

Measuring Staff Turnover in Nursing Homes

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Purpose: In this study the levels of staff turnover reported in the nursing home literature (1990–2003) are reviewed, as well as the definitions of turnover used in these prior studies. With the use of primary data collected from 354 facilities, the study addresses the various degrees of bias that result, depending on how staff turnover is defined in nursing homes. **Design and Methods:** Data came from a survey mailed to administrators of 526 nursing homes during March 2003. Facilities were located in four states: Missouri, Texas, Connecticut, and New Jersey. Three hundred and fifty-four responses were received, giving a response rate of 67%. **Results:** The 1-year turnover rates identified in these facilities were 119%, 89%, 87%, 57%, and 48%, for nurse aides, licensed practical nurses, registered nurses, administrators, and directors of nursing, respectively. However, findings show that the definition of turnover used could influence the relative difference between these reported rates by as much as 47%. **Implications:** As a result of measurement error, turnover rates may be misrepresented in prior studies. On the basis of the results of this investigation, several recommendations are made for future data-collection initiatives that will eliminate some of this measurement error.

Key Words: *Measurement theory, Turnover, Nursing homes, Staff, Long-term care*

In this research, I first comprehensively review the literature on levels of turnover among nurse aides (NAs), licensed practical nurses (LPNs), registered nurses (RNs), directors of nursing (DONs), and administrators in nursing homes. Second, I address how staff turnover is measured, that is, the way in which staff turnover is defined and assessed in nursing home studies. Third, I examine the biases resulting from different turnover measurement approaches. Using primary data collected from 354

facilities, I assess the impact on reported turnover rates caused by the use of different definitions of turnover, thereby furthering the understanding of the measurement error that may exist in prior studies.

Using the results of these analyses, I make recommendations for future data collection that will eliminate some of this measurement error. A better understanding of staff turnover also has important policy implications; for example, reducing measurement error in reported turnover rates is important because these data will be used by the Centers for Medicare and Medicaid Services (CMS, 2003). Thus, I discuss the policy implications of the findings.

As the study focus was on the comprehension of the levels of staff turnover in nursing homes and the measurement of this construct, my investigation was guided by classical measurement theory (Campbell, Raiffa, & Thrall, 1954). This theory asserts that a measure consists of a *true score* and an *error term*. The error term, if sufficiently large, can prevent measures from representing what they report to measure (Jones, 1971).

As I describe in the paragraphs that follow, definitions of staff turnover in nursing homes vary substantially, as do the instruments used to collect turnover information. The lack of specificity and the lack of uniformity have, in all likelihood, led to considerable measurement error in reports of levels of nursing home staff turnover. These measurement errors prevent any meaningful comparability across studies, and, if they are sufficiently large, they confound interpretation within studies. Classical measurement theory asserts that one can increase the reliability of reports of levels of nursing home staff turnover by decreasing measurement error.

Although measurement error can come in many guises (see Jones, 1971 for a review), the error of most concern here is an error of omission. In a nursing home the opportunity for error by omission is large, because one has to take into account numerous factors in compiling a turnover rate. For example, for the three types of nursing staff mentioned previously, one can organize the work these staff members undertake in different ways, such as by shift worked, part-time staff, and agency staff. These different ways of organizing staff are not always considered when turnover rates are reported. The voluntary (resignation)

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Table 1. Levels of Caregiver Staff Turnover in Nursing Homes

