International Journal of Nursing Studies 51 (2014) 1135–1141

Contents lists available at ScienceDirect

International Journal of Nursing Studies

journal homepage: www.elsevier.com/ijns

Associations between state regulations, training length, perceived quality and job satisfaction among certified nursing assistants: Cross-sectional secondary data analysis

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ARTICLE INFO

Article history:
Received 3 July 2013
Received in revised form 19 December 2013
Accepted 20 December 2013

Keywords:
Certified nursing assistant
Education
Job satisfaction
Nursing home
Regulation
Training

ABSTRACT

Background: In the U.S., there are federal requirements on how much training and annual continuing education a certified nursing assistant must complete in order to be certified. The requirements are designed to enable them to provide competent and quality care to nursing home residents. Many states also require additional training and continuing education hours as improved nursing home quality indicators have been found to be related to increased training.
Objectives: This study investigated the associations among state level regulations, initial training quality and focus, and job satisfaction in certified nursing assistants.
Design: Cross-sectional secondary data analysis.
Settings: This study used the National Nursing Home Survey and National Nursing Assistant Survey as well as data on state regulations of certified nursing assistant training.
Participants: 2897 certified nursing assistants in 580 nursing homes who were currently working at a nursing home facility, who represented 680,846 certified nursing assistants in US.
Methods: State regulations were related to initial training and job satisfaction among certified nursing assistants using chi square tests and binomial logistic regression models. Analyses were conducted using SAS-callable SUDAAN to correct for complex sampling design effects in the National Nursing Home Survey and National Nursing Assistant Survey. Models were adjusted for personal and facility characteristics.
Results: Certified nursing assistants reporting high quality training were more likely to work in states requiring additional initial training hours ($p = 0.02$) and were more satisfied with their jobs (OR = 1.51, 95% CI = 1.09–2.09) than those with low quality training. In addition, those with more training focused on work life skills were 91% more satisfied (OR = 1.91, 95% CI = 1.41–2.58) whereas no relationship was found between training focused on basic care skills and job satisfaction (OR = 1.36, 95% CI = 0.99–1.84).
Conclusions: Certified nursing assistants with additional initial training were more likely to report that their training was of high quality, and this was related to job satisfaction. Job satisfaction was also associated with receiving more training that focused on work life skills. Federal training regulations should reconsider additional hours for certified nursing assistant initial training, and include work life skills as a focus. As job satisfaction has been linked to nursing home turnover, attention to training may improve satisfaction, ultimately reducing staff turnover.

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http://dx.doi.org/10.1016/j.ijnurstu.2013.12.008

What is already known about the topic?

- In the US, there are federally regulated minimum training requirements (75 h of initial training and 12 h of continuing education annually) and each state has the authority to require additional training and continuing education hours.
- Additional training has been associated with improved nursing home quality indicators.

What this paper adds?

- Certified nursing assistants with initial training over federal minimums were more likely to report that their initial training was of high quality, and this was significantly related to their job satisfaction.
- Certified nursing assistants whose initial training also focused on work life skills, such as problem solving, task organization and working with others, were significantly more likely to be satisfied with their current job.

The nursing home industry is one of the largest health care providers in the United States serving the aging US population (Houser et al., 2009). Despite the fact that lower skill mix has been associated with resident complications in nursing homes (Dixon et al., 2010; Konetzka et al., 2008) the vast majority of care is provided by certified/geriatric nursing assistants (referred to as certified nursing assistants). These are entry level providers with limited training and education. A large problem with this workforce is the high turnover rate, often attributed to job dissatisfaction, unrealistic expectations, or a lack of satisfactory performance that may be due to poor training (Choi and Johantgen, 2012; Castle et al., 2007; Decker et al., 2009).

