Staffing Levels in Rural Nursing Homes.

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Abstract:

This mixed methods study used multiple regression analyses to examine the impact of organizational and market characteristics on staffing hours and staffing mix, and qualitative interview to explore the challenges and facilitators of recruiting and retaining qualified staff. Rural nursing homes (NHs) certified by Medicare or Medicaid (N = 161) were sampled from the Online Survey Certification and Reporting system. A subsample (n = 23) was selected purposively for the qualitative analysis. Smaller NHs or government-affiliated homes had more total nursing hours per resident day and more hours of care by certified nursing assistants and RNs than larger and nongovernment-affiliated homes; however, almost 87% of NHs in this study were below the national recommendation for RN hours. Informants voiced challenges related to enough staff, qualified staff, and training staff. Development of nursing resources is critical, especially in rural locales where aging resources may not be well developed.

Keywords: nursing homes | nursing home staff | gerontology | nursing | gerontological nursing | nursing education | rural nursing homes

Article:

The U.S. older adult population is increasing rapidly; in particular, Mountain West states such as Nevada, Utah, and Wyoming have some of the fastest growing older adult populations in the country (He, Sengupta, Velkoff, & DeBarros, 2005). It is predicted that the growth and aging of the population will create additional demand for nurses, and some of the Western states will face a greater shortage than others (Health Resources and Services Administration [HRSA], 2004). These shortages may create particular challenges in long-term care settings where recruitment and retention of nursing staff are often difficult. The situation is compounded in rural areas where less nursing staff are available (HealthReform.gov, 2009).

Approximately one third of nursing homes (NHs) are located in rural areas (Centers for Disease Control and Prevention [CDC], 2009). Rural NHs serve an important role in their communities

where larger proportions of rural older adults (75 and older) reside in NHs than their urban counterparts (Phillips, Hawes, & Williams, 2004). Yet, little health services research has focused on rural NHs and the factors that influence the quality of care delivered in these often underserved communities.

Study Purpose

The purpose of this descriptive, mixed methods study was to examine factors (organizational and market characteristics) associated with staffing levels of rural NHs in five Mountain West states: Colorado, Idaho, Nevada, Utah, and Wyoming. Quantitatively we asked, “To what extent do organizational and market characteristics influence staffing hours and staffing mix?” Qualitatively we asked, “What challenges do NHs confront related to staffing levels and recruiting and retaining staff?” and “What are the facilitators or strategies used to maintain staffing levels and recruit and retain staff?” This approach allowed us to integrate quantitative and qualitative findings to create a rich description of staffing levels in NHs located in rural areas where opportunities to hire and maintain qualified staff are limited.

Literature Review

Quality health care services are more difficult to provide in smaller, poorer, and isolated areas (Institute of Medicine [IOM], 2005). For example, the difficulty of recruiting staff is increased by the smaller scale of services and adequacy of supply inherent in rural areas (Phillips & McLeroy, 2004). Rural NHs face different challenges than urban NHs, and little is known about what influences key quality indicators, such as staffing levels, in these settings. The Mountain West region is the part of the nation where much of the projected rate of growth of the elderly population is occurring and concern for an adequate number of health care workers to care for this population is increasing. HRSA (2004) data indicate that states in the Mountain West face particularly high shortages (Table 1). It is estimated that nearly 30,000 additional nurses will be needed in these states alone by 2015. The direct care workforce falls short in meeting the demands of our aging population (U.S. General Accounting Office, 2001). In 2007, vacancy rates for those providing direct care in nursing facilities were 16.3% for RNs, 11.1% for licensed practical nurses (LPNs), and 9.5% for certified nursing assistants (CNAs); these rates are expected to increase (American Health Care Association [AHCA], 2010). This study provides administrators and health policy makers, particularly those in rural areas, with data to inform health care decisions in preparation for increased resource demand and the growing older adult population.

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Staffing Hours and Staffing Mix

Measures of nurse staffing have previously been documented as a marker of quality in NH care (Harrington, Zimmerman, Karon, Robinson, & Beutel, 2000). Critical indicators of nurse staffing in long-term care include staffing hours and staffing mix.

Staffing hours refers to the number of hours worked per resident per day (HPRD) by CNAs, LPNs, RNs, and total nursing staff (Bostick, Rantz, Flesner, & Riggs, 2006). The Centers for Medicare & Medicaid Services (CMS) identified staffing thresholds of 2.80 nurse aide and 1.30 licensed nursing (RN and LPN) HPRD and suggested that staffing levels below these thresholds potentially place residents at risk for poor outcomes (Kramer & Fish, 2001). Schnelle et al. (2004) agreed that nursing assistant staffing above 2.8 hours per day led to better quality. However, rural NHs were not likely to meet the CMS staffing recommendations (Phillips, Hawes, & Williams, 2003; Phillips et al., 2004).

Levels of nursing staff including CNAs, LPNs, RNs, and total nursing hours have been reported. In 33 states with staffing standards beyond federal requirements, the median licensed nursing HPRD were 2.35 compared with 1.26 for all states (Mueller et al., 2006). From a national sample (N = 13,777), Harrington et al. (2000) reported an average of 3.4 total nursing staff hours (CNA = 2.14 hours, LPN = 0.67 hours, RN = 0.59 hours). In one of few studies comparing urban and rural NHs, twice as many RN hours (0.80 versus 0.40) were reported in Utah urban NHs compared with rural homes (Towsley, Dudley, & Beck, 2006).

Staffing mix refers to the ratios of full-time equivalent (FTE) hours worked by CNAs, LPNs, and RNs to all FTE nursing staff. Little research related to staffing mix in NHs exists (Bostick et al., 2006). In California, an inverse relationship was found in NHs between number of serious deficiencies and whether the facility met the state staffing standard and percentages of RNs in the staffing mix (Kim, Harrington, & Greene, 2009).