Author(s)	Nurse Aides	LPNs	RNs	All Caregivers	Sample Size and Setting	Definition of Turnover
Brennan & Moos (1990)	—	—	—	46%	117 community nursing homes	The number of staff employed by the facility for less than one year ÷ total number of staff
Munroe (1990)	—	—	—	26%	57 long-term-care facilities for veterans	Annual percent turnover for all personnel
Caudill & Patrick (1991)	93%	—	45%	—	455 nursing homes in California	None given
AJN (1991)	37%	19%	19%	—	26 facilities in Western state	None given
Spector & Takada (1991)	118%	46%	44%	—	National survey	Number of staff leaving due to voluntary resignation, dismissal, or retirement as a percent of FTEs. Separate rates for RNs, LPNs, and NAs
Bowers & Becker (1992)	120–145%	—	—	—	56 nursing homes in Rhode Island	None given
Kovner et al. (1994)	—	—	34%	—	3 nursing homes in an urban, midwestern city	None given
Close et al. (1994) ^a	64.6% 17.4% 17.9%	32.4% 18.8% 48.9%	25.9% 19.3% 54.7%	— — —	317 acute and long-term-care providers	None given
Gaddy & Bechtel (1995)	67%	—	—	—	265 nursing homes	None given
SEIU (1995)	160–346%	—	—	—	One nursing home	None given
Banaszak-Holl & Hines (1996)	32% ^b	—	—	—	Beverly Enterprises nursing homes in Texas	Number of NA resignations and terminations in the last 6 months divided by the total number of NAs in the home
Grant et al. (1996)	14% ^b	8% ^{b,c}	—	—	250 facilities in 10 states	Proportion of staff who stopped working on the unit during the previous 6 months
	18% ^b	10% ^{b,c}	—	—	64 nursing home SCU	
	16% ^b	9% ^{b,c}	—	—	321 nursing homes without SCU	
	20% ^b	11% ^{b,c}	—	—	Non-SCU rate in 182 nursing homes with SCU	
Anderson et al. (1997)	179%	103% ^b	64%	—	Non-SCU rate in 139 homes without SCU	None given
Kiyak et al. (1997)	—	—	—	35%	469 facilities in Texas	Percent of staff who had left the organization
Straker & Atchley (1999)	88–137%	—	—	125–176%	308 employees in 6 nursing homes and 12 community facilities	Survey question for turnover rate for your facility
Remsburg et al. (1999)	23–28%	—	—	—	112 nursing homes in Ohio	Total number of full-time NAs who terminated employment during the fiscal year
HHCS (1999)	49%	27%	28%	—	One urban, nonprofit facility	
CMS (2001)	77.8%	—	—	72%	1,879 nursing homes	Total number of employees during the period ÷ average number of employees. Total number of employees during the period ÷ (0.5 × number of employees at beginning of period + number of employees at end of period). Employees at end of period + employees hired during period ÷ employees at end of period.
					Most facilities (1,167 of 1,238) in California	

(Table continues on next page)

Table 1. (Continued)

Author(s)	Nurse Aides	LPNs	RNs	All Caregivers	Sample Size and Setting	Definition of Turnover
	100.1%	57.2%	54.7%	85%	Most facilities (241 of 362) in Kansas	
	76.2%	38.7%	41.2%	63%	Most facilities (449 of 454) in Wisconsin	
Ong et al. (2002)	40%	—	—	—	All certified nurse aides in California	Employee retention rates over 1 year
AHCA (2002)	78.1%	53.6%	56.2%	—	National survey of 6,991 facilities	Sum of terminations (voluntary and involuntary) for six months ÷ sum of established positions. Collected by number of FTEs × 2 to give an annual rate.
Zimmerman et al. (2002)	40%	20%	20%	—	59 facilities in Maryland	RN turnover per FTE in one year; LPN turnover per FTE in one year; NA turnover per FTE in one year
Fitzpatrick (2002)	65%	—	—	—	12 facilities in South Carolina	None given
Stone et al. (2002)	53–82%	18–42%	33–44%	36–56%	Wisconsin nursing homes in 1995 and 1999	Number of full-time and part-time RNs, LPNs, and NA hired in the year ÷ number of full-time and part-time RNs, LPNs, and NA
Brannon, Zinn, Mor, & Davis (2003)	51% ^b	—	—	—	288 facilities in 8 states	None given
Decker et al. (2003)	71.1%	48.9%	48.9%	—	National survey of 6,155 facilities	See AHCA (2002)
Harrington & Swan (2003)	—	—	—	71%	Freestanding nursing homes (1,155) in California	Percentage of nurses not employed at the end of the year

Notes: LPN = licensed practical nurse; RN = registered nurse; AJN = American Journal of Nursing; FTE = full-time equivalent; NA = nurse aide; SEIU = Service Employees International Union; SCU = special-care units; HHCS = Hospital and Health-care Compensation Service; CMS = Centers for Medicare and Medicaid Services; AHCA = American Health Care Association.

^aThis study presents categories of turnover, we report the% of facilities reporting turnover to be higher than 25% in the first line, more than 10% but less than 25% in the second line, and 10% or less in the third line.

^bResults given for 2 years.

^cRate is for licensed nurses, which includes both LPNs and RNs.

and involuntary (termination) nature of turnover and the common measurement period of 1 year also serve to further increase the measurement error.

Literature Review

I searched the MEDLINE and CINAHL (Cumulative Index for Nursing and Allied Health Literature) databases from 1990 to 2003. I did not choose this time period to represent any important theoretical or statistical considerations, but because it would reasonably represent contemporary thinking and evidence on staff turnover and because other studies have reviewed this earlier literature (e.g., Cohen-Mansfield, 1997).