Previous research on certified nursing assistant training has suggested that it has a positive effect on job satisfaction (Castle, 2010), in reducing turnover (Noel et al., 2000), and also in promoting improved care for residents (Horn et al., 2010; Zheng and Temkin-Greener, 2010). Certified nursing assistants who are better trained are better prepared to do their job and therefore may be more satisfied and have less intention to leave. In two North Carolina nursing homes, certified nursing assistant training along with additional staffing interventions decreased turnover rates by two-thirds over 12 months (Noel et al., 2000). Temple and colleagues (Temple et al., 2009) suggested that in addition to wages and benefits, certified nursing assistant job competency or capability may be connected with their attitude toward their job and intent to stay or leave.

Furthermore, better trained certified nursing assistants who are more capable of performing assigned tasks could provide better care. Recent research has documented the beneficial effects of certified nursing assistant training on resident outcomes. For example, certified nursing assistants receiving end-of-life training were better able to address this issue with residents (Zheng and Temkin-Greener, 2010). Another study targeting pressure ulcer prevention trained certified nursing assistants to monitor and document skin conditions, and found a 33% reduction of pressure ulcers in the seven nursing homes completing the intervention (Horn et al., 2010). However, most previous research examining the impact of certified nursing assistant training has focused on continuing education efforts rather than initial training.

To ensure that certified nursing assistants meet competency requirements and that quality care is provided to residents, in the US there are federally regulated minimum training and certification requirements (Subpart D of Title 42 of the Code of Federal Regulations for Public Health) (Code of Federal Regulations, 2012). Specifically, certified nursing assistants must receive at least 75 h of initial training and at least 12 h of continuing education annually. In addition to federal requirements, each state has the authority to require additional training and continuing education hours (Paraprofessional Healthcare Institute, 2011). This creates an opportunity to evaluate whether additional training has any impact on employee and resident factors. Indeed additional training and continuing education hours have been found to be positively associated with several nursing home quality indicators (Trinkoff et al., 2013). State regulations of extra training hours could increase certified nursing assistant knowledge and skills as well as influence their confidence and behaviors. Greater confidence in performing skills and pride of doing the job correctly could lead to greater job satisfaction. However, little is known about possible mechanisms that may explain this association and the perceptions of the certified nursing assistants who are the target of the training requirements.

In this study we investigated the associations among state level regulations, initial training quality and focus, and job satisfaction in certified nursing assistants. Our study hypotheses were as follows: (1) more stringent training regulations (e.g., more hours required for initial training and continuing education) are related to better certified nursing assistant perception of initial training quality, (2) certified nursing assistants reporting better initial training quality are more satisfied with their jobs. Also (3) training focus, or topical content of the initial training, is associated with job satisfaction.

1. Methods

1.1. Design

This study was a cross-sectional secondary data analysis using the National Nursing Home Survey and National Nursing Assistant Survey linked to data on state regulations of certified nursing assistant training.

1.2. Data sources and sampling

State training regulation data for 2004 were obtained for all 50 states and the District of Columbia. Data were abstracted from the Iowa Caregivers Association report (Iowa Caregivers Association, 2004) that listed information on initial training and continuing education by state. For the six states omitted from this report (Colorado, Hawaii, Kansas, Pennsylvania, South Carolina, and West Virginia) we contacted relevant state regulatory bodies to obtain these data (Trinkoff et al., 2013).

For nursing home level data, we used the 2004 National Nursing Home Survey which reflects a nationally representative sample of the 16,628 nursing homes in the US. The National Center for Health Statistics selected 1500 nursing homes through a stratified multi-stage sampling strategy with 1174 facilities participating, for a response rate of 81%. Data on nursing home characteristics such as bed size, resident population, and other facility-level information were assessed through a computer-assisted personal interview.

The 2004 National Nursing Assistant Survey was the source of initial training quality, topical focus of initial training and job satisfaction data. To create the National Nursing Assistant Survey, a random sub-sample of 790 nursing homes was selected from the 1174 participating in the National Nursing Home Survey, with 592 nursing homes of those initially selected (75%) represented in the National Nursing Assistant Survey (Squillace et al., 2013). Of the 4274 eligible nursing assistants in these homes, 3017 certified nursing assistants (71%) completed a computer-assisted telephone interview on their demographic, training and job characteristics. Multiplying the certified nursing assistant participation rate by the facility participation rate gave an overall response rate of 53.4%.

