Wage, Work Environment, and Staffing: Effects on Nurse Outcomes

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Abstract

Research has shown that hospitals with better nurse staffing and work environments have better nurse outcomes—less burnout, job dissatisfaction, and intention to leave the job. Many studies, however, have not accounted for wage effects, which may confound findings. By using a secondary analysis with cross-sectional administrative data and a four-state survey of nurses, we investigated how wage, work environment, and staffing were associated with nurse outcomes. Logistic regression models, with and without wage, were used to estimate the effects of work environment and staffing on burnout, job dissatisfaction, and intent to leave. We discovered that wage was associated with job dissatisfaction and intent to leave but had little influence on burnout, while work environment and average patient-to-nurse ratio still have considerable effects on nurse outcomes. Wage is important for good nurse outcomes, but it does not diminish the significant influence of work environment and staffing on nurse outcomes.

Keywords

burnout; job satisfaction; outcomes; quality of work environment; staffing levels

Introduction

Burnout and job dissatisfaction are perennial problems resulting in costly employee turnover (Larrabee et al., 2003) and poor patient outcomes (McHugh, Kutney-Lee, Cimiotti, Sloane, & Aiken, 2011; Vahey, Aiken, Sloane, Clarke, & Vargas, 2004). Nurses working in hospitals with excessive patient workloads and poor work environments are more likely to be burned out and dissatisfied with their job (Aiken, Clarke, Sloane, Lake, & Cheney, 2008; Aiken, Clarke, Sloane, Sochalski, & Silber, 2002; Maslach, Schaufeli, & Leiter, 2001). These conditions—the level of nurse staffng and the quality of nurses' work environment—

can be changed through good management and organizational practices that value professional nursing.

A satisfactory wage is a significant factor in job-seeking behavior and is especially important in keeping workers in their current positions. Increasing wage to solve institutional workforce recruitment and retention problems is an easy-to-implement intervention in the short run (May, Bazzoli, & Gerland, 2006). Wage, however, is not the only factor; many nonwage job characteristics are important considerations for workers in selecting and staying at a workplace (Antonazzo, Scott, Skatun, & Elliott, 2003; Blau, 1991; Chiha & Link, 2003; García & Molina, 1999; Kovner, Brewer, Wu, Cheng, & Suzuki, 2006; Shields, 2004; Woodbury, 1983). Work takes place within a larger context of hierarchies, relationships, management environments, ethical climates, operating rules, resources, and space distribution (Maslach et al., 2001). Work environments that are more favorable to workers are associated with lower burnout, job dissatisfaction, and intent to leave across a number of sectors, including health care and nursing (Aiken et al., 2008; Kovner et al., 2006; Kovner, Brewer, Greene, & Fairchild, 2009; Maslach & Jackson, 1982; Shields, 2004; Shields & Ward, 2001; Ulrich et al., 2007). To nurses, the organizational climate may be as or even more important than wages as a reason for staying in their job (Hayes et al., 2006; Stone et al., 2007).

Wage increases may need to be combined with non-pecuniary factors, especially modifiable hospital factors such as work environment and workload, to recruit adequate numbers of nurses and prevent them from leaving the hospital setting to work in other jobs (Buerhaus, 1991; Ehrenberg & Smith, 2008; McHugh et al., 2011; Spetz & Given, 2003). Frequently missing from nurse outcomes studies, however, is the potentially confounding effect of wage. One might expect that better staffed hospitals with the best work environments also pay higher wages to their nurses. If true, work environment and staffing might be acting as a proxy when better wages is actually the determining factor for mitigating poor nurse outcomes like burnout and job dissatisfaction. Another possibility is that hospitals with less favorable work environments or staffing levels pay higher wages to compensate for poor work conditions. In either case, failing to account for the effects of both wage and nonwage factors on nurse outcomes could confound results. Our aim was to clarify how wage, work environment, and staffing are associated with burnout, job dissatisfaction, and intent to leave.