I conducted these searches with a combination of the key words *turnover*, *staffing*, and *caregivers*. Limiting the search to long-term-care facilities produced 72, 135, and 297 English-language publications, respectively. I subsequently examined the short abstracts for each of these publications to determine

their applicability for review. I defined relevant studies to be those that included any discussion of staff turnover. From this review of the nursing home literature, I sought to summarize (a) levels of staff turnover, and (b) definitions of turnover used in these studies.

I also searched the Social Sciences Citations Index and Business Source Premier Index by using the key words *turnover* and *measurement*. I used this search to determine whether researchers in the human resources, organizational behavior, management, and labor-economics literatures had identified refinements for use when studying turnover.

Levels of Turnover.—Studies addressing NA, LPN, and RN turnover rates in nursing homes are shown in Table 1. Reported average annual NA turnover rates vary from 14% to 346%, reported average annual LPN turnover rates vary from 8% to 103%, and reported average annual RN turnover rates vary from 19% to 64%.

Table 2. Levels of Top-Management Staff Turnover in Nursing Homes

Author(s)	NHA	DON	Sample Size and Setting	Definition of Turnover
AJN (1991)	—	37%	National survey	None given
Larsen (1993)	—	35%	80 facilities in Colorado	Time in current position
Gilbert (1995)	20%	—	National survey	None given
AHCA (1995)	—	36%	National survey	None given
Christensen & Beaver (1996)	70%	—	147 facilities in Oregon	Number of persons serving as administrators in a given time period
Gilbert (1996)	20–30%	—	National survey	None given
Singh et al. (1996)	40%	—	173 facilities in South Carolina	Length of employment at the facility
Singh & Schwab (1998)	40%	—	173 facilities in South Carolina	Job changes that occurred in the subject facilities during a 12-month period
Singh & Schwab (2000)	38.5%	—	552 administrators in Michigan and Indiana	See Singh & Schwab (1998)
Angelelli et al. (2001)	43%	—	832 facilities in New York	Number of administrators per year
Olson (2001)	—	46%	230 rural facilities in Midwest in 1994 ^a	Time in current position
Olson (2001)	—	16%	230 rural facilities in Midwest in 1999–2000 ^a	Time in current position
Castle (2001)	43%	—	420 facilities in 5 states	Number of administrators per year
AHCA (2002)	—	46.6%	National survey of 6,991 facilities	Sum of terminations (voluntary and involuntary) for 6 months ÷ sum of established positions. Collected by number of FTEs × 2 to give an annual rate.
Zimmerman et al. (2002)	140% ^b	180% ^b	59 facilities in Maryland	Administrator turnover in 2 years; DON turnover in 2 years.
Decker et al. (2003)	—	49.7%	National survey of 6,155 facilities	See AHCA (2002)

Notes: NHA = nursing home administrator; DON = director of nursing; AJN = American Journal of Nursing; AHCA = American Health Care Association; FTE = full-time equivalent.

^aResults given for 2 years.

^bResults given for 2 months.

Studies addressing administrator and DON turnover rates are shown in Table 2. Reported average annual administrator turnover rates vary from 20% to 70%, and reported average annual DON turnover rates vary from 16% to 49.7%.

In general, the average turnover rates identified in these studies are variable. There are likely to be many reasons for this variability, such as the varying periods of time in which these studies were conducted. The facility samples also differ, with some studies including limited variation in characteristics such as size and ownership. This also may influence reported turnover rates, as prior research has shown that turnover rates vary on the basis of facility characteristics. Turnover rates also are influenced by local employment conditions. Moreover, these rates may reflect different definitions of turnover used by the studies.

Defining Turnover.—Tables 1 and 2 also present the definitions of turnover utilized in each of the studies reviewed. In a few cases, no definition of turnover was provided. It is obvious from these tables that no standard definition exists, at least in long-term-care studies.

Recent Refinements in Turnover Research.—Researchers in other disciplines (already listed) have identified several refinements for use when studying turnover. Of most significance to this research are the following refinements: (a) further defining the type of turnover under investigation; (b) eliminating some so-called proxy turnover measures; and (c) matching the definition of turnover used with the study aims.