For this analysis, the sample was restricted to the 2897 certified nursing assistants in 580 nursing homes who were currently working in a nursing home at the time of the survey. When sampling weights were applied, this represented a national sample of 680,846 certified nursing assistants working in US nursing homes. Out of the eligible 2897 certified nursing assistants, those with missing data were excluded from the statistical models ($n = 33$ for training quality and focus, 9 for job satisfaction). To evaluate any selection biases that might occur, we compared the overall sample of nursing assistants to those used for this analysis, and found no differences in age, race, education, facility size and ownership between the two groups.

1.3. Measures

State regulatory measures represented whether states required more hours than the federal requirements for initial training (yes/no) and continuing education (yes/no).

Certified nursing assistant ratings of their initial training quality were assessed using Likert-type items asking "how well your initial nursing assistant training prepared you to perform in different areas of your job." Eleven different content areas were covered (alpha = 0.90). Item responses were coded as: 0 = not-offered, 1 = poor, 2 = fair, 3 = good and 4 = excellent. After summing the values and finding that the scores were skewed, scores were dichotomized using the 75th percentile to define initial training quality: high (total score = 41–44) versus low (1–40). Another National Nursing Assistant Survey item that asked about how well they felt their training prepared them for the actual work was found to be significantly different by their perception of their training quality. Among certified nursing assistants reporting a high quality of training, 92% felt well prepared, while only 57% of those with low training quality reported feeling well prepared ($\chi^2 = 66.3$, $p < 0.01$), supporting the validity of the initial training quality measure.

In addition, we explored the focus of what was taught in terms of topics provided. In the 11 content areas asked about by the survey, 6 items represented basic care skills (resident care skills, e.g., bathing, eating; talking with residents; discussing with family members; recording resident data; dementia care; and dealing with abusive residents) and 5 items represented work life skills (working with co-workers; working with supervisors; problem solving; organizing work tasks; and injury prevention). For each item we recoded the good/excellent responses as 1, and fair/poor/not-offered as 0. The count total was dichotomized to reflect the amount of focus paid to each skill taught such that a high count (6 for basic care and 5 for work life) reflected a strong emphasis in the content area. We also used three other items: initial training location (nursing facility, educational facility, others) and proportion of training costs the certified nursing assistant paid (all, part, none), plus an item asking how much they felt their work was valued by society (very much, somewhat, not at all).

Job satisfaction was assessed via a single item that asked "overall, how satisfied are you with your job" using a 4-point response (1 = extremely dissatisfied to 4 = extremely satisfied). This single item job satisfaction measure has been shown to highly correlate with multiple item measures (Wanous et al., 1997) and previous research using the National Nursing Assistant Survey has also successfully used this question (Choi and Johantgen, 2012). Because responses were highly skewed, the measure was dichotomized with responses of "extremely satisfied" or "satisfied" combined to define positive job satisfaction.

For control variables, several certified nursing assistant (age, race, education, and years of certified nursing assistant experience) and nursing home characteristics (bed size, type of ownership, and total nurse staffing) were selected because they have been found to be important in previous research on job satisfaction and certified nursing assistant turnover (Choi and Johantgen, 2012; Castle et al., 2007). Age and years of certified nursing assistant experience were moderately correlated ($r = 0.56$) so both were included.

1.4. Data analysis

Data were analyzed using the National Center for Health Statistics Research Data Center remote access system because the dataset contained confidential linking variables (e.g., state code, certified nursing assistant or facility identifier). SAS-callable SUDAAN version 10.0.1 (RIT International: Research Triangle Park, North Carolina, US) was used to correct for complex sampling design effects in the National Nursing Home Survey and National Nursing Assistant Survey.

