports related to disparate care in the emergency department.

In addition to gender and race, environmental factors such as ED crowding have been shown to affect aspects of care in the emergency department including patient satisfaction levels,[12-14] timeliness of medication administration,[15,16] and mortality rates.[17-19] Furthermore, during periods of crowding, emergency nurses report perceived decreases in the quality of care provided to patients.[20] However, no studies have been reported that examine how crowding specifically affects the nursing care provided.

The purpose of this study was to examine the frequency of vital sign monitoring and whether selected factors (age, gender, ethnicity, insurance, number of comorbidities, number of over-the-counter [OTC] and prescription drugs, triage category) affect the frequency of vital sign recording to provide guidance for the development of nursing policy regarding the frequency of vital sign monitoring. The second purpose was to determine whether these factors continue to influence the frequency of vital sign monitoring in the presence of environmental/process factors (crowding level, family presence, number of routes of medication administered in the emergency department, length of stay) and to determine whether disparities in care are present. The research questions were as