Methods

Data and Sample

Nurses—The parent study of our cross-sectional secondary analysis used a two-stage sampling design with surveys mailed to the homes of registered nurses in four states (California, Florida, New Jersey, and Pennsylvania) in 2006–2007. The response rate was 39%—more than 100,000 respondents. To address potential nonresponse bias, another random sample of 1,300 nonresponders generated a response rate of 91%. A comparison of the two samples indicated no response bias (Aiken et al., 2011; Smith, 2009). The sampling approach has been detailed elsewhere (Aiken et al., 2011). The survey collected information

on individual nurses' demographic characteristics, work status, setting, role, burnout, and job satisfaction.

Hospitals—The nurse survey detailed earlier was also the source of information about hospital work environment and nurse staffing levels. Hospital nurses provided their employers' names, allowing us to aggregate nurses' responses for work environment and staffing measures. We limited analysis to data from staff nurse respondents working in adult, nonfederal acute care hospitals with at least 10 respondents. We also used Magnet hospital status—designated through the American Nurses Credentialing Center (ANCC) Magnet Recognition program—as an alternative measure indicating the presence of a good work environment for nurses. Magnet-recognized hospitals have been demonstrated to exemplify good places for nurses to work, and outcomes for both nurses and patients are better in Magnet versus non-Magnet hospitals (Aiken et al., 2008; Lake, Shang, Klaus, & Dunton, 2010; Lake et al., 2012; McHugh et al., 2013).

Information on nonnursing structural hospital characteristics was obtained from the 2006 American Hospital Association (AHA) Annual Survey. These characteristics included number of beds, technological status, teaching status, and geographic location.

Wage—Average hourly wage data for registered nurses working as staff nurses in each hospital came from the 2006 Centers for Medicare & Medicaid Services' (CMS) Medicare Wage Index Occupational Mix Survey. The survey collected average hourly wage data for nurses and other workers from Medicare-participating hospitals. The survey differentiated patient care nurses from those in administrative roles. The survey did not include data for nurses in skilled-nursing, psychiatric, or rehabilitation facilities, allowing us to focus on staff nurses in adult, nonfederal acute care hospitals.

Measures

Burnout—As in earlier works (Kelly, McHugh, & Aiken, 2011; McHugh et al., 2011), burnout was measured using the Emotional Exhaustion subscale of the Maslach Burnout Inventory. The intraclass correlation coefficient ICC(1,k) for the Emotional Exhaustion subscale was acceptable at .62 with 10 nurses per hospital (Glick, 1985). Nurses were classified as *burned out* if their score on this subscale was higher than or equal to 27, the published average for health care workers (Maslach & Jackson, 1982, 1986).

Job dissatisfaction—Job dissatisfaction was measured using nurses' responses to the question, "How satisfied are you with your current job?" The 4-point Likert-type scale response options ranged from *very satisfied to very dissatisfied*. We dichotomized the measure such that nurses who reported being either very dissatisfied or a little dissatisfied were described as *dissatisfied* and nurses reporting being moderately satisfied or very satisfied were described as *satisfied* (Kelly et al., 2011).

Work environment—Work environment was measured using the Practice Environment Scale of the Nursing Work Index (PES-NWI; Lake, 2002). We used the four subscales of the PES-NWI, measuring nurse manager ability, leadership, and support; nursing foundations for quality care; collegial nurse–physician relations; and nurses' participation in hospital

affairs. The staffng and resource adequacy subscale was omitted due to high correlation with our staffng measure—patient-to-nurse ratio. An overall PES-NWI score for each hospital was calculated as the mean of the hospital-level subscales. The intraclass correlation coefficient ICC(1, k) for the hospital composite was acceptable at .85 with 10 nurses per hospital (Glick, 1985). For descriptive purposes, hospitals were classified into three categories based on the PES-NWI scores: hospitals in the top quartile were classified as *good*, hospitals in the low quartile as *poor*, and hospitals in between as *mixed*. In regression models estimating the effect of work environment on nurse outcomes, continuous standardized PES-NWI scores were used.

We also evaluated models substituting an alternative indicator of a good work environment —Magnet hospital status. Hospitals recognized as Magnet hospitals by the ANCC as of 2007 were included (53 Magnet and 481 non-Magnet hospitals in our sample).