A growing body of evidence indicates that staffing levels are associated with care quality. Higher nursing assistant staffing has demonstrated higher quality in providing assistive care such as feeding or incontinence care (Schnelle et al., 2004), and more licensed nursing hours (including RN but not aide hours) have been associated with better resident functional status, such as eating, bathing, and transferring (Bliesmer, Smayling, Kane, & Shannon, 1998). RN direct care time has been associated with better care outcomes such as fewer pressure ulcers and hospitalizations

(Horn, 2008; Horn, Nuerhaus, Bergstrom, & Smout, 2005), while optimal nursing assistant and RN staffing levels were reported to reduce pressure ulcer costs (Hendrix & Foreman, 2001).

Both organizational and market characteristics that influence a NH's viability and quality of service (Banaszak-Holl, Zinn, & Mor, 1996; Weech-Maldonado, Neff, & Mor, 2003) may affect nurse staffing; however, little research has examined the influence of these factors on staffing hours or mix. Organizational characteristics of NHs include facility size, type of ownership, chain affiliation, ownership changes, and resident acuity. Larger NHs may be more resilient in facing threats such as low occupancy or decreased reimbursement due to the resources that are available to them (Banaszak-Holl et al., 1996; Weech-Maldonado et al., 2003). Thus, larger NHs may also have more resources for staffing. Between 1997 and 2007, however, NHs with 50 to 150 beds had significantly decreased RN HPRD and RN mix and increased LPN and CNA HPRD compared with smaller NHs that had little or no change in RN HPRD or RN mix. Also during this period, for-profit NHs had larger decreases in RN HPRD and RN mix than nonprofit NHs; government-affiliated NHs reported increased HPRD across all staffing categories (Seblega et al., 2010).

When examining ownership type, for-profit NHs have been associated with less staffing than nonprofit NHs (Harrington, Woolhander, Mullan, Carrillo, & Himmelstein, 2001; Mueller et al., 2006). McGregor et al. (2005) examined ownership type and staffing levels of NHs in British Columbia (N = 167). Adjusted analyses for size and level of care revealed significant differences between not-for-profit and for-profit NHs; not-for-profit homes provided approximately 20 more minutes of direct-care staff (McGregor et al., 2005). Higher staffing levels have been associated with fewer number of beds and not being part of a chain (Mueller et al., 2006). Kash, Hawes, and Phillips (2007) compared staffing levels reported in Online Survey Certification and Reporting (OSCAR) and Medicaid cost report data and deemed Medicaid cost report data as more authentic than OSCAR's. Characteristics of NHs that "overreported" staffing levels, meaning they reported more hours than actually worked, included lower Medicaid and Medicare census, more competition, and for-profit ownership. Overreporting of RN staffing hours in OSCAR data was associated with for-profit and larger NHs (Kash et al., 2007).

Market characteristics include competition, occupancy rates, and availability of special care units. Previous research has suggested that NHs with higher levels of Medicaid residents have lower levels of RN staffing (Harrington & Swan, 2003; Zinn, 1994). These findings are similar to a study conducted by Donoghue (2006). In a sample of 912 NHs, lower CNA and RN staffing levels were reported among NHs that had more beds designated for Medicaid clients; however, no differences were found between for-profit and nonprofit NHs (Donoghue, 2006). Higher

levels of staffing have been associated with lower occupancy (Mueller et al., 2006). Kash et al. (2007) suggested lower Medicaid or Medicare occupancy in NHs was associated with the likelihood of overreporting LPN or CNA hours.

Staffing levels are also dependent on the availability of staff and the ability to recruit and retain staff—a challenging task in rural locales. For example, nationally, CNA turnover was estimated at more than 71%, and rural freestanding NHs had the highest turnover rate at 76.4% (Decker et al., 2003). In rural areas, staff RNs and LPNs had turnover rates of 47%, and 45.8%, respectively (Singh & Schwab, 2000). On the other hand, recruitment and retention have been aided by education opportunities, benefits, work flexibility (Kemper et al., 2008; Proenca & Shewchuk, 1997), and community attachment (Singh & Schawb, 2000). Thus, in this study we addressed two specific aims. We not only examined predictors of staffing hours and mix in rural NHs but also qualitatively examined the challenges NHs face and the facilitators NHs use to recruit and retain staff.

Method

Design

This research used a sequential mixed methods design (Creswell, Plano Clark, Gutmann, & Hanson, 2003) to comprehensively describe NH staffing in rural locales. Mixed methods allow data to be confirmed, cross-validated, and converged to obtain a thorough picture (Creswell et al., 2003). Data were collected sequentially and integrated at the interpretation phase. The quantitative data examined the relationships between organizational and market characteristics and staffing levels (hours and mix). The qualitative data provided context and insight into the challenges and strategies/facilitators of NHs staffing, particularly about recruiting and retaining qualified staff. The university's Institutional Review Board approved this study.

Eligible NHs were classified into three rural categories based on location: large rural city, small rural town, and isolated locale. These geographical classifications, determined by ZIP code, were established through the use of Rural Urban Commuting Areas (RUCA) codes and are based on urbanization, population, and daily commuting (Economic Research Service, 2004). RUCA codes range from 1 (urban) to 10 (frontier); a score of 4 or greater indicates a nonmetropolitan area. The OSCAR system was used to obtain the quantitative data. Qualitative data were obtained through semi-structured interviews with NH leaders.

