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Using agency nurses to fill RN vacancies within specialized hospice and palliative care

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Abstract

The use of agency nurses offers flexibility in filling registered nurse openings during times of shortage, yet little is known about their use in specialized palliative care. In an effort to fill this knowledge gap, this study determined whether significant relationships existed between full-time and part-time RN vacancies and the use of agency RNs within specialized hospices that deliver perinatal end of life care to women and their families in the event of miscarriage, ectopic pregnancy, or other neonatal complications resulting in death. This study used data from the 2007 National Home and Hospice Care Survey and multivariate regression methods to estimate the association between RN vacancies and agency RNs use. Approximately 13% of perinatal hospices in 2007 used agency nurses. Increases in full-time RN vacancies are associated with a significant increase in the use of agency RNs, while part-time RN vacancies are associated with a significant decrease in agency RNs. These results suggest that full-time agency RNs were used as a supplemental workforce to fill vacancies until the full-time position is recruited. However, for part-time vacancies, the responsibilities of those positions shifted onto existing staff and the position was not filled.

Keywords

nursing workforce; specialized end-of-life care; data analysis

National projections from the United States Health Resources and Services Administration (2014) suggest a surplus of 340,000 nurses by 2025; however, there is evidence that a

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nursing shortage presently exists (Carnevale, Smith, & Gulish, 2015; Juraschek, Zhang, Ranganathan, & Lin, 2012; Seo & Spetz, 2015). As an example, hospice and palliative care providers continue to experience shortages in registered nurses (RNs) (Hospice and Palliative Nurses Association, 2013). This is particular prevalent among providers of specialized hospice and palliative care for veterans, prison inmates, homeless patients, and perinatal patients. Perinatal hospice and palliative care provides a unique glimpse into the specialized care delivered at end of life for women and their families in the event of a miscarriage, ectopic pregnancy, stillbirth, or neonatal death (Calhoun, 2010; Roush, Sullivan, Cooper & McBride, 2007). Perinatal hospice and palliative care emerged in the 1990s and as of 2007 approximately 60% of hospices in the United States offered these services with an interdisciplinary team of RNs, obstetricians, pediatricians, social workers, and chaplains (Calhoun, 2010; Kilby, Pretlove & Bedford Russell, 2011; Lindley, Fornehed & Mixer, 2013).

Nurses on the perinatal hospice and palliative care team often facilitate the development and execution of a birth plan that outlines the mode of delivery, its location, management, and after-birth care of the mother and infant (D'Almeida, Hume, Lathrop, Njoku & Calhoun, 2006). They also facilitate the provision of traditional hospice care for the neonate with a life-limiting condition that includes pain and symptom management, along with bereavement services for parents and family (Williams, Munson, Zupanic & Kirpalani, 2008). Nurses providing perinatal hospice and palliative care have an unconventional mix of labor and delivery nursing skills and hospice nursing care knowledge. Thus, hospices offering perinatal care increasingly face the necessity of balancing their nurse staffing requirements with the unique care needs of their patient population.

The utilization of agency nurses offers specialized hospice and palliative care providers the same staffing flexibility in filling RN openings that occurs in more generalized health care settings such as hospitals (Seo & Spetz, 2013). Agency nurses are generally utilized when there is a need for a specific nursing skill that the organization's nursing staff lacks. Staffing agencies employ approximately 88,000 RNs and supply nursing services to hospitals and other health care settings on a temporary basis (United States Department of Health Resources and Services Administration, 2010). One benefit of utilizing agency RNs is greater staffing flexibility; however, reliance on agency RNs has been linked to a reduction in nursing productivity (Jalonen, Virtanen, Vahtera, Elovainio & Kivimaki, 2006), diminished professionalism (Manias, Aitken, Peerson, Parker & Wong, 2003), lowered standards of patient care (Grinspun, 2002; Inman, Blumenfeld & Ko, 2005), and decreased levels of teamwork within acute care settings (Aiken, Clarke, Cheung, Sloane, & Silber, 2003). Furthermore, Xue, Smith, Freund and Aiken (2014) found that agency nurses often lacked relevant health care competencies and on the job experience that was necessary for their temporary assignments. Despite these findings, other researchers report that the utilization of agency nurses has no impact on patient mortality or adverse patient outcomes in the acute care setting (Aiken, Xue, Clarke, & Sloane, 2007; Aiken et al., 2012; Aiken, Shang, Xue & Sloane, 2013; Xue, Freund, Aiken, & Noyes, 2012).