Staffing—Staffing was measured as the hospital's average patient-to-nurse ratio from the nurse survey data by dividing the average number of patients reported by nurses on their units on their last shift by the average number of nurses on that unit (Aiken et al., 2011). Hospitals were categorized into three groups for descriptive purposes: hospitals in the highest quartile as having *poor* staffing, hospitals in the lowest quartile as having *good* staffing, and hospitals in between as having *mixed* staffing. In regression models, a continuous standardized patient-to-nurse ratio was used.

Wages—The average hourly wage (total of paid wages and salaries/total paid hours) data for staff nurses, including charge nurses but excluding nurses in administrative or leadership positions, were obtained from the 2006 CMS Medicare Wage Index Occupational Mix Survey. Total paid wages and salaries included overtime, vacation, holiday, sick, lunch, severance, other paid time off, and bonuses, but not fringe benefits or wage-related costs. Paid hours included regular hours, overtime hours, paid holiday, vacation, sick, severance pay hours, and other paid-time-off hours.

Hospital characteristics—Our analytic models included a number of hospital structural characteristics as covariates that may affect nurse outcomes (Aiken et al., 2002). These variables were drawn from the AHA Annual Survey. Teaching status was a categorical variable where hospitals without any trainees (postgraduate medical residents or fellows) were nonteaching, hospitals with a 1:4 or smaller trainee-to-bed ratio were minor teaching, and those with higher than 1:4 trainee-to-bed ratios were major teaching. The number of beds was categorized as small (<100 beds), medium (101–250 beds), or large (>251 beds). High-technology hospitals were designated with a binary variable, where high-technology hospitals were those facilities that provided services for open heart surgery, organ transplantation, or both. We used the Herfindahl–Hirschman index—the sum of squared market shares for the hospital service area—as a market competition indicator. We used dummy variables for state as well as urban–rural location (urbanized areas=50,000 or more people; urban clusters=49,999–2,500 people; and rural areas encompass any area not included within an urban area or cluster).

Nurse characteristics—We included nurse-level demographic information that may have affected our nurse outcomes. These variables included gender, type of unit the nurse worked on (medical–surgical, intensive or critical care, or other), highest level of education attained (less than a Bachelor of Science in Nursing [BSN] degree vs. a BSN degree or higher), and years of experience as a registered nurse.

Data Analysis

The data sources were merged to create a final analytic sample of 26,005 registered nurses from 534 hospitals in the four states. First, we assessed the characteristics of nurses and the hospitals in which they worked. We then described the average wages by hospital characteristics. Logistic regression models were used to estimate the effects of wage, work environment, and nurse staffng on three separate nurse outcomes—burnout, job dissatisfaction, and intent to leave—while accounting for individual nurse and hospital characteristics. Our independent variables were standardized, which allowed us to interpret our results as the expected change in the outcome, corresponding with a one standard deviation (*SD*) change in the predictors. This permitted more relevant comparisons of the effects of different predictors on outcomes. We estimated robust standard errors and significance levels that accounted for the clustering of individual nurses within hospitals (White, 1980; Williams, 2000). The study protocol for the parent study was approved by the University of Pennsylvania institutional review board.

Results

Table 1 shows characteristics of the 534 study hospitals. Roughly half of the hospitals were nonteaching hospitals; among the teaching hospitals, most were minor teaching hospitals with a trainee-to-bed ratio of 0.25 or less. More than 90% of the hospitals in our study had more than 100 beds. Approximately 10% of the hospitals in our sample were Magnet hospitals. About 2% of the hospitals were located in rural areas. The mean score of nurse work environment was 2.73 (*SD*=0.22). On average, the patient-to-nurse ratio among these hospitals was approximately 5:1 (*SD*=1.1). Nurses' average hourly wage was $37.20 (*SD*= $8.84).

Descriptive information on registered nurses' average hourly wage by hospital characteristics is also presented in Table 1. The average hourly wage was higher in hospitals with good versus mixed and mixed versus poor work environments. There was little difference, however, in the average wage between Magnet and non-Magnet hospitals. Average hourly wage was higher in hospitals with lower patient-to-nurse ratios. The average hourly wage was also higher in teaching hospitals or hospitals with high technology or more beds. Similarly, wage was higher for hospitals located in urban areas compared with hospitals in rural areas. There was variation in the average wage across the states: Hospitals in California had the highest average wage ($45/hour), whereas hospitals in Pennsylvania had the lowest ($30/hour).

