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Original Study

Impact of Advanced Practice Registered Nurses on Quality Measures: The Missouri Quality Initiative Experience

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A B S T R A C T

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Purpose: The purpose of this article is to review the impact of advanced practice registered nurses (APRNs) on the quality measure (QM) scores of the 16 participating nursing homes of the Missouri Quality Initiative (MOQI) intervention. The MOQI was one of 7 program sites in the US, with specific interventions unique to each site tested for the Centers for Medicaid and Medicare Services Innovations Center. While the goals of the MOQI for long-stay nursing home residents did not specifically include improvement of the QM scores, it was anticipated that improvement most likely would occur. Primary goals of the MOQI were to reduce the frequency of avoidable hospital admissions and readmissions; improve resident health outcomes; improve the process of transitioning between inpatient hospitals and nursing facilities; and reduce overall healthcare spending without restricting access to care or choice of providers.

Methods: A 2-group comparison analysis was conducted using statewide QMs; a matched comparison group was selected from facilities in the same counties as the intervention homes, similar baseline QM scores, similar size and ownership. MOQI nursing homes each had an APRN embedded full-time to improve care and help the facility achieve MOQI goals. Part of their clinical work with residents and staff was to focus on quality improvement strategies with potential to influence healthcare outcomes. Trajectories of QM scores for the MOQI intervention nursing homes and matched comparison group homes were tested with nonparametric tests to examine for change in the desired direction between the 2 groups from baseline to 36 months. A composite QM score for each facility was constructed, and baseline to 36-month average change scores were examined using nonparametric tests. Then, adjusting for baseline, a repeated measures analysis using analysis of covariance as conducted.

Results: Composite QM scores of the APRN intervention group were significantly better ($P = .025$) than the comparison group. The repeated measures analysis identified statistically significant group by time interaction ($P = .012$). Then group comparisons were made at each of the 6-month intervals and statistically significant differences were found at 24 months ($P = .042$) and 36 months ($P = .002$), and nearly significant at 30 months ($P = .11$).

Implications: APRNs working full time in nursing homes can positively influence quality of care, and their impact can be measured on improving QMs. As more emphasis is placed on quality and outcomes for nursing home services, providers need to find successful strategies to improve their QMs. Results of these

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analyses reveal the positive impact on QM outcomes for the majority of the MOQI nursing homes, indicating budgeting for APRN services can be a successful strategy.

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Advanced practice registered nurses (APRN) have been practicing in nursing homes since the 1970s,¹ soon after the role was developed in the United States. The nursing home setting was a research site for early research analyzing the value of the APRNs in providing care to older adults with chronic diseases living in these settings. In 1 early study, gerontological APRNs were employed in 30 Medicare-certified nursing homes in 8 western states for 2 years. Retrospective review of records from the nursing homes with APRNs and matched controls, revealed favorable changes in 2 of 8 activities of daily living measures, 5 of 18 nursing therapies, 2 of 6 drug therapies, and reduction in hospital admissions and total days.² Results suggested that APRNs had a useful and cost-effective role to play in nursing homes. About 10 years later, Ryden et al³ examined the effect of clinical outcomes for newly admitted nursing home residents when gerontological APRNs worked with nursing staff implementing protocols for incontinence, pressure ulcers, depression, and aggressive behavior. APRNs practiced in 2 nursing homes while a third nursing home served as a comparison group. Data analyzed at 6 month's post admission revealed that residents of APRN intervention experienced significantly greater improvement or less decline in incontinence, pressure ulcers, and aggressive behavior, and they had better mean composite scores across all outcomes when compared with residents receiving usual care.

In a 2008 publication, Bakerjian⁴ reviewed 38 studies about care of nursing home residents by APRNs published over the last 25 years. The studies revealed 7 positive outcomes of APRN care evident in the publications: equivalent or better management of chronic diseases; improved functional status (toileting, dressing and ambulation) and less functional decline; reduced hospitalization and emergency department use; reduced overall costs; no differences in mortality between APRN and physician care; more time spent with residents by APRNs than physicians; and more satisfaction with APRN care than physicians care. The review showed significant support for APRNs providing care in a variety of long-term care settings and states.

