
Facility Service Environments, Staffing, and Psychosocial Care in Nursing Homes

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Using 2003 Online Survey Certification and Reporting (OSCAR) data for Medicare and Medicaid certified facilities (N=14,184) and multinomial logistic regression this study investigated if (1) psychosocial care quality was better in facilities where State requirements for qualified social services staffing exceeded Federal minimum regulations and (2) facility service environments are associated with psychosocial care quality. For-profit status and higher percentage of Medicaid residents are associated with lower quality. Staffing, market demand, and market competition are associated with better quality. Psychosocial care quality is more associated with payer status and market forces and less with regulatory requirements.

INTRODUCTION

Serious care deficiencies in nursing homes are receiving increasing attention from advocates and policymakers (Duhigg, 2007). Addressing deficiencies in hands on physical care remain a priority for these reform efforts. Psychosocial care receives less attention from researchers and policymakers, in part due to the priority given to serious physical care deficiencies, but also due to the complexities associated with measuring psychosocial

care and limited evidence linking the provision of such care to facility performance or resident outcomes.

Psychosocial care is defined by Federal regulations pertaining to quality of care, resident assessment, and quality of life. Regulations mandate that facilities must provide the necessary care and services to attain or maintain the highest practicable physical, mental, and psychosocial well-being, in accordance with the comprehensive assessment and plan of care (Centers for Medicare & Medicaid Services, 1991). Regulations require receipt of appropriate mental health treatment when problems are identified, services provided to prevent avoidable declines in social interaction or increasing depressive symptoms. Care delivered by qualified professionals in a manner designed to maintain or enhance opportunities for resident choice, participation, self-determination, dignity, and accommodation of individualized resident need. Facilitating family involvement in care is another mandated component of psychosocial care (Centers for Medicare & Medicaid Services, 1991; University of Minnesota, 2007).

Failure to help residents achieve the highest practicable physical, mental, or psychosocial well-being, a quality of care deficiency, has been one of the three most cited deficiencies for the past 3 years (Levinson, 2008). Failure to achieve compliance with Federal standards for psychosocial care assessment and planning is a particular problem (Office of the Inspector General, 2003).

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Few studies have analyzed deficiencies in psychosocial care across the population of U.S. nursing homes. Efforts to link the provision of social services with psychosocial care quality should be guided by an understanding of how delivery of psychosocial care is impacted by market forces surrounding the facility environment, and how the organization of services delivered within facilities influences psychosocial care quality.

STUDY AIMS

This study examines the relationship between facility service environments and psychosocial care quality across certified nursing homes in the U.S during 2003. To operationalize psychosocial care quality we use six OSCAR survey deficiency measures identified by an Agency for Healthcare Research and Quality (AHRQ) sponsored interdisciplinary expert panel. These deficiencies were nominated as those most reflective of psychosocial care provided by social services providers (Vourlekis et al., 2005):

- F-tag 243: Right to organize and participate in resident groups;
- F-tag 246: Nursing home policies that accommodate residents' needs and preferences;
- F-tag 319: Nursing home provides residents with appropriate treatment for mental or psychosocial problems;
- F-tag 320: Nursing home ensures that residents do not have avoidable decline in their psychosocial functioning;
- F-tag 251: Nursing home over 120 beds employs a qualified social worker on a full-time basis; and
- F-tag 250: Nursing home provides medically related social services.

Staffing and Psychosocial Care Quality

Psychosocial care delivered by social services providers includes coordinating admissions and resident adjustment to placement, ongoing assessment, care planning, and resource acquisition, implementing resident and family group interventions, ensuring resident rights are respected, assisting residents to complete advance care directives, and providing direct mental health services (Kruzich and Powell, 1995; Morrison et al., 2005). All certified nursing homes, regardless of size, must provide medically related social services but regulations only require facilities with more than 120 beds to employ social service providers deemed qualified by the Federal minimum standard. The minimum qualifications are (1) a bachelor's degree in social work or human services, including but not limited to sociology, education, rehabilitation counseling and psychology; and (2) 1 year of supervised social work experience in a health care setting working directly with individuals (U.S. Department of Health and Human Services, 1998).

Some States have enacted stronger regulations for social service provider qualifications, training, staffing ratios, and/or requirements for delivering aspects of psychosocial care such as resident assessment and care planning. Twenty States exceed Federal guidelines in some form and there is wide variation between States in the specificity and stringency of their regulations (University of Minnesota, 2007).

PSYCHOSOCIAL CARE QUALITY

Quality of care in nursing homes is recognized as a complex multidimensional and value-laden construct linked with resident quality of life (Kane et al., 2003).