In further defining the concept of turnover, Bluedorn (1978) developed a taxonomy consisting of four types of turnover: voluntary accessions, involuntary accessions, voluntary separations, and involuntary separations. Subsequent research has rarely used these four divisions, but it has stressed the importance of distinguishing between voluntary and involuntary turnover. As Shaw, Delery, Jenkins, and Gupta (1998) describe, this is because “to treat quits, discharges, and total turnover as synonymous ignores the markedly different etiologies and effects of these phenomena” (p. 511).

Other research has discounted the use of proxy turnover measures, particularly the use of tenure (Campion, 1991). Similar to turnover, tenure is a construct with multiple operational definitions; for

example, one can use tenure in the current position or tenure in the facility. Thus, some caution is needed when one is using measures of tenure. However, for use as a proxy measure of turnover, tenure is considered most problematic because of the “unproven assumption that short-tenure employees are equivalent to those who leave an organization” (Campion, p. 200). A degree of negative duration dependence exists between turnover and tenure; however, tenure measures are prone to length-bias sampling (Flinn, 1986). That is, cross-sectional studies will likely overrepresent long-tenure employees and underrepresent short-tenure employees (Flinn).

A further refinement that I identified in this literature review was that studies should provide a comprehensive definition of turnover that is appropriately matched to the study aims. As Van Der Merwe and Miller (1971) describe, “for whilst turnover has been measured often enough, it is still rare to find a clear relationship between the method of measurement used, and the purpose of that measurement. All too often measures have been structured around available data” (p. 233).

Summary of Literature Review

In the literature review, I identified 38 studies published between 1990 and 2003 that addressed staff turnover in nursing homes. The most serious criticism of this nursing home turnover literature is that many studies fail to provide a comprehensive definition of turnover. Moreover, the precision of the turnover estimates reported in these studies is unclear. The fact that I could find no consensus on the definition of turnover used in nursing home studies provided my motivation for this investigation. I undertook a survey to examine what administrators report when they are asked to give turnover rates of facility staff, and whether these rates differ substantially when other, more specific definitions of turnover are used.

Methods

Source of Data

The data I used in this investigation came from a survey of nursing home administrators. I mailed a questionnaire to the administrator at each of 526 nursing homes during March 2003. This was followed by reminder postcards at 2- and 4-week intervals. I did not make follow-up phone calls, but, if requested, I did send a repeat questionnaire to the administrator.

Facilities were located in four states: Missouri (MO), Texas (TX), Connecticut (CT), and New Jersey (NJ). I chose these states because two had high staff turnover (facilities in MO and TX averaged 123% and 105% NA turnover, respectively) and the remaining two had lower staff turnover (facilities in CT and NJ averaged 49% and 46% NA turnover, respectively).

I obtained information regarding levels of staff turnover in each state by examining American Health Care Association (AHCA) data from 2002, which include information from 6,991 facilities in all 50 states (Decker et al., 2003). By using the tercile distributions of NA turnover, I divided these states into high, medium, and low staff turnover. The two high-staff-turnover states included in this investigation (MO and TX) were randomly chosen from the first tercile and the remaining two states in the sample (CT and NJ) were randomly selected from the third tercile. I divided the sample in this way in order to examine whether the reported turnover rates would change significantly (using different definitions of turnover, as subsequently described), depending on the base rate reported.

For the mailing to administrators, I stratified facilities by state and then chose a random sample of approximately 20% ($n = 529$) of facilities from each state's pool of eligible facilities. I simply defined eligible facilities as nursing homes participating in Medicare or Medicaid certification. I received 354 responses from this sample, giving a response rate of 67%. The response rate varied a little across the states: MO had a response rate of 58% ($n = 73$); TX, 71% ($n = 190$); CT, 66% ($n = 42$); and NJ, 70% ($n = 49$).

Questionnaire

Turnover rates for the five types of staff listed in Tables 1 and 2 were of interest; therefore, the questionnaire addressed each category of staff separately. The work these staff members undertake can be organized in different ways; for example, the shift worked, the use of part-time staff, and agency staff may differ from facility to facility. Therefore, I examined these different ways of organizing work, as well as whether voluntary or involuntary turnover influenced turnover rates.

In examining the time period included in measures of turnover, I gave attention to determining whether a shorter period of time than the standard 1-year time frame influenced reported turnover rates. In the questionnaire, administrators were asked to calculate turnover rates for 1 year and for 6 months. The turnover rate for each of the five types of staff was requested. If these reported rates did not include all work shifts (day, evening, and night), clarification and a recalculated rate for all shifts were requested. Second, administrators were asked to report if the turnover rate included voluntary or involuntary turnover, or both; if the rate did not include both, clarification and a recalculated turnover rate were requested. Third, if the turnover rate the administrators reported did not include part-time staff, clarification and a recalculated rate for the total number of full-time-equivalent (FTE) staff were requested. Fourth, if the turnover rate the administrators reported did not include agency staff, clarification and a recalculated turnover rate were requested.