Sample

A total of 171 NHs were sampled from the national OSCAR database using the inclusion criteria of facility location in Colorado, Idaho, Nevada, Utah, and Wyoming; RUCA code of 4 or greater; licensed as a NH; Medicare and/or Medicaid certification; and most recent survey data collected between January 1, 2004 and June 15, 2005. Six NHs that had incomplete or missing OSCAR data were excluded from the analysis. In addition, 4 NHs in areas identified as having primary commuting flows to larger/urban areas were also excluded. The final sample for the analysis of organizational and market characteristics and nurse staffing consisted of 161 NHs.

Twenty-three of the 161 NHs were selected purposively for the qualitative component of the study in which interviews were conducted with key informants. We sampled to ensure representation of homes that varied on financial viability (measured by profit margin) and quality (measured by deficiencies). The sample of key informants (N = 30) included the leadership dyad of the NH: the administrator and Director of Nursing (DON). If both the administrator and DON of the selected facility declined to be interviewed, another NH was selected for the qualitative phase. If one key informant agreed to participate, the interview was conducted. Administrator and DON dyads from 7 NHs agreed to participate; 16 other key informants were single representatives of their NH. Seventeen individuals declined to participate in the interview stating reasons such as no time, too busy, or not interested; 5 were unable to be contacted.

Measures

OSCAR, a large existing database available from CMS, contains information on Medicare/Medicaid-certified NHs and consists of reports from the NH's certification survey, including facility and aggregate resident characteristics and staffing information. Nursing facility representatives follow standard instructions to complete the forms, which are then reviewed by the surveyors and recorded on OSCAR; surveyors can check the information provided and investigate questionable information (AHCA, n.d.). Data are collected at the time of the annual survey, conducted every 9 to 15 months. The survey process lacks auditing procedures to verify intersurveyor reliability, which potentially reduces the reliability and validity of OSCAR data. Despite these limitations, these data are routinely used in health services research (Kash et al., 2007) and serve as the basis for much of research in this area. Operational definitions for organizational, market, staffing, and location characteristics are specified in Table 2.

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Qualitative telephone interviews were conducted with administrators and DONs to elicit contextual staffing information. A letter of invitation was sent to the administrator and DON of

each NH selected for qualitative interviews. Follow-up telephone calls were made 1 to 2 weeks later, and on participation agreement, a telephone interview was scheduled at the informant's convenience. At the time of the interview, study procedures were reviewed, including confidentiality and the informant's right to decline to participate. Interviews obtained specific information about rural NHs and used open-ended questions pertaining to recruiting and retaining staff. Specific probes identified challenges as well as strategies used to improve recruitment and retention of nursing staff.

Data Analysis

Quantitative data analysis was performed using SPSS version 14. OSCAR data components were merged based on the NH provider number. During data cleaning, we eliminated duplicates and examined the distribution of scores on each variable to determine out-of-range scores or missing data. Although there were some extreme values, we decided to handle these values during the multivariate analysis using dfbetas, which measure change in regression b coefficients and identify extreme cases that potentially influence the analysis (Garson, 2010). Descriptive statistics, including frequencies and summary statistics, were used to describe the samples.

Regression Modeling Considerations

Activities of daily living (ADL) variables were entered into the model as predictors as well as dummy variables that were created for type of ownership. We evaluated regression models and chi square automatic interaction detection (CHAID; SPSS Answer Tree, 1998–99) analyses to examine predictors of nurse staffing hours (CNA, LPN, RN, and total HPRD) and mix (CNA, LPN, RN). Specifically, we examined the extent to which organizational and market characteristics were associated with nurse staffing hours and mix. Predictors were examined using backward-step multiple regression analyses. Predictor variables were entered into the model if the correlation with CNA, LPN, RN, and total HPRD or CNA, LPN, or RN mix had a significance of $p < 0.10$. Variables were retained in the models if their associated significance was ≤ 0.05.

We followed the same procedures for regression models of staffing mix. In some models, further analysis of the R2 and standardized beta weights resulted in eliminating variables to achieve a more parsimonious model. In the course of the regression analyses, we decided to further examine the predictors of staffing hours using CHAID. We used an iterative approach in which the number and composition of the segments were constructed so as to maximize the F value

(and minimize the p value). Exploring these variables in CHAID provided a visual illustration of how specific predictors influenced the outcome as well as explored potential interaction effects.

Given the limited sample, a conservative approach for screening outliers was selected to balance the need to retain the sample while guarding against excessive influence of outliers. Dfbeta cut-off points in the literature range from small (e.g., 0.20) to large values (e.g., ±2) (Garson, 2010). In this study, NHs with dfbetas greater than a ±2 cut-off point were excluded from the analysis. The number of NHs excluded from each regression analysis varied but ranged from 1 to 4. All of the regression model results are provided in Table 3, but only the most significant findings will be presented in the results section below.

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Qualitative Data Analysis

Qualitative analysis was performed with the subset of 23 NHs using transcribed audio recorded interviews with the 30 key informants: administrators and DONs. Audio recordings were transcribed verbatim. The investigator (G.L.T.) compared the recording with the transcript and notes from the interview. Transcripts were imported into NVivo version 2 (QSR International, Doncaster, Victoria, Australia), where data were organized and managed. Initially, content analysis was used following the procedure outlined by Miles and Huberman (1994). Data chunks (words, phrases, paragraphs) were organized according to the interview guide questions and coded using an open, prospective approach guided by the study's research questions and major categories that emerged. The process of reading and coding the transcripts moved the qualitative analysis from reading and memoing to describing and classifying (Creswell, 1998). Randomly selected sections of data were independently coded by a trained research assistant (RA) to ensure consistent coding. The RA and investigator discussed discrepancies in coding until they reached agreement. Qualitative analysis is an ongoing reiterative process. Peer-debriefing took place by seeking out an individual not involved in the analysis to review and critique the qualitative analysis.