Significant efforts in recent years have yielded a set of quality measures (QMs) designed to allow comparisons across facilities using resident assessment data. Two QMs, the percentage of residents who become depressed and the percentage of short-stay residents with delirium have been proposed as reflective of psychosocial care quality (Vourlekis et al., 2005). However, overall, the quality measures have been deemed inadequate to capture the quality of life aspects of psychosocial care and restrictive in their focus on the prevention of problems instead of the promotion of high quality. Some of these limitations arise from characteristics of the Minimum Data Set (MDS) 2.0 measures themselves. New quality of life measures proposed for MDS 3.0 will provide an opportunity to expand QMs so they represent a broader range of psychosocial issues and gather data through resident report (Arling et al., 2005).

Adequate psychosocial care has been associated with reduced use of anti-psychotic medications, lessened behavioral disturbances, and improvements in depression among nursing home residents (Fossey et al., 2006). In a review of 11 studies, Gaugler, Anderson, and Holmes (2005) identified greater family involvement in care, improved interaction between family members and residents, reduced conflicts between family members and staff, and increased provision of socioeconomic support by family members as benefits of family focused psychosocial care.

In the early 1990s a proposed set of clinical indicators for psychosocial services were recommended by a national sample of social service providers in nursing homes. Selected indicators were process-oriented tasks emphasizing assessment, care planning, and family involvement. Outcome indicators included resident satisfaction and amelioration of problems

(Vourlekis et al., 1995). This set of indicators is consistent with professional guidelines, such as those established by the U.S. Department of Veterans Affairs (VA) for social work services in long-term care (U.S. Department of Veterans Affairs, 2007), and with evaluations of resident, administrator, and provider perceived social service roles and functions (Greene et al., 2005).

FACILITY SERVICE ENVIRONMENTS

Ownership, Staffing, and Quality

The majority of nursing home residents in the U.S. reside in for-profit facilities (Zinn et al., 2007). For-profit facilities provide lower care quality than non-profit homes and receive greater and more serious deficiency citations (O'Neill et al., 2003; Harrington et al., 2001). Lower staffing levels are associated with more care and quality of life deficiencies (Harrington et al., 2000).

Chain Membership

Major corporations have become a dominant force in the nursing home industry. In metropolitan areas, chain affiliated nursing homes comprise 57 percent of the nursing home market (Zinn et al., 2007). Chain membership is related to increased facility deficiency citations (Harrington et al., 2001).

Payer Status

Medicaid pays for 70 percent of nursing home bed days and is responsible for 50 percent of all nursing home expenditures (Feng et al., 2006). Higher rates of health related deficiencies are found in facilities with high concentrations of Medicaid residents (Harrington et al., 2000). Medicaid

environment. ARF is a national county-level database containing measures of health resource information and demographic data integrated into a single database from several sources. Single variables in the ARF database are not collected every year. The 2000 ARF data used in this study represents the closest year available to measure the study variables.

OSCAR is the national nursing home deficiency annual surveillance system for the U.S. that includes all facilities federally certified for Medicare and Medicaid, except VA facilities or those located in the trust territories and Puerto Rico. Since 2003 no significant revisions to Federal legislation impacting the aspects of psychosocial care examined in this study or alterations in the OSCAR system have been implemented, so it is reasonable to assume deficiency data collected during the year 2003 would be similar to deficiency data collected more recently. OSCAR contains three areas of information: (1) facility characteristics, including categories of social services staffing; (2) resident census and conditions; and (3) deficiency citations based on the yearly survey.

Data Cleaning

Data were cleaned to eliminate extreme outliers and unreasonable numbers using recommended techniques. Facilities in Puerto Rico, the U.S. territories, and Washington, DC, were excluded from analysis because there are a small number of OSCAR surveys from these locations (Harrington 2000; Intrator et al., 2005; Mueller et al., 2006). If facility data had duplicate identifiers, the most recent survey data were used; if the dates of the surveys were identical, one was randomly selected (Castle, 2000). Facilities reporting more residents than beds, less than 15 residents, or more than 100 percent

occupation rate were excluded (Harrington et al., 2000, Mueller et al., 2006). The 2003 OSCAR data set contains surveys of 16,323 nursing homes. After data cleaning, 14,184 nursing homes remained in the study, representing 87 percent of the original number of nursing homes in the database.

Dependent Variables: Psychosocial Care Quality

The dependent variables for the study are psychosocial care quality that is measured by the presence or absence of any of six (previously described) psychosocial care survey deficiencies in the OSCAR database. The total number of deficiencies (range 0-6) for a facility is used as the value of the dependent variable. Because only a small number of nursing homes actually were given more than two deficiency citations, we combined the values of the dependent variable into three categories: 0, 1, or 2 to 6 deficiencies.

