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The use of contract licensed nursing staff in U.S. nursing homes.

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The Use of Contract Licensed Nursing Staff in U. S. Nursing Homes

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Abstract

The extent to which nursing homes rely on the use of contracted licensed staff, factors associated with this staffing practice, and the resultant effect on the quality of resident care has received little public attention. We merged the On-line Survey Certification and Reporting System database with the Area Resource File from 1992 through 2002, and regressed organizational and market level variables on the use of ≥5% contract full-time equivalent (FTE) registered nurses (RN) and licensed practical nurses (LPN). Since 1997, the proportion of facilities using ≥5% contract FTE RNs and LPNs more than tripled. Use of contract nurses was associated with more deficiency citations, characteristics of poorer facilities and tight labor markets. Nursing homes increasingly rely on contract nurses. The failure of nursing homes to attract and retain a competent, stable workforce creates a vicious cycle of nursing home staffing practices, which may lead to decline in quality of care.

Introduction

Nursing homes have long suffered from the lack of an adequate and stable supply of licensed nursing staff. Nursing home staffing vacancies, many of which result from continuously high turnover rates and low job satisfaction, are traditionally difficult to resolve (Wunderlich, Sloan, and Davis 1996; Institute of Medicine 2001). Nursing homes are unattractive worksites for licensed nurses, due in large part to lower salaries, higher burden of administrative duties, and a general lack of prestige among colleagues and society (Wunderlich, Sloan, and Davis 1996; Sherer July/August 2001). The current nursing shortage, which is predicted to be severe and of long duration (Steinbrook 2002), particularly threatens the quality of care in nursing homes (Sherer July/August 2001).

One solution to institutional staffing shortages is the use of temporary or contract nursing staff. This type of staffing is costly, disrupts continuity of care (Guillard 2000), and may also contribute to poor patient care. Indeed, the use of contract nursing staff in nursing homes reinforces the impression that nursing homes provide poor quality care.

New Contribution

Improving the quality of nursing home care relies heavily on the nursing staff available to plan and deliver around-the-clock care. Although many have studied nursing home staffing patterns (Harrington et al. 1998; Harrington, Kovner et al. 2000; Harrington, Zimmerman et al. 2000), none have considered implications associated with the use of contract licensed staff. Contract staff often receive higher wages and have greater flexibility with working hours and sites than their permanent staff counterparts. Intuitively, licensed nurses would prefer these more lucrative contract arrangements. However, the use of contract licensed staff may increase institutional costs and negatively influence the quality of care.

The lack of empirical data related to contract licensed staff in nursing homes deserves attention. The purpose of this paper is to characterize the extent to which nursing homes use contract registered nurses (RN) and licensed practical nurses (LPN); to determine what kinds of nursing home market situations foster the use of contract RNs and LPNs; and to relate use of contract nursing staff to quality of care in nursing homes indicated by health deficiency citations.

Background

Nursing home staffing crisis

The Institute of Medicine identified that nursing home care could be improved by increasing registered nurse staffing, but stopped short of recommending minimum staffing levels (Wunderlich, Sloan, and Davis 1996). Some experts maintain that minimum staffing levels are necessary for quality care (Harrington, Kovner et al. 2000). Federal policy sets mandatory guidelines for basic staffing levels in nursing homes to ensure that sufficient nursing staff are available to provide required care (Decker, Dollard, and Kraditor 2001). These guidelines require a licensed charge nurse on every shift, an RN on staff at least one 8-hour shift each day of the week, and a full-time RN Director of Nursing, who may serve as the charge nurse in smaller facilities. At this writing, thirty-seven states mandate staffing levels beyond the federal guidelines (Health Care Financing Administration 2000; Center for Medicare & Medicaid Services 2002). Policies that impose minimum staffing levels place further burden on homes to provide defined numbers and types of staff and may force nursing homes to increase their use of contract nursing staff.

Other external factors, such as the widespread nursing shortage (Steinbrook 2002), may influence nursing home staffing decisions. Although the major focus of concern recently has been on the lack of hospital registered nurses, the growing shortage of RNs threatens nursing homes as well (McKeon 2001; Decker, Dollard, and Kraditor 2001). Contributing to the shortage are a lack of specialty training, the aging nursing workforce, declining enrollment in nursing schools, and the decreased attractiveness of health care careers. Another important contributor to the shortage in hospitals is increasing job dissatisfaction among RNs (Aiken et al. 2001). This may also apply to RN staff in nursing homes.