A second level of analysis focused on comparing and contrasting the challenges of strategies used to recruit and retain staff between homes with low and high staffing levels. This level of analysis helped identify the challenges that may or may not traverse all rural NHs and delineate ways NHs have been successful. Major categories were described in narrative format providing descriptions about rural NH staffing. Miles and Huberman (1994) suggested that examining patterns helps move the analyses beyond classifying and categorizing and toward an increased understanding or explanation of phenomena, in this case high- versus low-staffed NHs. Quotes and exemplars illustrate these descriptions.

Results

Table 4 describes the 161 rural Mountain West NHs in this study, which averaged 67.5 beds (range = 8 to 158) and had occupancy rates ranging from 7% to 100% (mean = 77%, SD = 16%). Further, 48.4% were for profit, and 46% were part of a chain. These NHs averaged 1.20 ownership changes during the 18-month study period. On average, residents of these NHs performed the following ADL tasks independently: eating (52%), transferring (28%), toileting (23%), dressing (16%), and bathing (3%). NHs in isolated locales tended to be smaller, almost half were government affiliated, and they had less Medicare occupancy and higher percentages of residents who toileted and transferred independently.

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Staffing Hours Per Resident Day

Rural NHs averaged 3.52 total nurse staffing HPRD (mean HPRD: CNA = 2.29, LPN = 0.71, RN = 0.52) (Table 5). Staffing HPRD did not differ significantly across rural RUCA class. No differences in CNA or RN HPRD were found across the five states. However, significant differences existed between states with regard to LPN HPRD, $F(4, 160) = 4.19$, $p = 0.003$. Post hoc tests revealed that state differences in LPN HPRD existed between Idaho (mean = 0.89) compared with Wyoming (mean = 0.58) and Utah (mean = 0.55). Despite significant state differences in total nurse staffing HPRD ($F[4, 160] = 3.50$, $p = 0.009$), post hoc tests did not reveal statistically significant state-by-state differences. However, an examination of the means indicated that Colorado (mean = 3.25 HPRD) and Idaho (mean = 4.06 HPRD) had the most discrepant staffing.

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We examined predictors of nurse staffing (CNA, LPN, RN HPRD and total HPRD) in four separate regression models in which R2 values ranged from 0.06 to 0.21. In the following, we focus on the CNA, RN, and total HPRD models. See Table 3 for the complete results. CNA HPRD were significantly associated with total beds and type of ownership. The model accounted for a significant amount of variance, $F(2, 159) = 9.74$, $p < 0.001$ (adjusted R2 = 0.10). NHs with fewer total beds had more CNA HPRD as did those that were government affiliated compared with profit/nonprofit NHs. We used CHAID analyses to further examine interaction effects among predictor variables and CNA HPRD in the previous model. Presented in Figure 1, the analysis identified two segments of NH size. Similar to the regression analysis finding, NHs that were government affiliated averaged more CNA HPRD, compared with NHs that were for profit or nonprofit.

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An examination of RN staffing revealed that RN HPRD were significantly associated with total beds, Medicaid occupancy, and ownership type; these variables accounted for a significant amount of variance,$F(3, 158) = 6.21$, $p = 0.001$ (adjusted $R^2 = 0.09$). More specifically, NHs with more beds or more Medicaid occupancy had fewer RN HPRD. NHs that were government affiliated also had fewer RN HPRD. In the CHAID analysis, three segments of NH size were identified (Figure 2). As the middle group of NHs averaged fewer RN HPRD, these three segments illustrate a nonlinear relationship that cannot be detected in linear regression models. Ownership type was a significant predictor of RN HPRD in NHs with more than 31 beds. In the segment representing NHs with 31 to 49 beds, government-affiliated NHs averaged fewer RN HPRD compared with profit and nonprofit NHs, whereas in NHs with more than 49 beds, government-affiliated homes averaged more RN HPRD. Because this analysis indicated a potential interaction with ownership type by facility size, we performed the regression analysis with an interaction variable, which yielded nonsignificant results.

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Total HPRD were significantly associated with total beds and ownership type. These variables accounted for a significant amount of variance, $F(2, 159) = 20.96$, $p \leq 0.001$ (adjusted $R^2 = 0.20$). NHs that had more beds or were government affiliated had fewer total HPRD. In the CHAID analysis, three segments of NH size were identified (Figure 3) and illustrated a linear relationship indicating that as NH size increased, total HPRD decreased. We found that ownership type was a significant predictor of total HPRD in NHs with 31 to 80 beds. The segment including government-affiliated homes averaged more total HPRD compared with profit or nonprofit homes (3.87 versus 3.31 mean HPRD).

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Staffing Mix

CNAs comprised 64% of the nursing staff, followed by LPNs (21%) and RNs (15%) and did not differ significantly across RUCA classes. We also examined predictors of staffing mix (CNA, LPN, and RN), in which the R^2 value ranged from 0.03 to 0.11 (Table 3). Due to the interdependency of these models, we focus our presentation on the strongest model, the LPN mix—the proportion of total LPN FTE—model. Three variables significantly and positively predicted LPN mix: chain affiliation, Medicaid occupancy, and percentage of residents who toilet independently. These variables accounted for a significant amount of variance, $R^2 = 0.11$, $F(3, 160) = 6.12$, $p < 0.001$. The adjusted R^2 value was 0.09. NHs affiliated with a chain or had more Medicaid occupancy had higher percentages of LPNs in the staffing mix. Also, NHs with higher percentages of residents who toileted independently had higher percentages of LPNs in the staffing mix.