Independent Variables

Chain affiliation, the percentage of facility residents funded by Medicaid, and resident acuity were treated, respectively, as independent variables in the first three hypotheses. Ownership is a categorical variable that contains for-profit, non-profit, and government status, with 0 representing non-profit ownership, and 1, 2 representing government and for-profit ownership respectively. Percentage of Medicaid residents is measured by the ratio of the number of residents with Medicaid payment versus the total number of residents. Resident acuity represents the severity of residents living in nursing homes, reflecting both activities of daily living and health status measures. Resident acuity is a weighted case-mix index developed by the Cowles Research Group with

possible scores ranging from 0-38. Items included in the index are the [proportion of residents totally dependent at eating X 3] + [proportion of residents requiring the assistance of one or two staff with eating X 2] + [proportion of residents who are either independent or require supervision eating] + [proportion of residents totally dependent at toileting X 5] + [proportion of residents requiring the assistance of one or two staff with toileting X 3] + [proportion of residents independent or requiring supervision with toileting] + [proportion of residents totally dependent at transferring X 5] + [proportion of residents requiring the assistance of one or two staff with transferring X 3] + [proportion of residents independent or requiring supervision with transferring] + [proportion of residents who are bedfast X 5] + [proportion of residents who are chairbound X 3] + [proportion of residents who are ambulatory] + [proportion of residents receiving respiratory care] + [proportion of residents receiving suctioning] + [proportion of residents receiving intravenous therapy] + [proportion of residents receiving tracheostomy care] + [proportion of residents receiving parenteral feeding].

The independent variable for the fourth hypothesis is State category in terms of minimum Federal regulations for social services in nursing homes. As shown in Table 1, using the University of Minnesota's (2007) Nursing Home Regulations Plus categorization of State regulations

for social services, we divided facilities into two groups based on whether the facility is located in a State that exceeds (20 States) or mirrors (30 States) Federal regulations for social services staffing. We defined exceeding regulations on the basis of requiring higher staffing levels (full time equivalents [FTEs] or ratios of qualified social service providers to residents), or by requiring higher credentials for any social service provider, qualified or not. This variable is measured according to whether State nursing home regulations only adhere to the minimum Federal requirements for social services in nursing homes. It is treated as a dummy variable with 1 indicating the facility is located in a State exceeding the minimum regulations, and 0 indicating the facility is located in a State adhering to the Federal minimum regulations.

Control Variables

To study the hypothesized relationships, other organizational and market characteristics that related to psychosocial care quality were controlled in the analysis. Controlled organizational factors include nursing home size (total number of beds), hospital affiliation (hospital based versus non-hospital based), resident acuity index, occupancy rate, and qualified social service and mental health service staff.

These two staffing variables are measured as the number of staff per resident

Table 1
States Exceeding and State Mirroring Federal Guidelines According to University of Minnesota Nursing Home Regulations Plus

States Exceeding Federal Guidelines

Alabama, Alaska, Arkansas, California, Colorado, Connecticut, Hawaii, Idaho, Kansas, Maryland, Massachusetts, Minnesota, Nebraska, New Jersey, New York, Oklahoma, Oregon, Rhode Island, West Virginia, Wisconsin

States Mirroring Federal Guidelines

Arizona, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Mississippi, Michigan, Missouri, Montana, Nevada, New Hampshire, New Mexico, North Carolina, North Dakota, Ohio, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, Wyoming

SOURCE: University of Minnesota: *Nursing Home Regulations Plus*, 2007.

per day. To be comparable to the literature on staffing, the FTE was transformed to hours per resident day, using the following formula: $FTE \times 70 / 14 / \text{number of total residents}$. OSCAR FTE staffing includes full-time, part-time, and contract staff.

Two market contextual factors were also controlled in the models: market competition and market demand. Market competition was measured by the Herfindahl-Hirschman Index and calculated as: $H-H \text{ index} = \sum_{i=1}^n (\text{number of beds in a nursing home} / \text{total number of beds in a county})^2$, where i is number of nursing homes in a county. Higher value of the H-H score indicates less competition. Market demand was measured by the percentage of people 75 years or over in the county where a nursing home is located.

Analysis

Descriptive analysis was first used to summarize the sample and study variables. A proportional odds model (POM), one type of multinomial logistic regression model, was developed to test the four hypotheses all together. We used POM because: (1) the dependent variable in this study is a categorical variable with three values (0, 1, 2); (2) we assess the impacts of four independent variables on psychosocial care quality as specified in the hypotheses; and (3) other organizational and market factors needed to be controlled in the model while we tested the hypotheses.