Similar functional outcomes can now be measured by nursing home quality measures that were initiated by federal and state licensure and certification programs since passage of the Omnibus Budget Reconciliation Act of 1987 (OBRA-87).⁵ The changes recommended in OBRA-87 led to creation of the Minimum Data Set (MDS), a summary assessment of each resident's functional and health status. Using the MDS information, outcome indicators [quality measures (QMs)] were developed as proxy measures of quality of care as part of the Nursing Home Standards for Health and Safety used during the certification (survey) process. The MDS program has undergone revisions over the years to expand and strengthen the QMs, with MDS v 3.0 currently under use. The MDS QM ratings for nursing homes has information about 15 different physical and clinical measures for nursing home residents, available in the Certification And Survey Provider Enhanced Reports report accessible by nursing home staff⁶ and also available to the public on the Centers for Medicare and Medicaid Services website. QM scores that are low (below the state and national averages) indicate better quality of care.

The Missouri Quality Initiative (MOQI), a 4-year (2012–2016) federally funded research initiative, was a multifaceted intervention in 16 nursing homes in the Midwest, which embedded full-time APRNs in the participating homes.⁷ The MOQI was 1 of 7 sites nationally in the Centers for Medicare and Medicaid Services Innovations Center and Medicare-Medicaid Coordination Office funded national demonstration, *Initiative to Reduce Avoidable Hospitalizations among Nursing*

Facility Residents. The primary Initiative goals were to reduce unnecessary hospital and emergency department transfers; improve resident health outcomes; improve the process of transitioning between inpatient hospitals and nursing facilities; and reduce overall healthcare spending without restricting access to care or choice of providers. External evaluators of the Initiative, after analyzing 3 years of quantitative data (claims and assessments) compared with 6 other state sites, reported that MOQI interventions were associated with a consistent and significant reduction in the key outcomes.⁸ The results of a detailed quantitative analysis of key outcomes of the MOQI intervention was recently reported by Rantz et al.⁹ The MOQI APRNs were educated about the MDS CASPER report (available to every nursing home in the country) and its value in providing guidance for educational programs and quality improvement efforts in their assigned nursing homes. They were encouraged to work with their nursing home direct care staff to improve quality of care and care delivery systems that have potential to improve care of nursing home residents.

The purpose of this article is to review the impact of APRNs on the QM scores of the 16 MOQI nursing homes over the 3 years of full implementation of the MOQI intervention (September 2013–September 2016). APRNs focused on quality improvement strategies with potential to influence healthcare outcomes. Analyses were planned to measure the change in QM scores to discern impact on care quality of full time APRNs on QM outcomes of the MOQI nursing homes.

Methods

A 2-group comparison analysis was conducted using statewide QMs made available to the research team under appropriate Data Use Agreement and other publically available nursing home descriptive data of facility size, ownership, and location. Potential comparison group nursing homes were selected from facilities in the same counties as the intervention homes, similar baseline QM scores, size, and ownership. It was important that the comparison homes be from the same areas of the state as the intervention homes to avoid regional variations in care, staffing, state survey teams that could potentially influence the analysis. Government-operated homes were excluded from the matching as there are none in the intervention group. Also excluded from the pool of potential comparison homes were those with fewer than 89 certified beds, as this is the minimum bed-size in the intervention group. Matching was based on the Chebyshev distance.¹⁰

Next, a matched comparison group from the same counties was formed by matching with the 16 intervention homes on (1) baseline QM values of the 8 QMs selected for the national evaluation of the Initiative [selected by Research Triangle International (RTI), Durham, NC], the primary evaluation team of the national Initiative) these were falls, pressure ulcers, urinary tract infections, indwelling catheters, restraint use, activities of daily living, weight loss, and antipsychotic medication use; (2) for-profit status; and (3) number of certified beds. Table 1 summarizes the Baseline QM Scores and Facility Characteristics. Note, the comparison group selected for this comparison group for this analysis is different from the comparison group selected by RTI for their evaluation due to facility anonymity.⁸

Results

Table 1 summarizes descriptive statistics for each QM along with the raw difference of means, and significance levels for the group

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