Although the cost-benefit trade-off associated with utilizing agency RNs remains unclear within acute care settings, little evidence exists regarding the effects of their use in

specialized hospice and palliative care providers. One study found substantial differences in the nurse work environment between providers that did and did not provide perinatal hospice and palliative care (Lindley et al., 2013). Differences in the nurse work environment were also associated with changes in the delivery of care (Mixer, Lindley, Wallace, Fornehed, & Wool, 2015; Wool, Kozak, & Lindley, 2015). Specifically, aspects of the nurse work environment such as nurse knowledge in the form of advanced practice registered nurses were associated with reduced RN turnover (Lindley & Cozad, 2016). In addition, increasing RN unit size and nursing leadership was associated with a reduction in vacancies of permanent RNs within the organization (Lindley, Mixer, & Cozad, 2015). However, no evidence was identified that explored the utilization of agency RNs and their influence on filling RN vacancies among specialized hospices and palliative care providers. Thus, there is a critical gap in our understanding of utilizing temporary RNs in specialized hospice and palliative care.

We designed this study to address this gap in knowledge by examining the association between the numbers of full-time and part-time RN vacancies and the organization's decision to utilize agency RNs, while controlling for provider characteristics. A secondary aim was to examine whether the number of RN vacancies had an impact on the number of employed full-time and part time agency RNs. Knowing the factors that influence the utilization of agency nurses in highly specialized hospice and palliative care settings is important to ensure that this special population of mothers, infants, and their families receive high quality end-of-life care.

METHODS

Data Sources

We used a non-experimental cross-sectional design to perform a secondary analysis of 2007 data from the 2007 National Home and Hospice Care Survey (NHHCS) (United States Department of Health and Human Services (Centers for Disease Control and Prevention, 2010). The National Center for Health Statistics (NCHS) in the Centers for Disease Control and Prevention (CDC) conducted the NHHCS periodically from 1992 through 2007 (United States Department of Health and Human Services, Centers for Disease Control and Prevention, 2011). For the 2007 NHHCS survey, 1,036 in-person interviews were conducted with a nationally representative sample of hospice and home health agency directors between August 2007 and February 2008. NHHCS contains detailed organization-reported information on hospices and home health care providers. No patients or their families were contacted for this survey. The 2007 NHHCS data are the most current information on perinatal hospice and palliative care providers because NCHS modified the NHHCS in 2012 and removed the perinatal hospice and palliative care identifier.

Sample

The unit of analysis for this study was the hospice and palliative care provider. Organizations were included if they were state licensed hospice providers, provided perinatal hospice and palliative care services, and Medicare/Medicaid certified. Organizations were excluded if they did not employ RNs, were home health care

organizations only, or had missing data across the included dependent and independent variables. After applying the inclusion and exclusion criteria, the final un-weighted sample included 233 providers. The institutional review boards at the University of Tennessee, Knoxville and Furman University approved this study.

Measures

Dependent Variables—The NHHCS survey included provider-reported information on agency RN utilization. For this study, we created three dependent variables of agency RN utilization. The measure of “agency RN” was whether or not the perinatal hospice and palliative care provider utilized agency RNs. *FT Agency RN* represented the number of full-time RN contractors utilized by the hospice and palliative care provider; whereas *PT Agency RN* represented the number of part-time RN contractors utilized.

Independent Variables—The primary independent variables of interest were the number of unfilled full-time RN vacancies (*FT RN Vacancies*) and unfilled part-time RN vacancies (*PT RN Vacancies*) within a 12-month period at the perinatal hospice and palliative care provider.

Covariates—The three groups of covariates created for this study were hospice environment, nursing unit environment, and nursing unit structure (Lindley et al., 2013). In terms of hospice environment, *affiliation* was a categorical variable representing whether or not a providers was a freestanding agency. Service area was defined by three categorical variables (*metropolitan, micropolitan, or rural*) representing the Metropolitan Statistical Area (MSA) in which the perinatal hospice and palliative care provider delivered care. *Metropolitan* served as the base category for comparison within the regression models. *Facility size* categorized providers as small whether they had 100 patients per day or less and large whether they had over 100 patients per day. *Organizational age* represented the total number of years a provider had been licensed by the state. *Ownership* indicated whether a hospice reported being for-profit or other (not-for-profit or government) status. *Teaching status* signified providers that were clinical training site for any type of student (i.e. nursing or medical). *Accreditation* indicated whether or not the provider was accredited by the Joint Commission.