Table 3. Descriptive Statistics of Facilities, Administrators, and the Use of Turnover Information

Variable	MO and TX ^a	CT and NJ ^b
	M or % (SD)	M or % (SD)
Facility characteristics		
Organizational size	132 (102)	128 (99)
For-profit ownership	48%	45%
Chain membership	38%	36%
Medicaid occupancy	58% (22)	55% (23)
Average census	84% (14)	85% (13)
Respondent characteristics		
Female	41%	54%*
Age	47 years	51 years
Highest level of education ^c		
Associate's degree	3%	2%
Bachelor's degree	61%	64%
Master's degree or higher	35%	34%
Tenure as administrator in current facility	2.1 years	2.5 years
Tenure as a nursing home administrator	11.2 years	13.7 years
Member of professional society, or organization	67%	73%*
Turnover information (% responding yes)		
Regularly examine turnover	78	71*
Concerned by own turnover levels	91	89
Implemented initiatives to improve turnover	32	25*
Data systems used to examine turnover	51	62*
Know how own turnover rate is calculated	37	41
Have estimated cost of turnover	29	27

Notes: Data was collected from 354 administrators in Missouri, Texas, Connecticut, and New Jersey in March 2003.

^aN = 263 administrators; high NA turnover in 2002 (taken from Decker et al., 2003).

^bN = 91 administrators; low NA turnover in 2002 (taken from Decker et al., 2003).

^cValues may not total 100% because of rounding error.

*Difference between states is significant at $p < .05$.

The questionnaire also asked some background questions of the administrator, such as gender and tenure, and whether he or she regularly monitored staff turnover. It also asked whether turnover data represented a best guess by the administrator or whether the data were computerized in some way; if the administrator had introduced any measures to reduce turnover; and whether the administrator had calculated the cost of turnover.

I pilot tested the 27 items in the questionnaire with 10 administrators. This included mailing the questionnaire to the administrators and following up with phone calls that lasted between 15 and 45 min, and it resulted in minor changes to the questions. However, I did make revisions to the ordering of the questions, because the FTE and agency questions were consid-

ered difficult or time intensive to answer, and therefore were placed last on the questionnaire. I made this change so respondents would not become frustrated by these questions and terminate their participation. Indeed, I found that the amount of missing data for the FTE questions was low, but it was high (at about 17% missing) for the agency questions.

Analyses

I present descriptive analyses for each of the turnover rates reported by administrators. For example, I list the turnover rate first reported by the administrator, followed by the rate after voluntary and involuntary turnover are included. I repeated this for rates including shift work, part-time staff, and agency staff. In all cases I recalculated these rates, using the self-reported measure of turnover from administrators. I show the relative difference between the initial turnover rate and the recalculated rate as a percentage.

I present descriptive analyses for the questions on how and when turnover is monitored in the facility. I present descriptive statistics consisting of the percentage or mean for each of the questionnaire items. I calculated the average values for each of the two groups of states, those with high NA turnover and those with low NA turnover, and I used t tests to compare the significance of the difference in values between the groups. In addition, I used bivariate comparisons for respondent and nonrespondent nursing homes using facility factors.

Results

In the bivariate analysis, I found no significant differences in facility factors for respondent and nonrespondent facilities. These facility factors came from the Online Survey Certification Reporting System data and included size, ownership, chain membership, Medicaid occupancy, and average census.

Table 3 presents descriptive statistics for the respondent administrators ($n = 354$) and facilities, and whether they regularly monitored turnover in their facilities. Findings show that a majority (76%) of administrators regularly examined staff turnover, and most (90%) were concerned by staff turnover in their facilities.