The National Sample Survey of Registered Nurses (Spratley et al. 2001) reported that only 65% of registered nurses employed in nursing homes were satisfied with their jobs. More importantly, job satisfaction among those working as staff nurses in nursing homes was lowest of all work settings. Lower levels of job satisfaction have been linked with increased likelihood of turnover (Pan et al. 1995). A recent survey reported annualized turnover rates for nursing home staff RNs and LPNs at 56.2% and 53.6%, respectively (American Health Care Association 2002). The complex interplay of mandated staffing levels, professional workforce shortage, dissatisfied workers, and licensed staff turnover points to a potentially escalating trend of using temporary workers to meet institutional needs.

Nurse Contracting

Contracted nursing staff can be used to contain costs and to fill staffing vacancies. Commonly known as agency nurses, contract nursing staff are thought to contain costs by allowing flexibility in scheduling, decreasing the use of over-time for regular staff, and reducing the need to create more permanent positions (Strzalka and Havens 1996). Staffing demands created by emergencies, holidays, and unscheduled absences may require the use of contract nursing staff. During times of workforce shortages, contract nursing staff are used to ameliorate conditions caused by permanent positions that go unfilled. Recent concern about a widespread nursing shortage led the American Organization of Nurse Executives to survey 693 hospital nurse executives (American Organization of Nurse Executives and the HSM Group 2002). More than half (54%) reported using contract staff. No comparable recent data were found for the nursing home industry, although one anecdotal report indicates that following a merger a new corporation discovered two facilities spent $150,000 annually on contract staff and a Delaware

survey found that 100% of nursing homes used contract staff (Hegland 1992). Nevertheless, the use of non-permanent staff across settings may be a pervasive issue.

Institutions usually contract temporary nursing personnel through staffing agencies (Bloom, Alexander, and Nuchols 1997). Agencies assume responsibility for credentialing these workers. Agencies may also assess work history and technical competencies. Depending on individual state laws, agencies may perform drug screens or criminal background checks as well. Many speculate about the quality of contract nurses and the oversight they receive. Contract workers' lack of familiarity with patients and organizational policies and procedures are frequently cited as problems associated with relying on these types of staff (Sheridan, Bronstein, and Walker 1982; Strzalka and Havens 1996; Bloom, Alexander, and Nuchols 1997; Louwe and Kramer 2002). Professional guidelines regarding principles for nurse staffing in all settings were recently issued (American Nurses Association 1999). Among these were recommendations to document competencies expected of contracted nurses and to conduct ongoing evaluation of the use of supplemental staffing, thus casting doubt on the quality of care provided and management practices that rely on contracted staff.

Hospital staffing studies direct some attention to the use of temporary staff. A study of occupational exposure to blood revealed that nurses working temporary assignments were more likely to sustain injuries from needles or other sharp instruments (Aiken, Sloane, and Klocinski 1997). Temporary assignment of nursing staff to a burn unit was significantly associated with spread of Methicillin-resistant Staphylococcus aureus among patients (Arnow et al. 1982). Another study evaluated the quality of care on one unit by comparing documentation by unit-hired, float pool, and contract nurses on clinical quality indicators (Strzalka and Havens 1996). The use of contract RNs was associated with increased non-personnel hospital costs calculated as

operating expenses minus wages and benefits (Bloom, Alexander, and Nuchols 1997). Limited empirical information about the quality of care provided by contracted staff in nursing homes exists. Studies of nursing home staffing and its relationship to quality fail to differentiate permanent and contract staff (Harrington, Zimmerman et al. 2000; Harrington et al. 2001; Harrington et al. 1998). Although a report to Congress contained case studies of nursing home staffing that included attention to the use of contract staff (Louwe and Kramer 2002), the report noted that care provided by contracted staff appeared to depend on the overall quality of care provided by facility staff. This contradicted the regular staff's commonly held perspective that contracted staff contributed to poor quality care.

Based mainly on hospital literature, it appears that care provided by contract staff is negatively perceived by on-staff peers, may be a marker for overall nursing care quality, leads to increased workplace injury and spread of infection, and uses more institutional resources. In light of the inattention given to licensed nurse contracting in nursing homes and the potential quality ramifications resulting from the use of this type of personnel, a careful examination of the issue is necessary. We, therefore, provide a broad overview of the use of licensed contract staff in nursing homes.

Conceptual Model

The conceptual framework guiding this analysis is resource dependency theory. Resource dependency theory characterizes the environment in terms of other organizations that the focal organization engages in exchange relationships (Thompson 1967; Pfeiffer and Salancik 1978). Most organizations depend on the resources traded in these exchanges for survival, and they will make the necessary accommodations to guarantee exchange relationships with other organizations. Thus, organizational decision-making, including staffing decisions, may reflect accommodations intended to secure a stable flow of resources from the environment (Oliver 1990). For example, nursing homes depend on sources of referral, such as hospital discharge planners and case managers, in order to secure a key resource, nursing home admissions. However, admission referrals are conditioned on the facility's reputation for providing a level of care adequate to meet the needs of the potential resident. Contributing to this reputation is the maintenance of adequate staffing levels, either through hiring nurses on a permanent basis or through contractual arrangements.