Descriptive analysis was performed to explore certified nursing assistant characteristics (personal and facility characteristics). Chi square tests were used to explore differences in state regulations by training quality and focus, and individual training items by job satisfaction. Binomial logistic regression models that included the

potential confounding variables were used to estimate odds ratios (OR) and 95% confidence intervals (CI).

2. Results

For most certified nursing assistants, the highest educational attainment was a high school education or less (75.1%) (Table 1). Almost half of the certified nursing assistants were more than 40 years old and white. While 19% of the sample had less than two years of experience, half of the sample had six years or more. The majority of certified nursing assistants currently worked at large (bed size ≥ 100) and for-profit facilities, with a typical total nurse staffing level of less than 5 h per resident day. A difference by initial training quality was only seen for one demographic characteristic as a larger proportion of those rating their initial training quality as high were black (50.4%) whereas among those rating their initial training as low there were more whites (57.6%, $p < 0.01$). Differences were also noted for facility bed size, with more certified nursing assistants rating training as high quality in large facilities vs those rating it as low (72.4% vs 65.4%, $p < 0.01$).

2.1. Initial training quality

Certified nursing assistants reporting high quality of initial training were more likely to work in states that required additional training hours than those reporting low quality training (57.3% vs 49.7%, $p = 0.02$). No differences were noted for additional continuing education hours (Table 2). Certified nursing assistants with high training quality also viewed their work as highly valued by society (60.1%) compared to those perceiving poor training quality (35.8%, $p < 0.01$). No differences were noted for training location or for who paid for the training. Compared to certified nursing assistants reporting low initial training quality, those reporting high quality were significantly more likely to be satisfied with their jobs (OR = 1.51, 95% CI = 1.09–2.09) after adjustment for confounding variables (Table 3, Model 1).

2.2. Initial training focus

Those reporting a high perceived focus of initial training on basic care and work life skills were more likely to work in states that mandated additional continuing education hours over the federal 12-h requirement (basic care: 13.6% vs 9.8%, $p = 0.03$; work life: 13.8% vs 3.2%, $p < 0.01$) (Table 2). While the topical focus was not related to training location, certified nursing assistants who received high basic care skill focused training paid their own training costs more often than those with low training ($p = 0.04$). High training focus on basic care and work life skills was also

Table 1
Comparison of personal and facility characteristics by initial training quality among certified nursing assistants, weighted proportion (%).

	Study sample	Initial Training Quality		
		High	Low	*p*-Value
Unweighted *n*	2897	704	2160	
Weighted *n*	680,846	177,721	493,754	
Personal characteristics				
Age (years)				
≤30	31.4	28.2	32.8	0.46
31–40	23.8	25.7	23.2	
41–50	25.5	26.5	25.0	
≥51	19.4	19.0	19.1	
Race				
White	53.3	41.8	57.6	<0.01
Black	38.8	50.4	34.6	
Other	7.9	7.7	7.7	
Education				
≤High school	75.1	77.7	74.0	0.12
More than high school	24.9	23.4	26.0	
Years of certified nursing assistant experience				
<2	19.3	22.0	18.6	0.20
2–5	26.2	22.2	27.7	
6–10	19.2	20.8	18.9	
11–20	22.8	21.3	22.9	
>20	12.5	13.8	12.0	
Facility characteristics				
Bed size				
<100	32.9	27.6	34.6	<0.01
≥100	67.1	72.4	65.4	
Ownership				
For profit	58.3	57.4	58.6	0.69
Not for-profit	41.7	42.6	41.4	
Nurse staffing				
≥5 h per resident day	12.3	14.1	11.9	0.34
<5 h per resident day	87.7	85.9	88.1	

Note: *p*-Values based on chi square tests by initial training quality.

Table 2
Bivariate association between state regulation on certified nursing assistant training and initial training quality and topic focus (basic care skills and work life skills) among certified nursing assistants, weighted proportion (%).