Recruiting and Retaining Staff: Qualitative Results

NHs in the subsample (n = 23) averaged 3.03 total HPRD (CNA, LPN, and RN). On average, 61.7% were CNAs, 24.7% were LPNs, and 13.6% were RNs. The median was used to determine high and low levels of total nursing hours, and although we categorized NHs into high and low categories, informants in both groups discussed similar challenges and facilitators related to staffing. The higher-staffed NH may not have had a current problem, but similar challenges were voiced. One DON in a high-staffed NH stated:

Actually right now we're very good, staffed very well. Staffing is probably the most difficult job you'll ever have in the community. It's one, you're limited from the pool you can draw from. Two, people have to have time off. Number three, you can only have a certain number of staff and so we end up drawing from registry and then it's a hardship usually so…on the company because it's very expensive.

An administrator in a low-staffed NH conveyed similar challenges:

Shaky…. It's pretty expensive to live here…. We've got a new ski resort that has taken a lot of the individuals that could do entry level. So it's hard to attract people to health care because one, it's difficult and two, there's more jobs up here than there is people, with entry-level positions.

The primary challenges related to staffing included three components: enough staff, qualified staff, and training staff. Important staffing characteristics to providing quality of care included the longevity of the staff or having a core group of qualified staff that provided stability within the NH. An administrator of a NH with high staffing levels and a DON of a NH with low staffing levels explained:

Administrator: It's adequate…. We do have the usual turnover in CNAs. Not to the degree I think that some other facilities have done it. We have the problem of not having enough RNs or LPNs. CNAs—we get the numbers, but we could use more.

DON: Well, we could always use more. So, we have a lot of…a lot of people working extra shifts just to provide the necessary coverage for our residents. Staffing is going to always be a problem though in a rural setting.

Competition was the overarching challenge in recruiting and retaining staff. NHs competed for entry-level staff (e.g., CNAs) with other industries, such as retail or recreation. Competing with

these industries was challenging because the wages were similar, but positions in the NH were more physically and emotionally demanding. One administrator explained, “The level of skill and stress and the emotional issues are just so totally different.” Employees must deal with death, are asked to work long hours or overtime, and workloads are heavy, whether the work is in dietary, nursing, laundry, or housekeeping. A few discussed that burnout was high, primarily among CNAs. Others believed that employees did not fully comprehend what the job required before working in a NH.

Offering competitive wages was a specific issue for these administrators and DONs. These NHs could not offer wages that were competitive with those offered by local industries, hospitals, and larger cities within commuting distance. Some facilities were small and did not make a lot of money, so they did not offer competitive wages. One administrator explained, “We lose them because of better benefits, better pay…. We can’t compete…. For example, 25 minutes away we have an LPN going for like $3 an hour more—easy, than what we can pay.” Another DON said, “But our pool of resources is very small and our wages are not as competitive…. They’re not competitive at all with the city.”

Although not a prominent comment throughout the interviews, a few administrators and DONs implied that their facility’s wages were not competitive because their corporation controlled wage increases. One DON stated that the competition for staff was fair, meaning that all NHs lose staff and gain staff from other NHs. Another main challenge to recruiting qualified staff was the small labor pool in rural areas. Finding staff, primarily nurses, who were willing to work nights or off-hours (not day shift) was difficult. One DON said, “We’re in such a rural area that there’s just not a lot of people.”

Despite facing competition challenges, several administrators and DONs discussed how they were trying to overcome those challenges and shared their successes in recruiting and retaining qualified staff. Some resolutions involved increasing wages or at least offering comparable wages to the competition. Several facilities were offering sign-on bonuses. Another strategy was enhancing individual growth and the work environment. Many NHs offered educational opportunities in addition to the required in-house education. CNAs wishing to become LPNs could enter a contract stating they would work for the NH for a specified amount of time in exchange for their schooling costs. One facility offered continuing education at the NH, which decreased travel and seminar costs to the staff. Some NHs developed community partnerships to recruit employees. These activities included attending job fairs, serving breakfast at CNA classes, or acting as a clinical site for aspiring CNAs and LPNs.

Many administrators and DONs discussed the work environment as a major influence on their ability to recruit qualified staff. This influence included offering flexible schedules as well as facility/corporate values such as promoting teamwork, new visions, and a positive workplace that appreciated employees. Even after increasing wages, some NHs' wages still remained lower than their competitors. However, they believed other factors attributed to being able to recruit qualified staff. One DON said, "So they are still less than almost everybody around me. They aren't so much less that they appreciate the better working conditions."

Recruiting and retaining successes were also attributed to the NH's reputation. One DON said, "Usually when I get people that are applying it's a positive thing…and they say, 'Oh, we hear such good things about this place.'" An administrator expressed, "Because of our high HPRD, we're known as an organized facility because of the systems in place." Less tangible responses to successful recruitment strategies came in the form of luck, and a few informants attributed obtaining staff to no one particular strategy or action. One DON said, "They just come to us." Examples of these strategies or actions included a response to an advertisement in the newspaper, individuals unexpectedly walking through the door and applying for a position, and prayer.

Discussion

Little health services research has focused solely on rural NHs. In fact, because rural NHs are considered different from urban NHs they are sometimes excluded from analyses (Feng, Grabowski, Intrator, Zinn, & Mor, 2008; Gruneir, Lapane, Miller, & Mor, 2008). Thus, this study examined organizational and market factors associated with staffing in five Mountain West states: Colorado, Idaho, Nevada, Utah, and Wyoming. Care in rural areas is known to vary regionally, thus it is important to examine NHs in specific geographical locations. In these states, vast rural and frontier areas are challenged with an uneven balance of a projected growth in the older adult population yet fewer health care workers.