Table 4 presents statistics for the administrators' self-reported staff-turnover rates. I also obtained information on states with higher and lower turnover, 1-year and 6-month turnover rates, and whether or not the information came from a computerized source. However, the results for states with higher and lower reported turnover rates were highly similar. That is, the average turnover levels in the states with higher and lower turnover did, in fact, represent higher and lower turnover rates, but the variable of interest (the relative difference between

Table 4. Staff Turnover Rates Using Alternative Definitions of Turnover

Turnover Definition	1-Year Figures					6-Month Figures ^a				
	NAs	LPNs	RNs	NHAs	DON	NAs	LPNs	RNs	NHAs	DON
Initial response (turnover per year)	81%	69%	63%	49%	39%	74%	59%	53%	49%	38%
Range	15–359%	7–170%	5–191%	0–600%	0–500%	15–349%	7–167%	5–190%	0–300%	0–300%
Voluntary and involuntary turnover										
% that included both	87%	74%	72%	100%	100%	88%	74%	76%	100%	100%
Recalculated turnover rate ^b	94%	77%	79%	49%	39%	83%	67%	71%	49%	39%
Relative difference between initial and recalculated rates ^c	16%	12%	25%	0%	0%	12%	14%	34%	0%	3%
Shifts and turnover										
% that included all shifts	78%	82%	60%	—	—	79%	84%	60%	—	—
Recalculated turnover rate ^b	99%	82%	78%	—	—	90%	74%	69%	—	—
Relative difference between initial and recalculated rates ^c	22%	19%	24%	—	—	22%	25%	30%	—	—
Part-time workers and turnover										
% that included all workers	67%	73%	75%	56%	48%	67%	73%	75%	54%	47%
Recalculated turnover rate ^b	103%	86%	84%	51%	40%	92%	76%	75%	51%	40%
Relative difference between initial and recalculated rates ^c	27%	25%	33%	4%	3%	24%	29%	42%	4%	5%
Agency (or temporary) staff ^d										
% that included agency staff	11%	17%	21%	14%	16%	12%	19%	25%	14%	16%
Recalculated turnover rate ^b	107%	84%	80%	56%	47%	94%	70%	69%	56%	47%
Relative difference between initial and recalculated rates ^c	32%	22%	27%	14%	21%	27%	19%	30%	14%	24%
Overall adjusted turnover (per year) ^e	119%	89%	87%	57%	48%	107%	78%	76%	56%	49%
Range	18–411%	11–213%	9–267%	0–800%	0–800%	18–401%	11–203%	9–222%	0–800%	0–800%
Relative difference between initial and recalculated rates ^c	47%	29%	38%	16%	23%	45%	32%	43%	14%	29%

Notes: NA = nurse aide; RN = registered nurse; LPN = licensed practical nurse; DON = director of nursing; NHA = nursing home administrator.

^aValues multiplied by 2 to show per-year rate.

^bRecalculated rate represents an adjustment from the initial response using this category only and not all categories combined.

^c(Recalculated rate – initial rate) ÷ initial rate.

^dFor administrators and DONs, this refers to temporary staff: promoted from within the facility, provided by the corporate headquarters, or professional agency.

^eThis final recalculated rate includes an adjustment from the initial response and all of the categories combined (except agency staff).

the initial and recalculated rates) was highly similar irrespective of the state in which the facility was located. Furthermore, reported turnover rates were similar regardless of whether or not computerized information was used, and the relative difference between the initial and recalculated rates also was highly similar. I identified some differences in the data on the basis of whether the turnover rates came from 6-month or 1-year reporting periods. Therefore, Table 4 shows the 1-year reported turnover results pooled for all four states and turnover rates for 6 months pooled across all states.

The turnover rates reported by administrators were 81%, 69%, and 63% for NAs, LPNs, and RNs, respectively. The reported turnover rates for administrators and DONs were 49% and 39%, respectively. These same results using the 6-month estimates (adjusted to reflect 1-year rates) are slightly different, with rates of 74%, 59%, and 53% for NAs, LPNs, and RNs, respectively, and 49% and 38% for administrators and DONs, respectively. It also is clear from Table 4 that

most administrators included voluntary and involuntary turnover, all work shifts, and part-time workers in the reported turnover rates. However, approximately 30% did not include at least one of these factors, and when these omissions were corrected, the recalculated rates of turnover were generally higher.

Most administrators did not include the turnover of agency staff in their initial turnover-rate response. When this information was provided, it did not give much insight into agency-staff turnover, because almost all facilities that reported the inclusion of agency staff in their initial turnover-rate response actually used no or very few agency staff. I found this phenomenon by cross-referencing a question on the use of agency staff with the reported turnover-rate question. In many cases, agency staff were included in the initial response rate by administrators because they used few or none of these staff.

As with the other recalculated turnover rates, when the initial reported turnover rate was corrected to include agency staff, a large overall increase in the

recalculated turnover rate was seen. However, this process was clearly problematic for many administrators. Unlike other items on the questionnaire for which almost all administrators provided recalculated turnover rates, for this question only 32% of the respondents gave a corrected rate.