Differences in operating environment and in organizational characteristics will mediate the need and the ability to respond to key constituents. According to theory, dependency on external constituencies is not problematic if resources are sufficient. However, environments vary with respect to munificence, that is, the abundance of resources. The lower the environmental munificence, the more difficult it is to obtain needed resources to make infrastructure investments, such as (in the case of nursing homes) hiring permanent staff to meet minimal staffing levels. This suggests that nursing facilities in low munificence environments will be more likely to contract for staff.

Munificence is a function of competition and regulatory stringency. The more competitive the environment, the greater the demand on a shared pool of resources (in this case licensed nursing staff) and the more critical the ability to accommodate to the needs of key constituents (Pfeiffer and Salancik 1978; Ulrich and Barney 1984). Similarly, more stringent regulatory requirements may make resource acquisition problematic. Thus, the least munificent environments have high regulatory stringency and a scarcity of licensed staffing.

With respect to licensed nurse scarcity, while it is true that the nursing shortage affects all health care service sectors, because nursing homes are relatively unattractive places to work compared to hospitals, they experience disproportionate difficulties in hiring and retaining full-time licensed staff. This in turn may create greater dependence on the use of contract licensed staff. Low munificent environments will have the least investment in infrastructure. Thus, we hypothesize that the lower the supply of licensed nurses in the local market, and the greater the competition for that scarce resource from hospitals and other nursing homes, the more likely that facilities will use contract licensed nurses. In addition, to the extent that nursing homes compete for residents on the basis of quality, competition among nursing facilities, controlling for nurse supply, will result in greater use of contract licensed staff. On the other hand, in markets with higher rates of unemployment, there will be fewer job options for licensed nurses, making job retention a priority. Higher rates of unemployment should, therefore, be associated with lower turnover of permanent licensed nursing staff and hence, lower dependence on contract licensed nursing staff. Finally the implementation of the Prospective Payment System for Skilled Nursing Facilities (PPS for SNFs), because it provides incentives to increase the level of case mix acuity and hence the demand for skilled nursing care, should also be associated with greater use of contract licensed staff.

Organizational characteristics play a mitigating role in attempts to achieve a favorable position within the operating environment. While one hospital study suggests that the use of contract nurses increases non-personnel operating costs, in the short run it allows for greater flexibility by avoiding the costs associated with recruiting and hiring permanent staff. We hypothesize facilities that operate on a for-profit basis, that are chain members and that have a higher proportion of Medicaid recipients in overall resident census (implying a poorer revenue mix) may be inclined to pursue short-term cost advantages through the use of contract licensed staff. On the other hand, facilities with a higher proportion of private pay residents have a more favorable revenue mix, and the additional resources this provides may allow them to hire permanent staff rather than to rely on contract licensed staff. Finally, controlling for nurse supply, higher case mix acuity will increase reliance on contract licensed staff to maintain minimum staffing levels.

Data Definitions and Sources

Data and Sample

The On-line Survey Certification and Reporting System (OSCAR) files served as the primary source of data. The OSCAR includes organizational and aggregated resident data routinely collected as part of the annual licensure and certification process. We compiled a longitudinal data file from 1992 through 2002 containing 176,509 OSCAR survey records from 18,544 freestanding and hospital-based nursing facilities in urban and rural counties nationwide. We then merged the longitudinal file with the Area Resource File (ARF) for the same years (1992-2002) matched by county indicators to obtain county level market data.

Collected and maintained by the Centers for Medicare and Medicaid Services (CMS), the OSCAR data are used to certify whether Medicare and/or Medicaid participating nursing homes are in compliance with federal regulatory requirements. Certification is achieved through routine facility surveys, which the CMS contracts with states to conduct. Nursing homes are subject to unannounced standard surveys, on average about once a year but no later than 15 months after the date of the previous standard survey.

Upon receiving current provider records from CMS, we linked these records over time for each facility to create a longitudinal OSCAR file. A facility's provider number changes every time it changes ownership or certification category, or terminates from the certification process. We used information on facility name, address, size, associated provider numbers and dates to determine whether survey records under different provider numbers actually refer to the same facility, and if so, assigned them the same facility identifier. This way, we created a unique, longitudinal identifier for each facility in OSCAR. In the cases of facility terminations, the existing data did not provide detailed enough information (e.g., specific reasons for termination,

length of termination, and whether the facility actually closed down during the termination or not) to determine whether the change resulted in a new facility, or the facility remained essentially the same place under a new number. Nevertheless, evidence to date suggests that our decision rules implemented in the current procedure have worked remarkably well, despite the potential bias toward assuming that length of closure is of relatively little importance compared to name/address information.