Rural Mountain West NHs varied widely in size but are much smaller compared with NHs nationwide: They have an average of 67.5 beds versus 106.25 beds, and similar but primarily higher percentages of residents who perform ADL tasks independently: eating (52% versus 49%), transferring (28% versus 23%), dressing (16% versus 12%), and toileting (23% versus 18%) (AHCA, 2005). The percentage of residents who bathed independently was slightly lower in rural NHs (3% versus 5%) (AHCA, 2005). Staffing HPRD were similar to previous

nationwide studies (Harrington et al., 2000). Although not mandated, CMS recommends that NHs provide 0.75 RN HPRD; almost 87% of NHs in this study were below this threshold. Given the growing body of evidence that RNs influence outcomes (Horn, 2008; Horn et al., 2005; Kim et al., 2009), the paucity of RNs in rural areas warrants concern.

Staffing Hours Per Resident Day

The CNA, RN, and total HPRD regressions and CHAID analyses contained two similar significant predictor variables of organizational nature: total beds and type of ownership. NHs with fewer total beds had higher levels of CNA, RN, and total nursing HPRD. In the CHAID analyses, however, the relationship was not linear in respect to RN HPRD. In this study, smaller NHs were located in the most rural locales; these NHs likely have the most difficulty recruiting and retaining RN staff. Yet, the smallest NHs (<31 beds) had the highest average RN HPRD. These findings correspond with previous findings (Harrington et al., 2001; Seblega et al., 2010) and may be partially attributed to the requirement that an RN must be on duty 8 hours per day, 7 days per week. Although it is likely that fewer RNs are available in the most rural areas (Phillips et al., 2004; Towsley et al., 2006), in smaller NHs, the RN on duty requirement would show higher RN HPRD due to the lower number of residents. Because larger homes have more residents, it may be easier to expand the resident load for both nurses and nurse aides.

NHs that were government affiliated had higher levels of CNA and RN HPRD. CHAID analysis revealed that the fewest RN HPRD in NHs was in those with 31 to 39 beds and that were government affiliated. Previous research has often defined ownership as two categories: for profit and nonprofit, which includes government-affiliated NHs. However, we placed government-affiliated NHs into a separate category and dummy coded the ownership type variable. Our findings may be different from previous literature because the dummy variable retained in the model was government-affiliated NHs versus profit and nonprofit NHs. Almost 33% of NHs in our sample were government affiliated (i.e., city, county, or state owned), compared with almost 7% nationwide (CDC, 2009). Chain affiliation, ownership changes, and resident acuity were not significant predictors in the HPRD regression analyses.

The RN HPRD regression contained one significant predictor variable of market nature: Medicaid occupancy. Similar to previous research (Donoghue, 2006; Harrington & Swan, 2003; Zinn, 1994), we also found that NHs with more Medicaid occupancy had lower levels of RN HPRD. Competition and Alzheimer’s special care units were not significant predictors in the analyses.

Staffing Mix

The staffing mix models produced weak results and should be interpreted cautiously. Compared with the HPRD regression models, the strongest staffing mix model contained different significant predictors of organizational and market nature. NHs that were affiliated with a chain or had more Medicaid occupancy had higher percentages of LPNs in the staffing mix. It is possible and similar to previous findings that NHs with more Medicaid occupancy employed fewer RNs in favor of more LPNs to control labor costs (Feng et al., 2008).

Staffing Levels, Recruitment, and Retention

Informants from this subsample discussed the challenges of staffing in their rural areas, such as access to a small labor pool and the competition that occurs within this pool. Almost all respondents voiced concern over the lack of a labor pool, regardless of having high or low staffing levels. Such concerns will become greater if required staffing thresholds increase (Kramer & Fish, 2001; Phillips et al., 2003) and the projected nursing shortage in these states becomes reality (HRSA, 2004). Some NHs were challenged to find CNAs, and others had more difficulty recruiting and retaining licensed staff (LPNs and RNs). Informants from these higher staffed NHs attributed their success to having a good reputation, being flexible, and offering individual growth opportunities (e.g., schooling reimbursement). These kinds of rewards have been found in previous research (Kemper et al., 2008; Proenca et al., 1997) and may be related to employee retention (Castle, Engberg, Anderson, & Men, 2007).

Labor pool challenges are increasingly complex in rural areas and in the face of a health care workforce shortage (IOM, 2008) require complex solutions. Although NH leaders reported effort in recruiting and retaining qualified staff, most of the facilitators or strategies were singular in focus (e.g., increase wages). Our findings are similar to those of Kemper et al. (2008), who found that direct care workers in NHs voiced increased staffing, improved work relationships, and increased pay were the top three changes important to improving their jobs. These strategies may not be sufficient to meet the care needs of NH residents. Innovative and supportive models as suggested by the IOM (2008) should encompass better wages, better health insurance, and better pensions, as well as improved training, supervision, and mentoring. Comprehensive solutions are needed to address the concerns of quality and quantity of the long-term care workforce.

Limitations

The generalizability of this study is limited due to a fixed sample and the Mountain West geographical location, which excluded urban NHs. This exclusion was intentional to examine the degrees of variability within rural settings. The cross-sectional nature of this study prohibited the examination of trends in NH staffing over time. Although OSCAR data were suitable for the organizational and market characteristics in this study, Minimum Data Set data would allow for a more thorough examination of resident acuity and its relationship to staffing levels. The weak regression models suggest that organizational and market characteristics are not good predictors of staffing mix. Other factors, such as Medicaid reimbursement rates, may influence staffing levels. One informant in this study suggested that higher Medicaid reimbursement rates would allow the facility to hire more staff. However, Feng et al. (2008) examined the influence of Medicaid rates and case mix on NH staffing between 1996 and 2004 and found that total staffing levels did not increase and RN staffing levels decreased despite an increase in Medicaid reimbursement.