	Initial training quality			Training focus: Basic care skills			Training focus: Work life skills		
	High	Low	*p*-Value	High	Low	*p*-Value	High	Low	*p*-Value
Initial training requirements									
>75 h	57.3	49.7	0.02	52.7	50.4	0.38	53.7	49.5	0.13
75 h (federal requirement)	42.7	50.3		47.3	49.6		46.3	50.5	
Continuing education requirements									
>12 h annually	13.3	11.3	0.33	13.6	9.8	0.03	13.8	3.2	<0.01
12 h annually (federal requirement)	86.7	88.7		86.4	90.2		86.2	90.8	
Initial training location									
Nursing facility	53.8	58.0	0.32	55.5	58.7	0.37	57.8	55.3	0.34
Educational facility	42.2	37.6		39.7	37.6		37.6	41.0	
Others	4.0	4.5		4.8	3.7		4.6	3.8	
How much of training costs certified nursing assistants paid									
All	28.1	26.3	0.44	27.7	25.6	0.04	26.7	27.4	0.88
Part	9.8	8.1		9.9	6.9		8.2	8.8	
None	62.2	65.6		62.5	67.5		65.1	63.8	
How much their work valued by society									
Very much	60.1	35.8	<0.01	48.6	33.9	<0.01	49.5	33.2	<0.01
Somewhat	31.7	50.7		41.1	51.5		40.0	52.8	
Not at all	8.2	13.5		10.3	14.5		10.5	14.0	

Note: *p*-Values based on chi square tests by initial training quality and training topic focus.

associated with how much certified nursing assistants felt valued by society.

A high training focus on basic care and work life skills was each significantly associated with job satisfaction (Table 3, Models 2 and 3). However, when both variables were in the same model, those whose training had a higher focus on work life skills were 91% more likely to be satisfied with their jobs (OR = 1.91, 95% CI = 1.41–2.58) and the relationship between basic care skills and job satisfaction was no longer significant (OR = 1.36, 95% CI = 0.99–1.84) (Table 3, Model 4).

In an exploration, we also examined whether the perceived quality of individual basic care and work life skills areas were associated with job satisfaction (Table 4). Three basic care skills were more often rated as excellent among those satisfied with their jobs than those dissatisfied: discussing resident care with family members ($p = 0.02$), dementia ($p < 0.01$), and working with residents who act out or are abusive ($p < 0.01$). All six work life skills were independently associated with job satisfaction. A larger proportion of those satisfied with their job rated their training more favorably on topics such as how to work with co-workers and supervisors, dealing with work problems, task organization, and injury prevention than those not satisfied with their job.

3. Discussion

Using data from a nationally representative sample, we found that certified nursing assistants with more than 75 h initial training were more likely to report that their initial training was of high quality, and this was related to job satisfaction. Concerns of certified nursing assistant supervisors regarding minimum federal requirements for certified nursing assistant training have been noted, especially that 75 h was insufficient to adequately prepare new certified nursing assistants in nursing homes wherein resident acuity is increasing (Office of the Inspector General, 2002). In addition, certified nursing assistants themselves desired more clinical time and felt unprepared for real life job experiences. US federal requirements for certified nursing assistant initial training are much lower than similar positions in several countries, e.g., 16–22 months for health service helpers/assistants in Denmark, two-three years for care-workers in the Netherlands (Fujisawa and Colombo, 2009). Based on several developed

Table 3
Estimated association of initial training quality and topic focus (basic care skills and work life skills) with job satisfaction among certified nursing assistants working in nursing homes in 2004.

	Model 1 OR (95% CI)	Model 2 OR (95% CI)	Model 3 OR (95% CI)	Model 4 OR (95% CI)
Initial training quality, high vs low	1.51 (1.09–2.09)			
Training focus: basic care skills, high vs low		1.80 (1.36–2.37)		1.36 (0.99–1.84)
Training focus: work life skills, high vs low			2.19 (1.66–2.89)	1.91 (1.41–2.58)
Model fit: −2 log-likelihood ratio (*p*-value)	44.43 ($p < 0.01$)	64.72 ($p < 0.01$)	90.15 ($p < 0.01$)	94.04 ($p < 0.01$)

Note: Training quality: high (>75%-ile for each score) and low (≤75%-ile), training focus: high (answered good/excellent for all the items in each area) and low (all the other).
OR, odds ratio; CI, confidence interval.
Models were adjusted for age, race, education, years of certified nursing assistant experience, bed size, ownership, and nurse staffing.