Results for administrator and DON turnover were slightly different from those seen for nursing staff. For example, agency staff members do not typically fill top-management positions; when a top manager leaves the organization, however, it is common for a temporary administrator or DON to be used. These temporary staff may be promoted from within the facility, be provided by the corporate headquarters, or in rare cases come from a professional agency. Most respondents did not include these staff members in the administrator or DON turnover rates.

The overall recalculated turnover rate, reported at the bottom of Table 4, includes the rate of turnover of staff found by use of information on voluntary and involuntary leavers, all shifts, and part-time workers (members of agency staff are not included). The 1-year turnover rates are 119%, 89%, and 87% for NA, LPNs, and RNs, respectively. The 1-year reported turnover rates for administrators and DONs are 57% and 48%, respectively. The 6-month figures (adjusted to show the rate per year) are in all cases lower for nursing staff but about equivalent for top management.

Discussion

As the study results show, depending on what factors are used to calculate the turnover rates, there may be an extremely wide variation in these rates. Simply asking nursing home administrators to estimate the turnover rate of staff without providing specific directions will yield a mixed bag of responses.

This seemingly high degree of measurement error could have significant policy implications. In recent years, the CMS has released to the public a considerable amount of information on nursing homes. This information includes the national nursing home report card known as Nursing Home Compare (NHC), which gives quality measures (QMs) in 14 areas of resident care (www.Medicare.gov/NHCompare/home.asp). The CMS has proposed adding other QMs, including a measure of staff turnover (CMS, 2003).

The CMS has addressed how this turnover data may be collected, because turnover information is not reported in common nursing home administrative data sources. One option would be to collect the data as part of the yearly licensure–certification process. A second option under consideration would be to collect turnover information from payroll records (Scott, 2005). I could not find a definition of turnover used by the CMS; however, results show that in addition to determining how turnover data may be collected, serious consideration is needed in

determining what factors are used to calculate turnover rates. Some consideration should be given to the shift worked, part-time staff, and the voluntary and involuntary nature of turnover.

Given the difficulty in examining agency staff, no conclusions can be drawn regarding whether or not they should be included in turnover rates. However, the inclusion or exclusion of agency staff could have policy implications. If turnover rates are eventually used as a QM and the rates exclude agency staff, then facilities could decrease their reported turnover rates by simply using more agency staff, albeit at a high cost. Moreover, agency staff members are thought to provide lower quality resident care, because facilities that use higher levels of agency staff deliver lower quality care (Bourbonniere et al., 2006). The possible incentive to use these staff could confound the use of turnover as a QM, and if nursing homes use more agency staff, this QM could foster a situation in which quality actually declines.

An alternative to including agency staff in turnover rates could be to require the separate reporting of the number of agency staff (or agency hours per resident per day). This may be a useful approach, as the use of agency staff could itself be a meaningful quality indicator. Moreover, if both turnover rates and use of agency staff are reported, then the incentive to manipulate turnover rates by using agency staff would be eliminated.

In the past, the CMS has shown an interest in looking for parsimonious measures of poor facility quality. In addition to use in NHC, these measures could be used for additional certification survey activities (e.g., special emphasis inspections). Given the high degree of measurement error identified in this study, turnover rates would seem like poor candidates for this purpose. Moreover, turnover measures themselves may not be parsimonious, because findings from this research indicate that using one turnover rate could be misleading. Recalculated turnover-rate results show that turnover rates of RNs, LPNs, administrators, and DON, as well as NAs, are high. Thus, some serious consideration is needed in determining which types of staff are used to calculate QMs for turnover, and the CMS seems to be considering measures for several categories of nursing home staff (Scott, 2005).

A related issue is that the turnover–quality relationship itself has not been fully explored. The lack of knowledge in this area clearly has policy implications for both special emphasis inspections and NHC. Examining the turnover–quality relationship was beyond the scope of this study, but recent evidence would suggest that the association between staff turnover and quality is not a simple linear relationship (Castle & Engberg, 2005).

Many state and local programs to reduce staff turnover in nursing homes currently exist. As Stone and Wiener (2001) describe, these include wage pass-throughs, benefit enhancements, transportation

subsidies, career ladders, and enhanced training. The reduction of measurement error in reported turnover rates is essential so that these programs can be accurately evaluated.