Data regarding the labor pool and availability of CNA, LPN, and RN staff in the community are also important for future research, particularly given the shift from RN to LPN staffing (Seblega et al., 2010). Finally, overreporting is a potential concern when using OSCAR data, especially in regard to RN hours (Kash et al., 2007). Unfortunately, the effect of this is that the results that indicate inadequate staffing in the overwhelming majority of rural NHs might underestimate the problem. This bias in overreporting might mask a clinically significant risk for insufficient care for rural NH residents.

Conclusion

NHs are complex institutions that are constantly changing and may vary over time and by region. Understanding these complexities and anticipating future changes in NH staff supply and demand is critical. Rural areas are challenged to provide quality long-term care. More comprehensive approaches are needed to ensure an adequate workforce to care for older adults in their communities. With the growing older adult population, strategic development of resources for rural NHs, especially in the Mountain West region where aging resources may not be well developed, will be even more important to serve rural older adults in their communities.

References

American Health Care Association. (2005). Nursing facility patient characteristics. Retrieved from

http://www.ahcancal.org/research_data/oscar_data/NursingFacilityPatientCharacteristics/Forms/AllItems.aspx

American Health Care Association. (2010). U.S. long-term care workforce at a glance. Retrieved from http://www.ahcancal.org/research_data/staffing/Documents/WorkforceAtAGlance.pdf

American Health Care Association. (n.d.). What is OSCAR data? Retrieved from http://www.ahcancal.org/research_data/oscar_data/Pages/WhatisOSCARData.aspx

Banaszak-Holl, J., Zinn, J.S. & Mor, V. (1996). The impact of market and organizational characteristics on nursing care facility service innovation: A resource dependency perspective. Health Services Research, 31, 97–117.

Bliesmer, M.M., Smayling, M., Kane, R.L. & Shannon, I. (1998). The relationship between nursing staffing levels and nursing home outcomes. Journal of Aging and Health, 10, 351–371. doi:10.1177/089826439801000305

Bostick, J.E., Rantz, M.J., Flesner, M.K. & Riggs, C.J. (2006). Systematic review of studies of staffing and quality in nursing homes. Journal of the American Medical Directors Association, 7, 366–376. doi:10.1016/j.jamda.2006.01.024

Castle, N.G., Engberg, J., Anderson, R. & Men, A. (2007). Job satisfaction of nurse aides in nursing homes: Intent to leave and turnover. The Gerontologist, 47, 193–204. doi:10.1093/geront/47.2.193

Centers for Disease Control and Prevention. (2009). Table 1. Number and percent distribution of nursing homes, according to residents, and occupancy rate, by selected facility characteristics: United States, 2004. In The National Nursing Home Survey: 2004 overview (p. 14). Retrieved from http://www.cdc.gov/nchs/data/series/sr_13/sr13_167.pdf

Creswell, J.W. (1998). Qualitative inquiry and research design: Choosing among five traditions. Thousand Oaks, CA: Sage.

Creswell, J.W., Plano Clark, V.L., Gutmann, M.L. & Hanson, W.E. (2003). Advanced mixed methods design. In Tashakkori, A. & Teddlie, C. (Eds.), Handbook of mixed methods in social and behavioral research (pp. 209–239). Thousand Oaks, CA: Sage.

Decker, F., Gruhn, P., Matthews-Martin, L., Dollard, K.J., Tucker, A.M. & Bizette, L. (2003). Results of the 2002 AHCA survey of nursing staff, vacancy, and turnover in nursing homes. Retrieved from the American Health Care Association website: http://www.ahcancal.org/research_data/staffing/Documents/Vacancy_Turnover_Survey2002.pdf

Donoghue, C. (2006). The percentage of beds designated for Medicaid in American nursing homes and nurse staffing ratios. Journal of Health and Social Policy, 22, 19–28. doi:10.1300/J045v22n01_02

Economic Research Service. (2004). Measuring rurality: Rural-urban commuting area codes. Retrieved from http://www.ers.usda.gov/briefing/rurality/ruralurbancommutingareas/

Feng, Z., Grabowski, D.C., Intrator, O., Zinn, J. & Mor, V. (2008). Medicaid payment rates, case-mix reimbursement, and nursing home staffing—1996–2004. Medical Care, 46, 33–40. doi:10.1097/MLR.0b013e3181484197

Garson, G.D. (2010). Multiple regression. Retrieved from the North Carolina State University website: http://www2.chass.ncsu.edu/garson/pa765/regress.htm

Gruneir, A., Lapane, K.L., Miller, S.C. & Mor, V. (2008). Is dementia special care really special? A new look at an old question. Journal of the American Geriatrics Society, 56, 199–205. doi:10.1111/j.1532-5415.2007.01559.x

Harrington, C. & Swan, J.H. (2003). Nursing home staffing, turnover, and case mix. Medical Care Research and Review, 60, 366–392. doi:10.1177/1077558703254692

Harrington, C., Woolhandler, S., Mullan, J., Carrillo, H. & Himmelstein, D.U. (2001). Does investor ownership of nursing homes compromise the quality of care?American Journal of Public Health, 91, 1452–1455. doi:10.2105/AJPH.91.9.1452

Harrington, C., Zimmerman, D., Karon, S.L., Robinson, J. & Beutel, P. (2000). Nursing home staffing and its relationship to deficiencies. Journals of Gerontology. Series B, Psychological Sciences and Social Sciences, 55, S278–S287. doi:10.1093/geronb/55.5.S278

He, W., Sengupta, M., Velkoff, V.A. & DeBarros, K.A. (2005). 65+ in the United States: 2005. Retrieved from the U.S. Census Bureau website: http://www.census.gov/prod/2006pubs/p23-209.pdf

HealthReform.gov. (2009). More choices, better coverage: Health insurance reform and rural America. Retrieved from http://www.healthreform.gov/reports/ruralamerica/index.html

Health Resources and Services Administration. (2004). What is behind HRSA's projected supply, demand, and shortage of registered nurses? Retrieved from http://bhpr.hrsa.gov/healthworkforce/reports/nursing/rnbehindprojections/index.htm

Hendrix, T.J. & Foreman, S.E. (2001). Optimal long-term care nurse-staffing levels. Nursing Economic$, 19, 164–175.