We restricted our analysis to freestanding nursing facilities, both urban and rural. We excluded surveys for facilities in Alaska, District of Columbia, Hawaii, and Puerto Rico, due to the small number of cases in these states/entities (N=226 surveys from 51 freestanding facilities). We excluded an additional 594 facilities that changed freestanding or hospital-based status at any time between 1992 and 2002. This resulted in a final sample of 153,015 surveys from 15,717 distinct freestanding nursing facilities located in 822 urban counties and 1,976 rural counties. Approximately 25% of facilities changed hands at least once over the study period (1992-2002). Annually, about 3% of facilities experienced an ownership change. Relatively few facilities, approximately 1% per year, exited OSCAR over the study period due to termination from Medicare/Medicaid programs. We conducted sensitivity analyses with and without those terminated facilities and found that facility dropouts did not compromise the results reported here. Thus, all available surveys up to termination of those facilities were included in the analysis.

Variable Specification

We separately examined two dependent variables, the use of contract registered nurses (RN) and contract licensed practical nurses (LPN). Given that substantial use of RN and LPN

contracting is rare, for each we defined a dichotomous measure to indicate whether a facility used 5% or more contract RNs or LPNs out of total Full-Time Equivalent (FTE) RNs or LPNs.

According to OSCAR instructions and definitions with regard to facility staffing, facilities are asked to report the specific number of hours worked providing various services over the recent two-week period, separately by hours worked by full-time, part-time, and contract staff. The contract category includes individuals under contract (e.g., an RN) as well as organizations under contract (e.g., an agency to provide RNs). In the latter case, hours worked for the individuals provided are recorded. Based on reported staff hours, the number of FTE staff of a particular type can be derived, assuming full-time to be 35 hours worked per week.

Overall, the use of contract nursing staff is relatively rare. In addition, the distribution of % contract RNs and % contract LPNs is extremely skewed. Therefore, we categorized the dependent variable. There are alternative approaches to categorization, of course. For example, a lower percentage (than 5%) can be used as the threshold; a dichotomy for having any versus none contract staff may also be considered; or, it is possible as well to specify a multinomial outcome. Our primary interest in this paper, however, is to look at those "heavy users" of contract nursing staff, i.e., those with 5% or more of their nursing staff being on-contract.

Facility level variables. Dichotomous variables included for-profit status and chain membership. We also included an interaction term to test the effect of being for-profit and non-chain. We created two variables to represent payer source mix related to reimbursement through Medicaid and private pay using the top decile of the aggregate distribution for each. Therefore, a facility was determined to have a high proportion of Medicaid residents if the proportion of Medicaid residents in the total resident census exceeded 91% and a high proportion of private pay residents if the proportion of private pay among all residents exceeded 55%. Low occupancy

rate for facilities was defined as below 85% of capacity. Facility size was measured by the total number of beds, centered at the aggregate mean, 109, with increments of 10 beds. We dichotomized these variables because we expected some threshold effects. This also eases interpretation of results in the form of odds ratios. The cutoff points for percent Medicaid (91%) and percent private pay (55%) represent the upper decile values in the aggregate (over 1992-2002) distribution of the respective variable. The cutoff point for low occupancy rate (85%) corresponds roughly to the lower quartile value of the aggregate distribution of facility occupancy rate. We focused on just those extreme cases of these variables.

Case mix complexity was measured by three indicator variables: (1) facilities providing rehabilitation services to a higher volume of residents, that is having 35 or more rehabilitation residents and 30% or more residents receiving rehabilitation services, or having 20 or more rehabilitation residents and 50% or more residents receiving rehabilitation services (Berg, Intrator, and Lemon 2001; Zinn et al. 2003); (2) facilities with any residents receiving IV therapy; and (3) facilities with any residents receiving tracheotomy care (Zinn, Mor, and Gozalo 2000). We categorized some of the continuous variables given our belief that their relationships to the use of contract nursing are not linear but may be best expressed by the presence of a threshold effect.

Market level variables. We selected the following variables to characterize the market environment in which a facility operates (i.e., county), all centered at their aggregate mean with proper increments: overall unemployment rate, centered at 6%; total number of nurses (RNs and LPNs combined) per 1000 population, centered at 4; total number of nursing home beds per 1000 population aged 65 or older, centered at 68 with increments of 10 beds; total number of hospital beds per 1000 population, centered at 4; average number of empty nursing home beds, centered

at 11 with increments of 10 beds; Herfindahl Index, centered at 0.46 (mean) with increments of 0.32 (one standard deviation); and an indicator for urban location. The Herfindahl Index is a measure of market concentration of nursing home beds, standardized to range 0-1. The higher the index, the greater extent of market concentration, and hence, less competition.