Table 4
Bivariate comparison of initial training focus on basic care and work life skill topics by job satisfaction, weighted proportion (%).

	Satisfied with job	Dissatisfied with job	*p*-Value
Unweighted *n*	2097	519	
Weighted *n*	478,994	106,373	
How well your initial nursing assistant training prepared you to perform in different areas of your job			
Basic care skills			
Resident care skills such as helping with bathing, eating, dressing, and moving			
Excellent	67.2	64.2	0.17
Good	27.9	27.0	
Fair	4.4	8.0	
Poor	–	–	
Not offered	–	–	
Talking with residents			
Excellent	58.5	55.5	0.18
Good	33.3	31.1	
Fair	7.0	10.1	
Poor	1.1	2.9	
Not offered	–	–	
Discussing resident care with residents' family members			
Excellent	43.5	36.8	0.02
Good	34.0	30.2	
Fair	9.7	12.2	
Poor	4.6	9.3	
Not offered	8.3	11.5	
Recording residents' information			
Excellent	54.3	46.2	0.09
Good	35.6	38.2	
Fair	6.6	10.5	
Poor	1.7	2.9	
Not offered	1.9	2.3	
Dementia care			
Excellent	45.8	39.6	<0.01
Good	36.9	32.8	
Fair	11.9	16.4	
Poor	3.3	7.5	
Not offered	2.1	3.7	
Working with residents that act out or are abusive			
Excellent	43.3	35.7	<0.01
Good	35.2	30.9	
Fair	15.0	19.6	
Poor	5.6	10.2	
Not offered	1.0	3.6	
Work life skills			
Working with co-workers			
Excellent	38.5	32.3	<0.01
Good	42.4	39.4	
Fair	15.2	19.4	
Poor	2.8	6.4	
Not offered	1.1	2.5	
Working with supervisors			
Excellent	42.0	30.5	<0.01
Good	42.0	39.7	
Fair	11.2	17.9	
Poor	2.7	8.9	
Not offered	2.1	3.0	
Straightening out or dealing with problems at work			
Excellent	34.3	22.9	<0.01
Good	43.4	39.0	
Fair	16.9	24.6	
Poor	3.3	10.0	
Not offered	2.1	3.4	
Organizing your work tasks so that everything gets done on time			
Excellent	51.2	41.1	<0.01
Good	36.0	33.2	
Fair	9.0	16.3	
Poor	3.1	6.2	
Not offered	0.7	3.3	
Preventing injuries at work			
Excellent	53.3	45.3	0.01
Good	38.3	38.6	
Fair	6.7	12.1	
Poor	1.2	2.1	
Not offered	0.6	2.1	

Note: – indicates disclosure constraints and value suppressed due to small cell size. *p*-Values based on chi square tests by job satisfaction.

countries' efforts and findings, Fujisawa and Colombo (Fujisawa and Colombo, 2009) suggested better certified nursing assistant training would help to meet the escalating demands for nursing home resident care services with workers who can better handle increasing resident acuity.

The high certified nursing assistant turnover (70% of some training program graduates) also has been linked to insufficient clinical experiences provided to certified nursing assistants (Office of the Inspector General, 2002). The training focus on practical experience in Denmark and the Netherlands is believed to help match certified nursing assistant expectations to actual job experience and to increase retention (Fujisawa and Colombo, 2009; Korczyk, 2004). Furthermore, an extensive literature search found that additional certified nursing assistant didactic (i.e., in-class) training was related to improved quality (Smith et al., 2005; Fitzpatrick and Roberts, 2004). Additional training hours may have provided more information and knowledge that could help certified nursing assistants feel more competent in and satisfied with their work.