Horn, S.D. (2008). The business case for nursing in long-term care. Policy, Politics, & Nursing Practice, 9, 88–93. doi:10.1177/1527154408320420

Horn, S.D., Buerhaus, P., Bergstrom, N. & Smout, R.J. (2005). RN staffing time and outcomes of long-stay nursing home residents: Pressure ulcers and other adverse outcomes are less likely

as RNs spend more time on direct patient care. American Journal of Nursing, 105(11), 58–70. doi:10.1097/00000446-200511000-00028

Institute of Medicine. (2005). Quality through collaboration: The future of rural health. Retrieved from the National Academies Press website: http://www.nap.edu/openbook.php?isbn=0309094399

Institute of Medicine. (2008). Retooling for an aging America: Building the healthcare workforce. Retrieved from the National Academies Press website: http://www.iom.edu/Reports/2008/Retooling-for-an-Aging-America-Building-the-Health-Care-Workforce.aspx

Kash, B.A., Hawes, C. & Phillips, C.D. (2007). Comparing staffing levels in the Online Survey Certification and Reporting (OSCAR) system with the Medicaid cost report data: Are differences systematic?The Gerontologist, 47, 480–489. doi:10.1093/geront/47.4.480 [CrossRef]

Kemper, P., Heier, B., Barry, T., Brannon, D., Angelelli, J. & Vasey, J. et al. (2008). What do direct care workers say would improve their jobs? Differences across settings. The Gerontologist, 48(Special No. 1), 17–25. doi:10.1093/geront/48.Supplement_1.17

Kim, H., Harrington, C. & Greene, W.H. (2009). Registered nurse staffing mix and quality of care in nursing homes: A longitudinal analysis. The Gerontologist, 49, 81–90. doi:10.1093/geront/gnp014

Kramer, A.M. & Fish, R. (2001). The relationship between nurse staffing levels and the quality of nursing home care. In Abt Associates, Inc., Appropriateness of minimum nurse staffing ratios in nursing homes. Report to Congress: Phase II final. Washington, DC: U.S. Department of Health and Human Services.

McGregor, M.J., Cohen, M., McGrail, K., Broemeling, A.M., Adler, R.N. & Schulzer, M. et al. (2005). Staffing levels in not-for-profit and for-profit long-term care facilities: Does type of ownership matter?Canadian Medical Association Journal, 172, 645–649. doi:10.1503/cmaj.1040131

Miles, M.B. & Huberman, A.M. (1994). Qualitative data analysis: An expanded sourcebook (2nd ed.). Thousand Oaks, CA: Sage.

Mueller, C., Arling, G., Kane, R., Bershadsky, J., Holland, D. & Joy, A. (2006). Nursing home staffing standards: Their relationship to nurse staffing levels. The Gerontologist, 46, 74–80.

Phillips, C.D., Hawes, C. & Williams, M.L. (2003). Nursing homes in rural and urban areas, 2000. Retrieved from the Texas A&M University System Health Science Center website: http://www.srph.tamhsc.edu/centers/srhrc/projects/nhchartbook/PDF/Introduction.pdf

Phillips, C.D., Hawes, C. & Williams, M.L. (2004). Nursing home residents in rural and urban areas, 2001. Retrieved from the Texas A&M University System Health Science Center website: http://www.srph.tamhsc.edu/centers/srhrc/projects/NHRUA01/introduction.pdf

Phillips, C.D. & McLeroy, K.R. (2004). Health in rural America: Remembering the importance of place. American Journal of Public Health, 94, 1661–1663. doi:10.2105/AJPH.94.10.1661

Proenca, E.J. & Shewchuk, R.M. (1997). Attracting RNs to nursing homes: Nurses' work experiences and perceived importance of organization and job attributes. Best Practices and Benchmarking in Healthcare, 2, 265–273.

Schnelle, J.F., Simmons, S.F., Harrington, C., Cadogan, M., Garcia, E. & Bates-Jensen, B.M. (2004). Relationship of nursing home staffing to quality of care. Health Services Research, 39, 225–250. doi:10.1111/j.1475-6773.2004.00225.x

Seblega, B.K., Zhang, N.J., Unruh, L.Y., Breen, G.M., Paek, C.P. & Wan, T.T. (2010). Changes in nursing home staffing levels, 1997 to 2007. Medical Care Research and Review, 67, 232–246. doi:10.1177/1077558709342253

Singh, D.A. & Schwab, R.C. (2000). Predicting turnover and retention in nursing home administrators: Management and policy implications. The Gerontologist, 40, 310–319. doi:10.1093/geront/40.3.310

Towsley, G.L., Dudley, W.N. & Beck, S.L. (2006). Quality care in Utah nursing homes: Urban vs. rural. Utah's Health: An Annual Review, XI, 16–23.

U.S. General Accounting Office. (2001). Nursing workforces: Emerging nurse shortages due to multiple factors (GAO Publication No. 01-944). Retrieved from http://www.gao.gov/archive/2001/d01944.pdf

Weech-Maldonado, R., Neff, G. & Mor, V. (2003). The relationship between quality of care and financial performance in nursing homes. Journal of Health Care Finance, 29(3), 48–60.

Zinn, J.S. (1994). Market competition and the quality of nursing home care. Journal of Health Politics, Policy, and Law, 19, 555–582. doi:10.1215/03616878-19-3-555

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