Nursing unit environment variables were also included as covariates. *RN unit size* captured the number of full-time equivalent RNs on staff per patient. *Patient acuity* represented whether nurses cared for patients receiving continuous home hospice care. *RN leadership* denotes whether the agency director had a nursing degree of any kind, and the *RN support services* indicated whether the provider had at least one clinical nurse specialist or nurse practitioner on staff full-time.

A final group of covariates included the nursing unit structure. The proportion of RNs on staff (*RN Proportion*) was the proportion of RN FTEs divided by the total number of RN and licensed practical nurse FTEs for each provider. *RN education* represents whether the nursing unit had RNs with their highest degree as a baccalaureate in nursing (BSN). *RN certification* was whether RNs within the nursing unit had any specialty certifications. Whether or not influenza vaccines are encouraged for nurses within the provider was a

proxy for the *safety climate*. *Career climate* was a binary measure indicating whether a provider offered a career ladder for nurses, and *technology climate* gauged whether the provider was using an electronic medical records system.

Statistical Analysis

We calculated the means and standard deviations for all continuous variables and tabulated the frequency of occurrence for all categorical variables within the sample. We used multivariate regression models to determine the magnitude and statistical significance of the association between full-time and part-time RN vacancies and use of agency RNs.

In Model 1, a logistic regression estimated the relationship between full-time and part-time RN vacancies and the perinatal provider's decision to utilize agency RNs. In Model 2 and 3, a Poisson regression estimated whether full-time and part-time RN vacancies affected the intensity of utilization of full-time and part-time agency RNs (i.e. number of agency RNs employed). A Poisson regression model was selected over other suitable models (negative binomial, zero inflated negative binomial, and instrumental variable specifications) through tests of over-dispersion, along with the Durbin-Wu-Hausman test for endogeneity (Cameron & Trivedi, 2009). Other models of sensitivity demonstrated no multicollinearity issues between the independent variables and covariates. All regression results appear as marginal effects with standard errors in parentheses. All analyses were weighted to account for the complex nature of the NHHCS data. Analysis was performed using Stata 12.0 software (Statacorp LP, College Station, TX).

STUDY FINDINGS

Descriptive Statistics

Table 1 displays the summary statistics for the variables included in the study. Almost 13% of providers utilized agency RNs. The average number of full-time agency RNs was less than one (0.04) and two was the maximum number of full-time agency RNs any one perinatal provider utilized. For part-time agency RNs, the mean was also less than one (0.25) with the majority of the sample not using any agency RNs; the maximum number of RNs used annually was 20. The average number of full-time RN vacancies was 0.98 per year, while the average number of part-time RN vacancies was 0.57 per year.

Most perinatal providers were non-freestanding (56.8%) and delivered services within a metropolitan area (42.2%). The facility size was small (88.4%) and providers operated for approximately 16 years. Perinatal providers were generally not-for profit or governmental status (83.3%), served as a clinical teaching site for students (86.9%), and were not accredited (65.5%). The average perinatal hospice had less than one full-time equivalent RN per patient. Only 14.4% of the sample had patients receiving continuous home care, but 71.1% had an agency director with a nursing degree. Less than a quarter of the sample had clinical nurse specialists or nurse practitioners. Providers also had a high proportion of RNs on staff (0.85). Almost 90% of providers had nurses with a BSN degree and 65.5% had specialty certifications. It was common for providers to emphasize safety through influenza

vaccinations for staff (95%) and to have electronic medical records (62.6%), but less than a quarter (23.4%) offered career ladders for nurses.

RN Vacancies and the Decision to Utilize Agency RN

Full-time and part-time RN vacancies were related to the utilization of agency RNs. For a typical perinatal provider, an additional full-time RN vacancy was associated with an increase in the probability of deciding to utilize agency RNs by 3 percentage points, while an additional part-time RN vacancy was related to a decrease probability of deciding to utilize agency RNs by 2 percentage points (see Table 2 for results of the logistic regression (Model 1)).

Several covariates were also associated with agency RN utilization. Delivering perinatal hospice and palliative care in a rural area ($ME=-0.21$) had significant negative association with utilization of agency RNs. In addition, older hospices were less likely to utilize agency RNs ($ME=-0.007$). However, perinatal providers with RN support services ($ME=0.09$) and technology climate ($ME=0.09$) were positively related to the utilization of agency RNs (see Table 2).