Limitations of the Study and Suggestions for Further Research

Only limited information was available on the turnover of agency staff, because facilities found that recording the turnover of these staff was difficult and agency staff are not directly employed by the facility. Clearly, more research on the use of agency staff and their potential impact on turnover rates is needed.

In general, NA turnover was shown to be higher than LPN or RN turnover, a pattern that has been identified in other studies. Moreover, the turnover rates of different staff were correlated (range from $r = .62$ to $r = .74$; not shown in table) and relatively constant, even when the recalculated turnover rates are used. These strong relationships among turnover rates of different staff are not unusual (Castle, 2005); however, these averages do hide some details. For example, several facilities (8%) were identified in which the LPN or RN turnover exceeded the NA turnover. Although some facilities had high turnover for most staff, the rate for others was extremely low. In addition, when shift worked, part-time staff, and agency staff are included, the average turnover rates generally increase, yet in some facilities the reverse occurs.

For the study sample, I used AHCA data from 2002 to identify states with high and low average turnover rates. On the basis of the study findings, some measurement error in identifying these states may have existed, based on the turnover definitions used by the AHCA.

My data came from a survey of administrators, but administrators may not be the most appropriate respondents for collecting turnover information. Moreover, I know neither whether or not administrators sought help from other parties in completing the questionnaire, nor what the methods are that administrators used to calculate turnover rates. A more accurate approach would be to ask for detailed staffing information and for the researchers to calculate the turnover rates. I did not use this approach, because it would have substantially increased the number of items in the questionnaire, and it would not have been consistent with prior turnover studies.

Administrators were asked whether the turnover data were computerized in some way, but this was somewhat imprecise, because the data could have come from an ad hoc spreadsheet maintained by the facility or a sophisticated human resources system. Because the CMS is considering the use of turnover data from payroll records, it also would have been useful to examine how many administrators actually extracted information from these records and how many could have done so.

This study highlights potential inaccuracies in turnover rates in prior studies, but it does not necessarily resolve what should be included when researchers are measuring turnover. Clearly, if studies move away from simply asking administrators “what is your turnover rate?” to include several or all of the factors identified as important when turnover is measured, then measurement error in this area may be reduced. A greater contribution would likely result if a standardized staff-turnover questionnaire were to be developed for use in nursing homes.

Another interesting finding is that, despite the incredibly high turnover rate of nursing staff, particularly NAs, few administrators examined the cost of this turnover to the facility and few had initiatives to reduce turnover. Other researchers have pointed out that these costs can be extremely high, so much so that if all NAs were given a \$1/hr pay increase and turnover was reduced by 50%, the increase would be cost neutral (Straker & Atchley, 1999).

Using results from this study and other research, I can make several recommendations for future studies of nursing home turnover. First, all turnover measures should be specific as to whether they assess voluntary or involuntary turnover. As this study shows, aggregate measures that are not specific may understate turnover levels because involuntary turnover may be excluded. In addition, this distinction is important because voluntary and involuntary turnover are likely to have different antecedents, and data from this research show a relatively large involuntary turnover rate.

Second, all turnover measures should be specific as to which work shifts they include and whether they assess part-time staff, FTE staff, or both. Again, these findings show that aggregate measures that are not specific with respect to work shift and FTE status of staff may understate turnover levels.

Third, all turnover measures should be specific regarding the time period they represent. Clearly, a 1-year time interval predominates in the literature, yet lower reported turnover rates were found when a 6-month time frame was used. It is not clear which rate is the most accurate, because both rates are self-reported by administrators. From the questionnaire, it could be determined that administrators believe the 6-month rate is more accurate, and, ironically, one reason is the high turnover among administrators themselves. Many administrators were less confident reporting the 1-year turnover rate because they had not worked at the facility for a full year. This shorter time period is also less prone to the problem of nonsimultaneous separation behavior. This confound occurs when actual turnover is not matched temporally with predictor variables. However, it is not known whether this time frame is susceptible to measurement error, because of the potential seasonality of turnover.

Fourth, turnover measures should examine the situation in which staff members actually leave the

organization, and not proxy measures, such as tenure, for reasons described herein. This recommendation is particularly relevant to nursing home studies examining administrators and DONs, which appear to have a penchant for using measures of tenure.

Results of this study support a definition of turnover as the total number of staff (measured in FTEs) who leave employment during a 6-month period divided by the total number of staff (measured in FTEs) who were employed during this period. This calculation should include all shifts, part-time staff, and voluntary and involuntary turnover.

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