Factors Associated with Nurse Staffing Levels in Nursing Homes

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Abstract

Objectives: This study examined the association of Medicaid nursing home reimbursement and resident casemix (acuity), and other factors on nurse home staffing levels in a small rural state of United States.

Methods: Secondary data were used from the Online Survey Certification and Reporting (OSCAR) system, the Minimum Data Set, state reimbursement and staffing data, and the Area Resource File (ARF) to examine 195 freestanding nursing homes in Colorado. Two-stage least squares regression models were used to take into account the endogeneity of Medicaid reimbursement rates, resident case mix, and staffing levels, while controlling for clustering by geographical regions.

Results: The findings showed that higher estimated Medicaid reimbursement rates were associated with higher RN hours, the percent of RN to total staffing hours, and total nurse staffing levels, but estimated resident casemix was not associated with staffing levels.

Conclusion: Medicaid payment is an important incentive for improving staffing levels in nursing homes, even in a small rural state like Colorado.

Key Words: Nursing Homes, Medicaid Reimbursement, Resident Casemix, Nurse Staffing Levels

I. Introduction

Nursing home residents are characteristically vulnerable and highly dependent upon nursing staff for their physical, mental, and social needs. Nurse staffing is one of the most important structural characteristics of nursing homes and is related to the process and outcomes of nursing home care (1). Higher staffing levels have been associated with fewer occurrences of resident adverse outcomes such as pressure ulcers, catheterizations, urinary tract infections, less antibiotic use, as well as with fewer regulatory deficiencies (violations) (2-11).

Because staffing levels are related to higher quality measures, it is important to understand what factors may encourage nursing homes to increase their nurse staffing levels (12, 13).

State Medicaid reimbursement rates have been identified as an important policy that can be used to improve nursing home staffing levels. Several nursing home studies have found a positive relationship between state Medicaid reimbursement rates and nursing home staffing (4, 14-19).

Most studies of the impact of nursing home reimbursement rates have not taken into account the
potential endogenous relationships between Medicaid reimbursement and staffing levels. Harrington et al (4) found that if nursing homes have higher staffing levels, state Medicaid programs may increase the Medicaid reimbursement rates to pay for the staffing. At the same time, if Medicaid reimbursement rates are high, nursing homes are likely to increase their staffing levels, creating an endogenous relationship. This study examines the relationships of Medicaid reimbursement on staffing taking endogeneity into account.

Resident casemix (acuity) reflects the severity of illness of residents and also impacts on the amount of care and staffing needed at the nursing home. Resident casemix has been found to be a significant predictor of staffing levels for registered nurses (RNs) and total nursing staff (RNs, licensed vocational or practical nurses (LPNs), and nursing assistants (NAs) (4, 15, 20). At the same time, homes with higher staffing levels may be more likely to attract or admit residents with a higher care needs, creating an endogenous relationship between staffing and resident casemix (4).

This study was designed to determine whether Medicaid reimbursement rates and resident casemix, and other factors were associated with higher nurse staffing levels in Colorado nursing homes. Because Medicaid reimbursement rates and resident casemix are considered to have endogenous relationships with nurse staffing levels, this study used a two-stage least squares regression analyses of all nursing homes in Colorado.

II. Background

Since most studies of nurse staffing levels have been conducted in either large states or with all U.S. nursing homes, Colorado was selected because it is a small rural state that is sparsely populated in certain areas. The state had available data on all nursing homes that were collected for another project in 2000. Colorado is unique in that only 4 states out of 33 states with minimum staffing requirements below the level of Colorado (set at 2.0 direct care hours per resident day) (21). Colorado also had lower staffing levels than the average state in 2000 (22). The state Medicaid reimbursement rates set by state officials are based on each nursing home’s specific costs, with adjustments to take the resident casemix (or care needs) into account, cost of living adjustments for different geographical regions, and ceilings or limits on costs. The average Medicaid nursing home rate was $111 per resident per day in 2000, which was a level that was 20th out of all 50 states (23). This study addressed the question of whether Colorado’s Medicaid reimbursement rates and the resident casemix in the state’s nursing homes gave nursing homes incentives to increase staffing, as has been found in larger states.

1. Conceptual Framework

This study examined nurse staffing levels as structural aspects of quality in nursing homes Previous investigators have combined Donabedian’s structure-process-outcome framework(24) with organizational perspectives to investigate nursing homes as organizations and their contextual/environmental factors(12, 13). Nursing homes are considered to be open systems where organizational decisions as well as market environment influence nurse staffing levels.

Nursing Home Characteristics. Studies of nursing homes have found that nursing home characteristics are important predictors of nurse staffing levels that need to be taken into account. Several studies have shown that larger size, for-profit ownership, and chain affiliation were related to lower staffing levels per resident day (4,