In addition, we included a dummy variable, indicating whether the survey date was post July 1, 1998 (when the Prospective Payment System [PPS] took effect), to determine if there was a PPS effect on the use of contract licensed nursing staff. We also included a variable for calendar time in years from January 1, 1992 to the current survey to control for unmeasured changes that occurred over time. Furthermore, we controlled for the state where a facility is located by specifying 47 dummy variables, with Alabama as the reference state, to account for unobserved, state-specific characteristics that may affect the use of contract licensed staff in nursing homes.

Because one of the key market variables, total number of nurses per capita in county, was not available in ARF until 1994, the multivariate analysis used data only for the period 1994-2002. A description of all variables included in the multivariate model, including their aggregate means and standard deviations, is provided in Table 1.

[Insert Table 1. about here]

Analytic Methods

Our approach was primarily descriptive. We first delineated the trend in the use of contract nursing staff in freestanding nursing facilities over the period 1992-2002. Next, we related contract nursing to quality indicated by the total number of health related deficiencies summarized from the OSCAR data. There is considerable variability across the states in the number of deficiencies and in how state inspection agencies determine specific deficiency citations (Office of Inspector General 1999) which limits the comparability of deficiencies among states. Thus we ranked all facilities within each state in each year by their total number of health deficiencies, and those ranked in the top quartile were identified as providing poor quality of care.

Finally, we conducted a multivariate analysis to examine the effects of various facility- and market-level factors considered relevant to facility leadership's choice to rely on contracting for more than 5% of their skilled nursing care needs. Specifically, using the XTGEE procedure available in STATA (Stata Corporation 2003), we estimated a Generalized Estimating Equation (GEE) model of the likelihood of using 5% or more contract licensed nursing staff, separately for RNs and LPNs. Because the outcome is dichotomous, the binomial distribution using the logit link function was specified. Unlike the conventional linear regression model, XTGEE properly accounts for within-group (here facility) correlations, which is suitable for analysis using cross-sectional time series data like OSCAR. In addition, the procedure allows specification of the commonly used Huber/White/sandwich estimator of clustered robust variance, which produces valid standard errors even if the within-group correlations are not as hypothesized by the specified correlation structure. In this analysis, an exchangeable or equal correlation structure

was assumed and the Huber/White robust variance estimator applied. The equation of the cross-sectional time series GEE model with a logit link function is given by:

$$\text{Ln}\ \{P_{it}/(1- P_{it})\} = \beta_0 + \beta X_{it}$$

Where P_{it} is the probability of using 5% or more licensed contract RNs (or LPNs) in facility *i* at time *t*, β_0 is the intercept, X_{it} is a vector of covariates at the facility and market levels as specified above, and β is a vector of parameter estimates for the effects of the covariates.

Results

Sample Characteristics

Descriptive statistics for selected facility level variables based on a cross section of the most recent OSCAR for each facility included in the analysis are provided in Table 2. Ten percent of facilities surveyed reported using ≥5% contract RNs, whereas 14% used ≥5% contract LPNs. Nearly three-quarters of the sample (73%) were proprietary and 55% were part of a chain. Less than 25% of residents paid privately for their care, while 66% had Medicaid as the primary source of payment. The overall occupancy rate in this sample was 84%. The mean number of residents per facility was about 91. The average ratio of FTE LPNs to RNs was 5:1.

[Insert Table 2. about here]

Facility Trends Using Contract Nurses

Figure 1 presents the proportion of facilities using 5% or more contract RNs and LPNs in each year between 1992 and 2002. As is apparent, contracting for over 5% of LPNs is somewhat more common than contracting for 5% or more of RN FTEs. The two figures move in parallel, with a drop between 1992 and 1996 and then a substantial upswing in both rates up to 2002. The gap between the use of contracted LPNs and RNs persisted and widened steadily as the overall use of contracted staff rose sharply from 1997 to 2002.

[Insert Figure 1. about here]

Quality of Care and Contract Nurses

Figure 2 displays the annual proportion of facilities in the top quartile of intra-state distribution of total heath deficiencies, by whether or not the facility used 5% or more contract nursing staff (RNs and LPNs combined). As can be seen, facilities employing a higher proportion of contract nurses (≥5% of total FTEs) fell disproportionately into the top quartile

ranks of health deficiency citations during annual survey and certification inspections. For each calendar year the differences between the two groups were statistically significant at the .05 level using Chi-square analyses.