RN Vacancies and the Number of Agency RNs Employed

Full-time RN vacancies were associated with number of full-time and part-time agency RNs utilized. An additional full-time RN vacancy increased the probability of using another full-time agency RN by six percentage points and the effect of an additional full-time RN vacancy on part-time agency RNs was almost twice as large, increasing the probability of using a part-time agency RN by 11 percentage points. In addition, part-time RN vacancies were related to the number of agency RNs. RN vacancy reduced the probability of utilizing another full-time agency RN by approximately seven percentage points and part-time agency RN by approximately eight percentage points (see Table 2).

Additionally, several covariates were related to the number full-time and part-time agency RNs. Significant associations with the number of full-time agency RNs utilized included micropolitan area ($ME=-0.13$), rural area ($ME=0.06$), facility size ($ME=-0.10$), organizational age ($ME=-0.01$), accreditation ($ME=0.11$), RN unit size ($ME=-0.03$), patient acuity ($ME=-0.01$), RN leadership ($ME=-0.06$), RN support services ($ME=0.10$), RN proportion ($ME=-0.20$), and safety climate ($ME=-0.81$). Variables associated with the number of part-time agency RNs were freestanding ($ME=-0.40$), facility size ($ME=0.34$), accreditation ($ME=-0.40$), RN unit size ($ME=-0.02$), patient acuity ($ME=-0.62$), RN education ($ME=-0.37$), and safety climate ($ME=3.52$) (see Table 2).

DISCUSSION

This study's goal was to assess the relationships between full-time and part-time RN vacancies and the use of agency RNs among providers of perinatal hospice and palliative care services. In this section, we first discuss how staffing constraints might prompt directors of these special hospices to use agency RNs, then we consider the study's limitations, findings for health policy, nursing practice, and future research within perinatal palliative care.

How Staffing Constraints Lead to the Decision to Use Agency RNs

The findings from this study revealed that full-time RN vacancies resulted in an increase in the probability of the perinatal provider's deciding to utilize agency RNs. More specifically, a full-time vacancy increased the probability of hiring another full-time agency RN by 6 percentage points and a part-time agency RN by 11 percentage points. This result suggests that full-time RN vacancies create a shortage of labor within the perinatal provider that constitutes the decision to use more full-time agency RNs. One possible explanation for this finding is that providers offering perinatal palliative care utilize the supplemental workforce provided by agency RNs to fill in the full-time position until it is recruited. The utilization of agency RNs may also represent a source of recruitment and on the job training for the regular RN opening.

Part-time RN vacancies resulted in a reduction in the probability of using full-time or part-time agency RNs. An additional part-time RN vacancy reduces the probability of hiring another full-time agency RN by approximately seven percentage points and another part-time agency RN by approximately eight percentage points. This suggests that the responsibilities of the individuals who create the part-time vacancies are shifted onto current full-time and part-time hospice employees, rather than being filled by agency RNs. Another explanation may be that agency administrators of perinatal hospice and palliative care do not fill the part-time positions. It is possible that when part-time vacancies exist, the provider restructures by reorganizing positions and job responsibilities and combining multiple part-time vacancies into full-time vacancies.

Another interesting finding was that perinatal providers with a policy of encouraging their staff to receive influenza vaccines were significantly associated with using more full-time and part-time agency RNs, compared to providers with no policy in place. In an effort to control infectious disease, it seems plausible that providers offering perinatal palliative care services institute measures to encourage influenza vaccinations and create an environment of safety when relying on agency RNs, in order to protect women and their families in the during events of a miscarriage, ectopic pregnancy, stillbirth, or neonatal death. Instituting standard operating procedures that encourage vaccinations prior to or simultaneously with the decision to utilize agency RNs creates an expectation for these personnel to meet this standard, which may be spread by word of mouth and ensures all RNs comply because the standard is well known throughout the organization.

Overall, these results inform health policy by highlighting that providers offering perinatal hospice and palliative care services do face similar staffing constraints as those found in acute care settings, and agency RNs offer the same staffing flexibility in filling RN openings that has been found in more generalized health care settings (Seo & Spetz, 2013). Evidence from the study also suggests when agency RNs are employed, administrators may also worry about the safety and the spread of infectious disease, just as administrators in the acute care settings. However, for more broad policy implications, additional detailed data is needed to overcome the limitations of this study and further the body of evidence regarding how these organizations differ from acute care settings in measuring quality of care with agency RNs.