Table 2 describes the nurse characteristics and outcomes in the final sample. Of the 26,005 nurse respondents, approximately 25% expressed dissatisfaction with their current job and

about 34% reported high burnout. Roughly 14% of the nurses expressed intent to leave their current position within the year.

We examined whether the differences seen between hospitals with good work environments and the other hospitals was due to their location in urban areas. Tabulating the work environment and staffing data by urban–rural location (Table 3) shows that the average wage was still generally higher in hospitals with better work environments or good staffing levels. A similar relationship was found between urban–rural locations and staffing: Average wage was higher in hospitals with lower patient-to-nurse ratios. All the Magnet hospitals were in urban areas, preventing such an evaluation.

In addition to unadjusted models, we estimated two versions of our final models, both of which jointly consider the effects of work environment (measured alternatively with the PES-NWI and Magnet status) and staffing when controlling for nurse characteristics and structural hospital factors (Table 4). The difference between the models was that one was estimated without wage, while the other included wage so that we could evaluate how our estimates would change when wage was held constant.

Our results related to job dissatisfaction show that nurses working in hospitals with better work environments and better staffing have lower odds of job dissatisfaction. When we added wage to the models, the effect of wage was significant, but the effects of work environment and staffing remained essentially unchanged. Thus, an odds ratio (*OR*) of 0.70 (95% confidence interval [CI] [0.67, 0.72]) for work environment suggests that even when we account for wage and all other covariates, nurses working at hospitals at the 50 th versus the 16 th percentile or the 84 th versus the 50 th percentiles in terms of the work environment had 30% lower odds of job dissatisfaction. The *OR* for both staffing (*OR*=0.91; 95% CI [0.86, 0.95]) and wage (*OR*=0.91; 95% CI [0.86, 0.96]) suggests that a one standard deviation change in either average wage or average staffing was associated with 9% lower odds of nurses reporting job dissatisfaction. The same was true for our models that substituted Magnet status as an indicator of a good work environment. The odds of job dissatisfaction was 18% (*OR*=0.82; 95% CI [0.72, 0.94]) lower in Magnet compared with non-Magnet hospitals, accounting for wage and all other covariates.

Our results related to burnout were similar to job dissatisfaction. The notable exception was that there was no statistically significant relationship between wage and burnout in our adjusted models with either the PES-NWI (*OR* for wage=0.96; 95% CI [0.91, 1.02] in the PES-NWI model) or Magnet status (*OR* for wage=0.97; 95% CI [0.90, 1.04] in the Magnet status model).

Work environment and staffing were significantly associated with intent to leave even when we accounted for average wage. The one caveat was related to models measuring the work environment with the PES-NWI—when we go from a model not including wage to one that includes wage, the relationship between staffing and intent to leave becomes statistically insignificant at the *p*=.05 level (*p*=.058). The estimate, however, remained essentially unchanged (*OR*=0.93; 95% CI [0.86, 0.99] in the PES-NWI model without wage; *OR*=0.93; 95% CI [0.87, 1.00] in the PES-NWI model with wage). The estimates for staffing in models

using Magnet status, both with and without the inclusion of wage, were statistically significant. Interactions between the work environment and wage, Magnet status and wage, and staffing and wage were not significant.

Discussion

The significant association between more favorable nurse work environments and nurse outcomes, net of wage effects, implies that wages are important, but they do not account for the better outcomes associated with the work environment and nurse staffing. This supports earlier findings that more favorable work environments are associated with lower burnout, job dissatisfaction, and intent to leave across a number of sectors, including nursing (Aiken et al., 2008; Kovner et al., 2006, 2009; Maslach & Jackson, 1982; Stone et al., 2007). Our findings are also consistent with the literature demonstrating that it requires more than good pay to attract nurses into hospital employment and keep them working there (McCloskey, 1974; Stone et al., 2007).