[Insert Figure 2. about here]

Facility Characteristics and ≥5% Contract Licensed Staff

Table 3 displays results of the two XTGEE analyses for the likelihood of using 5% or more contracted FTE RNs and LPNs, respectively. For profit facilities were 33% less likely to use ≥5% contracted RNs and 45% less likely to contract for ≥5% LPNs ($p<.01$) than were non-profit facilities. Facilities with a high proportion of private pay residents were also less likely to employ ≥5% contract licensed RNs (OR = 0.88, $p<.05$). Chain membership increased the likelihood of using ≥5% FTE contract RNs (OR = 1.31, $p<.01$) and LPNs (OR = 1.21, $p<.01$). Facilities that were for-profit without chain membership were also more likely to use ≥5% contract RNs (OR = 1.24, $p<.01$) and LPNs (OR = 1.24, $p<.01$). Facilities with low occupancy rates were more likely to use ≥5% contracted RNs (OR = 1.24, $p<.01$) and LPNs (OR = 1.16, $p<.01$). Larger facilities were also more likely to employ ≥5% contracted RNs and LPNs (OR = 1.02, $p<.01$ and OR = 1.02, $p<.01$, respectively, relative to an increment of 10 beds above the mean). The availability of IV therapy was the only case-mix acuity measure that significantly increased the likelihood of empolying ≥5% contract RNs (OR = 1.09, $p<.01$).

Market Characteristics and ≥5% Contract Licensed Staff

Facilities located in counties with higher unemployment rates were less likely to use ≥5% FTE contracted RNs and LPNs (OR = 0.97, $p<.05$ and OR = 0.96, $p<.01$, respectively, relative to 1% increase in unemployment rate). The number of nursing home beds/1000 persons aged 65 years or older significantly reduced the likelihood of using ≥5% LPNs, while less significantly

for ≥5% RNs (OR = .96, p<.01 and OR = 0.97, p<.05, respectively, relative to an increment of 10 beds above the mean). For each increment of 10 nursing home bed vacancies above the aggregated county mean (11 empty beds), facilities were 9% more likely to employ ≥5% FTE contract LPNs (OR = 1.09, p<.01). A significant and negative effect of the Herfindahl Index on LPN contracting suggests that facilities in more competitive markets (i.e., less concentrated places) were more likely to use ≥5% contract LPNs.

Compared with rural facilities, urban facilities were significantly more likely to engage in contracting ≥5% RNs (OR =1.82, p<.01) and to contract for more than 5% of their LPN FTEs (OR = 2.02, p<.01). Consistent with Figure 1, after the introduction of PPS, facilities were substantially more likely to use ≥5% FTEs for both contract RNs (OR = 1.55, p<.01) and LPNs (OR = 1.39, p<.01). Although many time-varying facility and market characteristics were controlled for, a linear calendar time trend was still apparent with an increase of 13% in the odds of using ≥5% contract RNs and 16% increase in the odds of using ≥5% contract LPNs for every year.

[Insert Table 3. about here]

Discussion

Nursing homes appear to be contracting for licensed staff more and more as financial and workforce pressures have increased over the past decade. Between 1992 and 1996, contract licensed nursing staff use declined but it increased in 1997, with proportions tripling by 2000. Whether this trend was caused by the introduction of the prospective payment system (PPS) in nursing homes or was further complicated by the emergence of the nursing shortage is unclear. Nevertheless, it appears that both have influenced the manner in which nursing homes are staffed. Recent Health Resources and Services Administration survey results suggest that nursing homes are the least desirable work places for nurses to work (Spratley et al. 2001). This may also account for the dramatic increase in the use of contract licensed staff during the final years of the last decade.

No definitive studies to date support the common perception that contract nursing staff provide lower quality care. Our findings indicated that facilities that used a greater proportion of contract licensed staff (≥5%) were more likely to receive the worst quality deficiency ratings. More health deficiencies and staff instability would certainly reinforce the notion that nursing homes are not desirable work places for nursing staff. The use of contract licensed nursing staff in nursing homes is not random. It reflects regional (rural vs. urban) and market (unemployment rate, nursing home beds per capita aged 65 years and older) variation. In addition, the use of contracted staff reflects individual characteristics of nursing facilities. These are particularly evident in their proprietary status, size and occupancy rates, as well as in the reimbursement mix (Medicaid vs. private pay) of the facility's residents.