To evaluate the influence of facility ownership, payer mix, resident acuity, and State location, we used a POM, which is a fixed effects model. We used the score test to examine the assumptions of POM models and used the Pearson goodness-of-fit test to assess the performance of the model. Odds ratios and their statistical significances from the POM were used to assess

the impacts of the hypothesized variables. Because POM models multiple cumulative logits, it produces one odds ratio for each independent variable in the model. If an odds ratio is more than 1, it indicates a positive relationship between the independent variable and the dependent variable psychosocial care quality. On the other hand, if an odds ratio is smaller than 1, it indicates a negative relationship. The statistical significance level was fixed at 0.05 and the model results were produced by using SAS[®] software.

Beside main effects, possible interactions between independent variables were examined in the POM. Resulting effects with statistical significance are reported in the results section.

RESULTS

Descriptive statistics of study variables are presented in Table 2. Facilities averaged 112 beds with an occupancy rate of 83.7 percent. Among them, 38.78 percent of facilities were located in the States that exceeded the minimum social service provider requirements. 85.43 percent of nursing homes did not have a single deficiency citation regarding psychosocial care while 254 of them (approximately 2 percent) received two or more deficiency citations. The breakdown of the frequencies and percentages for each deficiency category is presented in Table 3. It indicates that, overall, few deficiencies are cited. Failure to accommodate resident needs and preferences, followed by failure to provide the required medically related social services, are most frequent.

Table 4 presents results of the proportional odds model. The p value of the score test is more than 0.05 which indicates the model meets required assumptions for POM. The goodness-of-fit test suggests that the POM model fits the data

statistically significant. It suggests that having a higher percentage of Medicaid residents and having more severe residents is associated with more psychosocial care deficiencies. Therefore, both hypotheses two and three are supported. In addition, the percentage of Medicaid residents has the largest odds ratio among all predictors. It indicates that for 1 percentage increase of Medicaid residents in a nursing home, we may expect more than 1 percent increase in the odds of having more psychosocial care deficiencies.

State location, a variable representing whether a State exceeds minimum Federal regulations for social services staffing, becomes statistically significant in the model by controlling other facility and market factors. The odds ratio of State location is 1.350, indicating that facilities located in

States exceeding minimum Federal regulations for social services are more likely to be cited for psychosocial care deficiencies than facilities located in States only mirroring the minimum Federal regulations. Thus, hypothesis four is not supported.

The POM model results show that qualified social service and mental health staffing is negatively associated with psychosocial care deficiencies and these relationships are statistically significant. The greater the number of qualified social services and mental health services staff the higher the likelihood of quality psychosocial care. Among other statistically significant variables, facility size, hospital ownership and market competition show a negative association with psychosocial care deficiencies.

Table 4
Results of Proportional Odds Model of Staffing, Facility Factors and Psychosocial Care Deficiencies

Variables	OR (95 Percent CI)
Categorical Variables	
Chain Membership Yes (Versus No)	1.310 (1.184, 1.448) *
Non-Profit Ownership (Versus For-Profit)	0.722 (0.636, 0.819) *
Government Ownership (Versus For-Profit)	0.614 (0.473, 0.797) *
Hospital Based Yes (Versus No)	1.324 (1.054, 1.664) *
State Location 1 (Versus State Location 0)	1.350 (1.224, 1.488) *
Continuous Variables	
Percent of Medicaid Residents	2.058 (1.946, 3.232) *
Facility Size (Total Number of Beds)	1.002 (1.001, 1.002) *
Occupancy Rate	0.839 (0.615, 1.146)
Qualified Social Service Staff	0.132 (0.050, 0.349) *
Mental Health Services Staff	0.024 (0.001, 0.571) *
Acuity Index	1.066 (1.034, 1.099) *
Market Competition	0.480 (0.376, 0.612) *
Percent of 75 or Over Population in County	0.071 (0.006, 0.803) *
Score Test for POM Assumption	
Chi-Square (df) = 22.213 (13)	
p-Value = 0.052	
Pearson Goodness-of-Fit Tests	
Chi-Square/df = 0.9608	
p-Value = 1.000	

* Statistically significant at 0.05 level.

NOTE: N = 14,184. OR is odds ratio. CI is confidence interval.

SOURCE: Zhang, N., Gammonley, D., Paek, S., and Frahm, K. , University of Central Florida, 2009. Data from 2003 Online Survey Certification and Reporting (OSCAR).