Surprisingly our descriptive findings showed that certified nursing assistants who were satisfied with their jobs perceived their initial training as better in handling their work life through a focus on interpersonal skills such as problem solving and work organization. Certified nursing assistants with high focus of training on work life skills such as problem solving, task organization and working with others were significantly more likely to be satisfied with their current job. These work life topics are not federally required in US certified nursing assistant training (Code of Federal Regulations, 2012), but in Europe training typically includes communication, conflict management and team work (Fujisawa and Colombo, 2009). Our findings suggest that additional attention to these topics could help to increase certified nursing assistant job satisfaction and thus their retention.

Study findings should be interpreted with caution as data were cross-sectional and the National Nursing Home Survey and National Nursing Assistant Survey relied on self-report. In some cases, respondents might not feel comfortable criticizing their training, though they were not asked to do this in direct relation to their job performance. Confidentiality of the data collection and use of computer-assisted interviewing for the National Nursing Home Survey and National Nursing Assistant Survey should have decreased this problem.

Findings from this study provide new evidence to inform regulatory research and policy. In order to increase

certified nursing assistant retention and the quality of resident care delivery in US nursing homes, comprehensive actions are needed. Federal training regulations should reconsider the minimum requirements, which have not changed in more than 20 years (Sengupta et al., 2010). The Institute of Medicine recommended that (1) the minimum training hours increase to at least 120 h, and that (2) the certified nursing assistant certification exam directly assess competence in the care of older people (Institute of Medicine, 2008). Additional hours for certified nursing assistant initial training and continuing education in work life skills should be considered, given the relation to job satisfaction or competency, as well as the ultimate goal of regulation, to promote quality resident care. In addition, hours required for didactic or clinical education can be investigated for their effectiveness and for optimal allocations.

Conflict of interest

None declared.

Funding

This study was funded by the National Council of State Boards of Nursing (Grant R40009; PI, A Trinkoff).

Ethical approval

The Institutional Review Board of University of Maryland, Baltimore reviewed and approved this study (IRB protocol number: HP-00049284).

References

Castle, N.G., 2010. An instrument to measure job satisfaction of certified nurse assistants. Appl. Nurs. Res. 23 (November (4)) 214–220.

Castle, N.G., Engberg, J., Anderson, R., Men, A., 2007. Job satisfaction of nurse aides in nursing homes: intent to leave and turnover. Gerontologist 47 (April (2)) 193–204.

Choi, J., Johantgen, M., 2012. The importance of supervision in retention of certified nursing assistants. Res. Nurs. Health 35 (April (2)) 187–199.

Code of Federal Regulations, 2012. Title 42 – Public Health, Part 483: Requirements for States and Long Term Care Facilities. www.ecfr.gov/cgi-bin/text-idx?c=ecfr&tpl=/ecfrbrowse/Title42/42cfr483_main_02.tpl (retrieved 11.11.13).

Decker, F.H., Harris-Kojetin, L.D., Bercovitz, A., 2009. Intrinsic job satisfaction, overall satisfaction, and intention to leave the job among nursing assistants in nursing homes. Gerontologist 49 (October (5)) 596–610.

Dixon, S., Kaambwa, B., Nancarrow, S., Martin, G.P., Bryan, S., 2010. The relationship between staff skill mix, costs and outcomes in intermediate care services. BMC Health Serv. Res. 10 (July) 221, http://dx.doi.org/10.1186/1472-6963-10-221.

Fitzpatrick, J.M., Roberts, J.D., 2004. Challenges for care homes: education and training of healthcare assistants. Br. J. Nurs. 13 (21) 1258–1261.

Fujisawa, R., Colombo, F., 2009. The long-term care workforce: overview and strategies to adapt supply to a growing demand. OECD Health Working Papers, No. 44. OECD Publishing. http://dx.doi.org/10.1787/225350638472 (retrieved 11.11.13).