Study Limitations

This study had several limitations. First, the cross-sectional, rather than longitudinal, design for the secondary analysis meant that only associations between the variables and no causal conclusions should be drawn from the results. Second, as previously mentioned within the Methods section, the most recently available data on perinatal hospice and palliative care providers and agency RNs comes from the 2007 NHHCS, which has been discontinued by the CDC. Hence, the data here are about ten years old and might not reflect current state of practice and policy. Third, only 12.8% of an already small sample used agency RNs, which may contribute to bias or measurement error. The study lacked the ability to analyze contextual factors such as the recent rapid growth within the hospice industry due to data limitations imposed by discontinuation of the survey (Thompson, Carlson & Bradley, 2012). The rapid growth of hospice industry has the potential to exacerbate vacancies and the use of agency RNs because an overall shortage of labor is placing supplies side labor constraints on hospice managers. Lastly, measurement error in the data may exist because provider self-reported answers to the survey. Even though the CDC maintains the quality of the data, incentives may exist for hospice administrators to underreport negative information in a government survey.

Implications for Nursing Practice

The findings have administrative implications for specialized hospice and palliative care providers. Administrators need to develop staffing plans aimed at filling full-time RN vacancies. Given the nursing shortages within specialized hospice and palliative care (Hospice and Palliative Nurses Association, 2013), administrators may need to use agency nurses to manage ebbs and flows in personnel created by the larger macroeconomic pressures within a geographic region. Additionally, whether managers use agency RNs, they might consider partnering with staffing agencies to encourage using the same agency RNs within the organization. This consistency could enhance the ability of agency RNs' to become part of the provider's nursing unit teams, thereby potentially safeguarding against diminished teamwork that other researchers found when hospitals used agency RNs (Aiken et al., 2003). Having an integrated workforce may also increase nursing productivity, professionalism, and improve the quality of care for patients, thereby addressing many of the issues that were associated with agency RN use in hospitals (Aiken et al., 2003; Grinspun, 2002; Inman et al., 2005; Jalonen et al., 2006; Manias et al., 2003). Furthermore, consistently integrating agency RNs into the nursing unit team may provide the work environment necessary to build the competencies that Xue and colleagues (2014) found agency nurses needed for their temporary assignments, albeit in hospital and not hospice and palliative care settings.

Implications for Future Research

The study findings highlight that future research on specialized hospice and palliative care is still needed to determine whether agency RNs are an adequate substitute for full-time RNs because of the unique nursing skills needed to operate within this environment. This research is especially important given that perinatal hospice and palliative care RNs are asked to provide sensitive and effective end-of-life care to mothers, families, and infants

during a particularly difficult time. Future research might determine the effect agency RNs have on the quality of care that patients in this specialized environment need. However, current evidence remains ambiguous due to the current challenges in defining and collecting data associated with quality of care.

One challenge in defining quality of care for perinatal hospices and palliative care is that data on patient outcomes have different meanings at end of life compared with other types of care. Hospital quality of care, for example, may be measured in how many patients are saved. In palliative care, however, mortality is expected so other metrics are needed to evaluate quality of care. In the case of perinatal hospice and palliative services, quality of care may come in the form of having pediatric knowledge, which is a resource intensive process involving formal training of staff on how to treat, manage, and counsel patients or having nurses available to assist families in the grieving process by creating memories aimed at easing perinatal grief (Lindley, Mixer, & Cozad, 2013; Miller, Lindley, Mixer, Fornehed, & Niederhauser, 2014). Because programs aimed at quality of care in perinatal hospice are in their infancy, research focused on garnering quality of care likely needs to be measured using open-ended qualitative interviews that are sensitive to the vulnerability of patients (Miller et al., 2014). Further, to thoroughly understand the mechanism through which quality of care is delivered to these patients, this study's results also highlight the need for research that focuses on supply-side dynamics such as how full-time and part-time agency RNs are being utilized as part of the nursing team. Then, it may be possible to assess the effects of the use of these personnel on the unique metrics of quality care within perinatal hospice and palliative care.

CONCLUSIONS

In summary, this study provided evidence of an association between full-time and part-time RN vacancies and the use of agency RNs within specialized hospice and palliative care providers. It found increases in full-time RN vacancies were associated with a statistically significant increase in the use of agency RNs. This suggests that vacancies create a shortage of labor within perinatal hospices and that full-time agency RNs may be used as a supplemental workforce until the full-time position is filled. However, part-time RN vacancies in these special providers were associated with decreases in use of agency RNs.