Economic motivations may underlie the decision to use contract licensed staff in U. S. nursing homes. The Balanced Budget Act of 1997 established a prospective payment system

(PPS) for nursing homes that modified payment for skilled nursing facility services. The effect of PPS on nursing home staffing decisions may very well be real. In times of economic uncertainty, organizations may desire to avoid new staffing obligations even if it results in temporary increases in labor costs (Zinn et al. 2003). In addition, proprietary nursing facilities are less likely to use ≥5% FTE contract licensed nursing staff, thereby avoiding higher labor costs associated with this type of worker. This finding suggests two possibilities. Rather than paying premium prices to complement their existing pool of licensed staff in situations of staff illness and vacancies or when bed occupancy fluctuates, proprietary facilities may be more willing to operate with fewer licensed staff on site. On the other hand, proprietary nursing homes may have resources that enable them to create better work environments, thus leading to a more stable workforce and less turnover as demonstrated in hospital staffing studies (Aiken et al. 2002; Aiken and Patrician 2000; Aiken, Smith, and Lake 1994). While there is little empirical evidence to suggest that the use of contracted licensed staff in nursing homes is more costly as compared to all the training, recruitment and benefit costs associated with full time nurses, research has demonstrated an increase in operating costs associated with the use of contracted staff in hospitals (Bloom, Alexander, and Nuchols 1997).

The profile of a facility that employs more contract licensed staff appears to be the profile of a poor facility. RN contracting is prevalent in facilities with low occupancy rates, a lower proportion of residents who pay privately for care and those more likely to receive deficiency citations. Facilities with these attributes are more likely to close (Angelelli et al. 2003). The unfortunate reality of limited resources for clinical care among the poorer nursing homes undoubtedly reduces the opportunities for such facilities to attract and retain licensed nursing staff. Facilities with reputations for turnover or chronic unfilled vacancies may be associated

with poor quality care by licensed nursing personnel. As a result, facilities have difficulty recruiting permanent licensed nursing employees. Thus, a vicious cycle is created. Poorer facilities are forced to allocate higher proportions of their resources to maintain the absolute minimum licensed nursing staff levels needed to remain operational (Mor et al. 2004).

Market level factors also support the notion that staffing decisions are motivated by economic conditions. In urban areas, RN shortages are even more acute than in rural areas. The competition between hospitals, nursing homes, and other agencies for RN services in these areas are heightened. Furthermore, facilities in more competitive job markets (e.g., counties with higher numbers of empty nursing home beds or lower Herfindahl Index) are more likely to contract for LPNs, while counties with higher unemployment rates discourage both RN and LPN contracting.

The results of this study must be interpreted with the following limitations in mind. We were unable to truly capture patient care quality. Our gross proxy of quality, health deficiency citation, may be compounded because of huge inter-state variations. We attempted to remove this variation by using intra-state rankings and by further controlling for states in the analyses. This maneuver, however, may have failed fully to account for this variation. The same caveat applies to staffing data in the OSCAR, which are highly variable, prone to error, and capture only a two-week period of reporting (Feng et al. 2005). Additionally, it was impossible to differentiate between contracted and “float” staff. The difference between these temporary workers is that “float” staff are generally facility employees who are assigned to work where the need is greatest. This type of staffing decision by nursing homes may have different effects on quality or deficiencies by virtue of the employee being known to staff and by having prior contact with residents.

Implications

This study is the first to characterize the use of contract licensed staff in nursing homes across the country in terms of the extent to which temporary staff are used, exogenous conditions that encourage these staffing patterns, and how this phenomenon may relate to quality of care. Clearly organizational as well as market factors influence the factors that go into facility administration choosing to contract for nursing staff. While this study has expanded our understanding of the prevalence and factors influencing this phenomenon, further quality of care implications for nursing home residents related to increased use of contract nursing staff warrant more research.

Concern about the use of contract nurses by nursing homes seems to be particularly relevant in light of the growing nursing shortage and current payment structures for nursing home care. Nursing homes have been historically plagued by labor shortages because they are the least desirable employers in terms of wages and working conditions. As the nursing shortage reaches crisis proportions in many labor markets around the country, it will be crucial for administrators and policy makers to know more about when and under what conditions nursing homes rely upon contract nursing staff.

The escalating use of contracted licensed staff in nursing homes has major implications for state and federal policy makers. Results of our analyses suggest facilities that staff with ≥5% licensed contract nursing staff may be contributing to inferior quality of care due to procedural inefficiencies and staff deficits. Payment structures for nursing homes must take into account the complexity of care today's nursing home population requires and the level of staff required to provide appropriate and quality care. The use of contract staff is widely considered to be expensive, of lower quality, and discontinuous. Whether these perceptions are completely

accurate remains to be seen. Nursing homes that are facing tight labor markets, reduced financial resources, and a reputation of poor quality care stand little chance of attracting a stable work force (Institute of Medicine 2001) or remaining viable (Angelelli et al. 2003). Thus, some of society's most vulnerable population are served by facilities that are indeed vulnerable themselves (Mor et al. 2004).