Transforming the organizational culture to support and integrate a model of professional nursing practice can be a valuable investment for hospitals (DeBaca, Jones, & Tornabeni, 1993; Mark, Lindley, & Jones, 2009; Needleman & Hassmiller, 2009; Zelauskas & Howes, 1992), but it requires organizational willingness and commitment. The Magnet Recognition Program is one approach offering a concrete model for creating a good work environment for nurses. When we substituted Magnet hospital status as an indicator of the work environment, our findings showed that—holding wage constant—Magnet recognition was associated with lower odds of burnout, job dissatisfaction, and intent to leave. The Magnet estimates are likely conservative given the low ratio of Magnet hospitals.

The finding that a higher patient-to-nurse ratio was associated with job dissatisfaction and burnout, regardless of average wage, supports previous research (Aiken et al., 2002). An excessive workload exhausts workers' energy and makes recovery impossible. Effective and gratifying work—the satisfaction that comes from providing good quality care to patients— becomes less attainable. Although hiring more nurses can be costly, some of these costs would be offset by increased productivity, a reduction in turnover and retraining costs, and, more importantly, better patient outcomes (Dall, Chen, Seifert, Maddox, & Hogan, 2009; Jones, 2004; Needleman & Hassmiller, 2009; Rothberg, Abraham, Lindenauer, & Rose, 2005).

Our intent was not to discount the importance of wage; wages are an important tool for administrators to use to attract and expand their workforce (Buerhaus, 2008). Our goal, however, was to evaluate whether, as we found, the effects of the work environment and staffing persisted when we accounted for wage. The wage effect, as one might expect, was still important—except in the instance of burnout. Wage may do little to compensate for the conditions leading to burnout. Reforming underlying work conditions at the root of emotional exhaustion may be key to reducing and preventing burnout.

Although nurses are paid relatively well in the United States, wages are compressed (Greipp, 2003) and hospitals can set nurses' wages below their value (Staiger, Spetz, & Phibbs,

2010). This has not gone unnoticed. Nurses, particularly those in direct patient care roles in hospitals and nursing homes, have reported dissatisfaction with wages, as well as nonwage benefits such as health care, tuition reimbursement, and retirement benefits (McHugh et al., 2011). Wage rates and distribution should match nurse skill level to encourage entry into the profession and retention within the institution. Competitive wages, combined with good benefits and nonpecuniary factors, may be necessary to recruit adequate numbers of nurses to meet the ongoing care demands of the upcoming decades and prevent cyclical shortages that have defined the past half century (Spetz & Adams, 2006; Spetz & Given, 2003).

Researchers have estimated that California increased wages 12% higher than other metropolitan hospitals outside of California between 2000 and 2006 (Mark, Harless, & Spetz, 2009). It has been suggested that this rise in wages was a consequence of California's mandate that limited the number of patients that nurses could care for at a given time. We also find that California's hospital wages were higher compared with hospitals in the other states in our analysis. However, our models estimating the effect of wage, work environment, and staffing on nurse outcomes account for differences by state.

There are limitations to our study. Foremost, the cross-sectional design limited our ability to draw causal inferences. The study, however, strengthens the basis for causal inference by accounting for an important potential confounder that had previously been omitted from most research.

Another limitation is that our survey and wage data predate the economic recession that began at the end of 2007. In an environment where any job is difficult to find, the financial downturn could have tempered perceptions of less desirable aspects of the work environment. A number of factors, however, limit our concern here. The first is that, over the many investigations examining the association between work environment and nurse outcomes, the relationships that we found have been consistently identified regardless of time (Aiken et al., 2002; Aiken & Patrician, 2000; Hare & Skinner, 1990; Kelly et al., 2011; Kutney-Lee et al., 2009; Larrabee et al., 2003; McHugh et al., 2011). What is important about our findings is that we show that these relationships persist when we account for wages as a potential confounder.