The findings from this study highlight that future research on perinatal hospices and palliative care is still needed to determine whether agency RNs are an adequate substitute for full-time RNs because of the unique nursing skills needed to operate within this environment. Future research is also needed on these specialized providers to understand how to better measure quality of care from the patient's perspective and ascertain how full-time and part-time agency RNs are being utilized as part of the nursing team.

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Table 1

Descriptive Statistics of Study Variables, Unweighted (N=233)

Variables	Mean/Percentage	Std. Dev.	Min	Max
Dependent Variables				
Agency RNs				
No	87.2%			
Yes	12.8%			
FT Agency RN	0.04	0.23	0	2
PT Agency RN	0.25	1.45	0	20
Independent Variables				
FT RN Vacancies	0.98	2.05	0	12
PT RN Vacancies	0.57	1.86	0	20
Covariates				
Affiliation				
Freestanding	43.2%			
Non-Freestanding	56.8%			
Service Area				
Metropolitan	42.2%			
Micropolitan	31.0%			
Rural	26.8%			
Facility Size				
Small	88.4%			
Large	11.6%			
Organizational Age	16.2	7.74	1	28
Ownership				
For-profit	16.7%			
Non-profit or government	83.3%			
Teaching Status	86.9%			
Accreditation	34.3%			
RN unit size	0.67	0.87	0.02	9.68
Patient Acuity	14.4%			
RN leadership	71.1%			
RN support services	23.2%			
RN proportion	0.85	0.16	0.33	1.5
RN education-BSN	89.4%			
RN certification	65.5%			
Safety climate	95.0%			
Career climate	23.4%			
Technology climate	62.6%			

Note 1. Table 1-authors' secondary analysis of publicly available data from the 2007, National Home and Hospice Care Survey (NHHCS, 2007).

Table 2

Association Between RN Vacancies and Number of Agency RNs Utilized

Dependent Variables	Agency RN (Model 1)	FT Agency RN (Model 2)	PT Agency RN (Model 3)
Independent Variables			
FT RN Vacancies	0.03 (0.01) ***	0.06(0.02) ***	0.11(0.03) ***
PT RN Vacancies	-0.02(0.01) *	-0.07(.03) ***	-0.08 (0.02) ***
Covariates			
Freestanding	-0.07(0.06)	-0.02(0.04)	-0.40 (0.15) ***
Metropolitan	-0.03(0.04)	-0.13(0.08) *	-0.11 (0.13)
Rural	-0.21(0.06) ***	0.06 (0.04) *	-0.55(0.20)
Facility Size	-0.05(0.09)	-0.10 (0.23) ***	0.34 (.17) *
Organizational Age	-0.01(0.002) ***	-0.01 (0.004) *	-0.015 (0.006)
Ownership	0.11(0.07)	0.03(0.06)	0.40 (0.25)
Teaching Status	0.07(0.07)	-0.06(0.11)	0.33 (0.30)
Accreditation	-0.04(0.05)	0.11(0.04) ***	-0.40 (0.15) **
RN unit size	-0.01(0.01)	-0.03(0.015) **	-0.02(0.04)
Patient Acuity	-0.11(0.08)	-0.01(0.05) ***	-0.62 (.23) ***
RN leadership	-0.08(0.05)	-0.06(0.035) **	-0.08 (0.11)
RN support services	-0.06(0.06)	0.10 (0.04) ***	0.01 (0.13)
RN proportion	0.14(0.14)	-0.20(0.12) *	0.20 (0.52)
RN education-BSN	-0.05(0.06)	0.02 (0.05)	-0.37 (0.22) *
RN certification	0.09(0.05) *	-0.09 (0.06)	0.34(0.21)
Safety climate		0.81(0.20) ***	3.52 (0.66) ***
Career climate	-0.05(0.05)	-0.06(0.05)	-0.07(0.15)
Technology climate	0.09(0.04) **	0.14(0.10)	0.09 (0.13)

Note 1: Results reported as marginal effects.

*
p< 0.05,**
p<0.01,***
p<0.001

Note 2: Table 2 comes from a secondary, cross-sectional analysis of publicly available data from the 2007 National Home and Hospice Care Survey (NHHCS, 2007)