Horn, S.D., Sharkey, S.S., Hudak, S., Smout, R.J., Quinn, C.C., Yody, B., 2010. Beyond CMS quality measure adjustments: identifying key resident and nursing home facility factors associated with quality measures. J. Am. Med. Dir. Assoc. 11 (7) 500–505.

Houser, A., Fox-Grage, W., Gibson, M.J., 2009. Across the States 2009: Profiles of Long-Term Care and Independent Living, 8th ed. American Association of Retired Persons, Washington, DC.

Institute of Medicine, 2008. Retooling for an Aging America: Building the Health Care Workforce. http://www.iom.edu/~/media/Files/Report%20Files/2008/Retooling-for-an-Aging-America-Building-the-Health-Care-Workforce/RetoolingforanAgingAmericaBuildingtheHealthCareWorkforce.pdf (retrieved 11.11.13).

Konetzka, R.T., Stearns, S.C., Park, J., 2008. The staffing-outcomes relationship in nursing homes. Health Serv. Res. 43 (June (3)) 1025–1042, http://dx.doi.org/10.1111/j.1475-6773.2007.00803.x.

Korczyk, S., 2004. Long-Term Workers in Five Countries: Issues and Options. American Association of Retired Persons, Washington, DC. http://assets.aarp.org/rgcenter/health/2004_07_care.pdf (retrieved 11.11.13).

Iowa Caregivers Association, 2004. Survey of Nurse Aide Registries (Direct Care Worker) in the United States. http://www.directcareclearinghouse.org/download/ICG_Registry_04.pdf (retrieved 11.11.13).

Noel, M.A., Pearce, G.L., Metcalf, R., 2000. Front line workers in long-term care: the effect of educational interventions and stabilization of staffing ratios on turnover and absenteeism. J. Am. Med. Dir. Assoc. 1 (November–December (6)) 241–247.

Office of the Inspector General, 2002. Nurse Aide Training Report. http://oig.hhs.gov/oei/reports/oei-05-01-00030.pdf (retrieved 11.11.13).

Paraprofessional Healthcare Institute, 2011. Nurse Aide Training Requirements by State. http://phinational.org/nurse-aide-training-requirements-state (retrieved 11.11.13).

Sengupta, M., Harris-Kojetin, L.D., Ejaz, F.K., 2010. A national overview of the training received by certified nursing assistants working in U.S. nursing homes. Gerontol. Geriatr. Educ. 31 (3) 201–219, http://dx.doi.org/10.1080/02701960.2010.503122.

Smith, B., Kerse, N., Parsons, M., 2005. Quality of residential care for older people: does education for healthcare assistants make a difference? N. Z. Med. J. 118 (May (1214)) U1437.

Squillace, M.R., Remsburg, R.E., Bercovitz, A., Rosenoff, E., Branden, L., 2007. An Introduction to the National Nursing Assistant Survey. Vital and Health Statistics. Vol. 1, Programs and Collection Procedures, pp. 1–54. http://www.cdc.gov/nchs/data/series/sr_01/sr01_044.pdf (retrieved 11.11.13).

Temple, A., Dobbs, D., Andel, R., 2009. Exploring correlates of turnover among nursing assistants in the National Nursing Home Survey. Health Care. Manage. Rev. 34 (2) 182–190.

Trinkoff, A.T., Johantgen, M., Lerner, N., Storr, C.L., Han, K., McElroy, K., 2013. State regulatory oversight of certified nursing assistants and resident outcomes. J. Nurs. Regul. 3 (4) 53–59.

Wanous, J.P., Reichers, A.E., Hudy, M.J., 1997. Overall job satisfaction: how good are single-item measures? J. Appl. Psychol. 82, 247.

Zheng, N.T., Temkin-Greener, H., 2010. End-of-life care in nursing homes: the importance of certified nursing assistant staff communication. J. Am. Med. Dir. Assoc. 11 (September (7)) 494–499, http://dx.doi.org/10.1016/j.jamda.2010.01.006.