Furthermore, although work environments may improve over time, evidence suggests that where changes occur, they are associated with changes in nurse outcomes, that is, if work environments and staffing improve, rates of burnout, job dissatisfaction, and intent to leave decrease (Kutney-Lee, Wu, Sloane, & Aiken, 2013). Additionally, research showed that the percentage of direct care hospital nurses who were very satisfied with their present job in 2006 (prerecession) was 29% compared with 28% in 2008 (during the recession). The percentage of nurses who would rate the quality of the salary and benefits package in their current or most recent work setting as excellent or very good was not significantly different from 2006 (28%) to 2008 (30%). Researchers also suggested that the recession effects on the nursing workforce were temporary (Staiger, Auerbach, & Buerhaus, 2012). We expect that if we repeated our study today, we would find the same relationships. Nevertheless, additional study is warranted.

Another consideration is that our outcomes were nurse-specific, but our wage data were not. Although nurse-level wage data might have allowed a more refined analysis of the association between individual wage and our nurse outcomes, we expect that the gains would have been marginal given wage compression. Additionally, some rural hospitals are not represented in our data because there were an insufficient number of nurses from small hospitals for reliable estimates. Many of such hospitals are Critical Access Hospitals, which are not paid under the Inpatient Prospective Payment System (IPPS) and, therefore, were not required to complete the survey that was the source of our wage data.

We also do not measure union presence or membership, although evidence varies regarding how much of a premium unions confer (Ash & Seago, 2004). We do, however, include many covariates we expect would at least partially account for the variation associated with unionization, including state and urban–rural indicators, teaching status, ownership, and size.

Last, the relative impact of wage on nurse outcomes may vary in different countries. Some studies conducted outside the United States, for example, have shown that dissatisfaction with wage played the biggest role with nurse job dissatisfaction and turnover (Fochsen, Sjogren, Josephson, & Lagerstrom, 2005; Klopper, Coetzee, Pretorius, & Bester, 2012; Palmer, 2014). These studies, however, also found that characteristics of the work environment were important contributing factors. Multihospital studies outside the United States and cross-national studies would be valuable.

Conclusion

Our findings suggest that better wages do not explain the relationship between working in well-staffed hospitals with good practice environments and nurse outcomes such as nurse burnout, job dissatisfaction, and intent to leave. Although good wages are important, interventions that improve the work environment and maintain reasonable staffing levels may be more critical to attracting and retaining satisfied nurses in the hospital workforce.

Acknowledgments

Biographies

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Table 1

Hospital Characteristics and Average Hourly Wage by Hospital Characteristics (*n*=534).

	n (%)	Mean wage (*SD*)
Nurse work environment		
Poor	134 (25)	$33.82 (6.61)
Mixed	267 (50)	$37.49 (9.20)
Good	133 (25)	$40.49 (9.05)
Nurse staffing		
Poor	134 (25)	$32.23 (6.48)
Mixed	267 (50)	$36.43 (7.75)
Good	133 (25)	$43.67 (9.11)
Magnet hospital		
Magnet	53 (10)	$36.29 ($6.54)
Non-Magnet	481 (90)	$37.30 ($9.05)
High technology		
High technology	246 (46)	$38.22 (8.86)
Not high technology	288 (54)	$36.54 (8.85)
Teaching status		
No	273 (51)	$36.97 (9.22)
Minor	217(41)	$37.67 (8.65)
Major	44 (8)	$37.70 (8.00)
Bed size		
100	51 (10)	$34.80 (9.35)
101–250	234 (44)	$36.79 (9.22)
>250	249 (47)	$38.33 (8.34)
Ownership		
Not for profit	444 (83)	$37.35 ($9.08)
For profit	90 (17)	$36.47 ($7.50)
State		
California	204 (38)	$45.27 (7.72)
Florida	132 (25)	$32.15 (3.61)
New Jersey	69 (13)	$37.58 (3.69)
Pennsylvania	129 (24)	$29.72 (5.03)
Urban–rural status		
Urban area	482 (90)	$37.91 ($8.64)
Urban cluster	40 (7)	$31.03 ($8.07)
Rural	12 (2)	$29.33 ($7.57)

Table 2

Nurse Characteristics and Outcomes (*n*=26,005).

	n
Characteristics	
Age, mean (*SD*)	44.7 (10.7)
Work experience, mean (*SD*)	16.97 (11.2)
Female	23,704 (93.2%)
BSN degree or above	10,460 (41.0%)
Outcomes	
Job dissatisfaction	6,199 (24.8%)
Burnout	8,489 (33.6%)
Intent to leave	3,455 (13.7%)

Note. BSN=Bachelor of Science in Nursing.