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Table 1. Means and standard deviations for variables included in the multivariate analysis, aggregated over 1992-2002 (N=124,297 surveys from 15,717 freestanding facilities)

	Mean	SD
Dependent variables:		
Contract RNs ≥5% (1/0)	0.05	0.23
Contract LPNs ≥5% (1/0)	0.08	0.27
Facility characteristics:		
For profit (1/0)	0.73	0.44
Chain (1/0)	0.56	0.50
For profit and non-chain (1/0)	0.26	0.44
% Medicaid	66.1	22.7
% private pay	26.0	21.0
Occupancy rate (%)	87.0	14.4
Bed size	109.0	63.4
IV therapy available (1/0)	0.29	0.45
Tracheotomy care available (1/0)	0.24	0.43
High rehab intensity (1/0)	0.05	0.22
Market (county) characteristics:		
Unemployment rate (%)	5.4	2.7
# Nurses (RNs+LPNs) per 1000 population	4.1	4.0
# Nursing home beds per 1000 population aged 65+	68.0	49.0
# Hospital beds per 1000 population	4.0	4.4
Average # empty nursing home beds	12.2	11.0
Herfindahl Index (range 0-1)	0.46	0.32
Urban location (1/0)	0.30	0.46
Other controls:		
Post PPS (survey date after 7/1/1998; 1/0)	0.50	0.50
Calendar time (years from 1/1/1992-current survey)	6.5	2.6

Table 2. Characteristics of 15,717 freestanding facilities included in the final analysis sample based on the latest OSCAR survey

	Mean	SD
Contract RNs ≥5% (1/0)	0.10	
Contract LPNs ≥5% (1/0)	0.14	
Facility is for profit (1/0)	0.73	
Facility is part of a chain (1/0)	0.55	
% Medicaid	66.0	22.4
% Private pay	24.3	20.0
Occupancy rate (%)	84.3	15.3
Total # residents	90.5	57.0
Total # FTE RNs+LPNs	19.3	34.8
Total # FTE RNs	6.2	17.1
Total # FTE LPNs	13.1	23.0
LPN/RN ratio	5.1	10.2

Table 3. The likelihood of using ≥5% licensed contract nurse staff: Cross-sectional time series GEE model results, OSCAR 1992-2002

	Contract RNs: ≥ 5%			Contract LPNs: ≥ 5%		
	β	SE [a]	OR	β	SE [a]	OR
Facility characteristics:						
For profit	-0.401 **	0.060	0.670	-0.595 **	0.054	0.551
Chain	0.272 **	0.067	1.313	0.191 **	0.059	1.210
For profit & Non-chain	0.219 **	0.080	1.244	0.211 **	0.071	1.235
High % Medicaid (>91%)	0.112 +	0.061	1.118	-0.021	0.052	0.979
High % private pay (>55%)	-0.133 *	0.061	0.876	-0.071	0.051	0.931
Low occupancy (<85%)	0.213 **	0.037	1.237	0.149 **	0.031	1.161
Bed size (centered 109, step 10)	0.016 **	0.003	1.016	0.024 **	0.003	1.024
IV therapy available	0.084 **	0.030	1.088	0.038	0.026	1.039
Tracheotomy care available	0.031	0.035	1.032	0.050	0.031	1.052
High rehab intensity	0.083	0.064	1.086	0.003	0.055	1.003
Market (County) characteristics:						
Unemployment rate	-0.027 *	0.012	0.973	-0.038 **	0.010	0.963
# nurses per 1000 population	0.010	0.009	1.010	0.013 +	0.008	1.013
# Nursing homes beds per 1000 population 65+	-0.027 *	0.012	0.974	-0.038 **	0.012	0.963
# Hospital beds per 1000 population	-0.011	0.013	0.989	-0.015	0.011	0.985
Average # empty nursing home beds	-0.018	0.032	0.983	0.083 **	0.027	1.086
Herfindahl Index	-0.086	0.053	0.918	-0.252 **	0.052	0.777
Urban	0.597 **	0.068	1.817	0.702 **	0.064	2.019
Other controls:						
Post PPS (after July 1, 1998)	0.437 **	0.049	1.549	0.330 **	0.040	1.391
Calendar time (years 1/1/92—current survey)	0.125 **	0.010	1.134	0.145 **	0.008	1.156
States (47 dummies; omitted)						
Intercept	-6.513 **	0.368	0.001	-5.466 **	0.356	
Model χ^2 (Wald) / d.f. / N	2721.46 / 66 / 121,366			3754.34 / 66 / 122,675		
Estimated within-facility correlation (exchangeable)	0.118			0.165		

+ p<.10 * p<.05 ** p<.01 [a] Adjusted for clustering within facility