DISCUSSION

Our study increases understanding of psychosocial care quality in nursing homes by examining how staffing and facility service environments contribute to the receipt of psychosocial care deficiencies. Only about 15 percent of nursing homes in 2003 were cited for any psychosocial care deficiency. Failure to accommodate resident needs and preferences was the most frequently cited followed by failure to provide the required medically related social services.

Our findings supported the proposed associations between facility service environment, staffing factors, and psychosocial care quality. Staffing, chain affiliation, for-profit ownership, resident acuity, and payer status contribute to psychosocial care quality. High proportions of residents funded by Medicaid were associated with poorer quality. Not-for-profit and government-owned facilities, and facilities located in more competitive markets, had better quality. Staffing by both qualified social services providers and mental health services staff was associated with greater psychosocial care quality.

State Regulations and Staffing

Being located in a State with higher standards for the credentials or training of qualified social services providers was associated with an increased number of psychosocial care deficiencies, but only after controlling for other facility and market factors. Being located in a State exceeding the minimum Federal regulations does not necessarily result in more qualified social services staff for each facility in a State because the Federal minimum regulations only apply to large nursing homes (121+ beds). While facilities located in States exceeding minimum qualifications

may implement mixed levels of psychosocial care it is also possible that these higher standards create greater awareness of psychosocial care among OSCAR surveyors within these States. States exceeding Federal minimum standards may also have developed higher standards for social services staffing levels or provider qualifications in response to previously identified problems in psychosocial care quality.

Facility Service Environments

Psychosocial care may differ across facilities based on resident case-mix. Being a hospital-based facility was associated with more psychosocial care deficiencies. Frequent resident turnover places greater emphasis on assessment and care planning devoted to ensuring continuity of care as residents transition in and out of sub-acute hospital-based care. Bonifas (2007) reported greater psychosocial care deficiencies when social service directors perceived that their facility placed primary emphasis on individualized care planning and assessment tasks. Psychosocial care in hospital-based facilities, because of more frequent resident assessment and care planning needs, may be more complex. Psychosocial care provided in facilities with more long-term Medicaid funded residents may require greater attention to interventions emphasizing prevention of deterioration in mental health status, protection of resident rights, and accommodating needs and preferences.

More competition between facilities was associated with fewer psychosocial care deficiencies in 2003. Because the presence of qualified social services and mental health service providers was also associated with fewer psychosocial care deficiencies, perhaps a link between market competition and staffing exists? The cost of hiring more qualified social service

or mental health providers may be more acceptable to facilities located in communities where there is stronger competition between nursing homes. Facilities in competitive markets have been shown to be more likely to hire nurse practitioners and physician assistants as a strategy to promote quality (Intrator et al., 2005).

Study Limitations

Causal linkages between staffing and quality cannot be made from these analyses because staffing and quality are endogenous in the nursing home. OSCAR staffing measures do not easily capture who delivers psychosocial care. Services defined under the care to be delivered by mental health service staff include the administration of psychotropic medicines (a service that could also be delivered by nurses) along with counseling and psychotherapy. OSCAR staffing measures make it difficult to gauge the respective psychosocial care delivered by qualified social service providers versus mental health service staff. Moreover, OSCAR staffing definitions also designate qualified activities professionals as responsible for meeting resident psychosocial care needs.

Three of the six indicators (F250, F251, F246) represent staffing resources or policy implementation under primary control of the facility management while the other three more closely reflect direct care activities that might be provided by social service or mental health service providers. We did not include scope and severity of the deficiency which may be an important factor. A broader array of indicators may be required to fully capture the breadth of quality of life and quality of care aspects of psychosocial care. Bonifas (2007), for example, has proposed a set of 30 OSCAR

deficiencies that could potentially reflect psychosocial care quality.

RECOMMENDATIONS FOR FURTHER ACTION

The limited number of psychosocial care deficiencies cited is cause for concern as it reflects a lack of attention to an important dimension of resident care. OBRA 1987 requires facilities to provide social services in order to help residents attain or maintain “. . .the highest practicable physical, mental and psychosocial well-being.” In our study 6 percent of facilities failed to provide the required medically related social services.

Facilities located in more competitive environments had better psychosocial care quality in our study. Identifying how improvements in psychosocial care provide a competitive advantage to facilities will be an important next step given trends of a declining nursing home census and growth in the number of special care units.

Linking the psychosocial care provided specifically by qualified social service providers, in particular facility service environments, will require consideration of the unique contributions of assessment, care planning, and intervention, along with the respective contributions of several categories of nursing home staff. Future studies should incorporate resident-level data, such as indicators derived from MDS, utilize multi level models, and examine longitudinal data.

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