Table 3

Mean (*SD*) Hourly Wage by Work Environment, Staffing, and Urban–Rural Area Classification.

	Urban area	Urban cluster	Rural
Work environment			
Poor	$33.82 ($6.07)	$30.15 ($7.21)	$28.40 ($5.40)
Mixed	$38.43 ($8.86)	$30.02 ($7.91)	$30.77 ($9.00)
Good	$40.80 ($8.92)	$35.58 ($9.41)	$23.00 (–)
Nurse staffing			
Poor	$33.52 ($6.01)	$26.98 ($4.91)	$27.63 ($7.92)
Mixed	$36.73 ($7.66)	$32.86 ($8.60)	$32.74 ($6.38)
Good	$43.71 ($9.24)	$42.45 ($3.30)	–

Table 4

Odds Ratios Indicating the Effect of Wage, Work Environment, and Staffing on Individual Nurse Outcomes.

| | Unadjusted ORs [95% CI] | Adjusted ORs [95% CI] | | | |
| | | PES-NWI | | Magnet Hospital | |
		Without wage	With wage	Without wage	With wage
Job dissatisfaction					
Wage	0.81 [0.77, 0.86]***	–	0.91 [0.86, 0.96]***	–	0.91 [0.84, 0.99]*
Work environment	0.66 [0.64, 0.69]***	0.70 [0.67, 0.72]***	0.70 [0.67, 0.72]***	–	–
Magnet status	0.82 [0.71, 0.94]**	–	–	0.82 [0.72, 0.94]**	0.82 [0.72, 0.94]**
Staffing[a]	0.78 [0.75, 0.82]***	0.90 [0.86, 0.95]***	0.91 [0.86, 0.95]***	0.84 [0.79, 0.90]***	0.84 [0.79, 0.90]***
Burnout					
Wage	0.88 [0.84, 0.92]***	–	0.96 [0.91, 1.02]	–	0.97 [0.90, 1.04]
Work environment	0.77 [0.74, 0.79]***	0.78 [0.75, 0.81]***	0.77 [0.75, 0.81]***	–	–
Magnet status	0.90 [0.80, 1.00]	–	–	0.87 [0.78, 0.97]*	0.87 [0.78, 0.97]*
Staffing[a]	0.86 [0.82, 0.89]***	0.92 [0.87, 0.96]**	0.92 [0.88, 0.96]**	0.87 [0.83, 0.92]***	0.87 [0.83, 0.92]***
Intent to leave					
Wage	0.89 [0.84, 0.94]***	–	0.89 [0.82, 0.97]**	–	0.90 [0.81, 0.99]*
Work environment	0.75 [0.71, 0.80]***	0.72 [0.68, 0.76]***	0.72 [0.68, 0.76]***	–	–
Magnet status	0.81 [0.70, 0.94]***	–	–	0.84 [0.73, 0.97]*	0.84 [0.73, 0.97]*
Staffing[a]	0.94 [0.89, 0.99]*	0.93 [0.86, 0.99]*	0.93 [0.87, 1.00]	0.87 [0.80, 0.94]***	0.86 [0.80, 0.94]***

Note. PES-NWI=Practice Environment Scale of the Nursing Work Index; OR=odds ratio; CI=confidence interval. For interpretability, we report standardized coefficients. Unadjusted estimates are based on models evaluating the effect of a predictor variable, separately, without accounting for any other covariates. Adjusted models account for nurse gender, education level, unit type, years of experience, and hospital characteristics including market competition with the Herfindahl–Hirschman index, teaching status, number of beds, technology level, ownership, state, and urban–rural location.

[a] To interpret coefficients in a similar direction, the standardized staffing variable is based on the reciprocal of the patient-to-nurse ratio.

* p <.05.

** p<.01.

*** p<.001.