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The Association of Race, Ethnicity, and Wages Among Registered Nurses in Long-term Care

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Objective: This study seeks to measure wage differences between registered nurses (RNs) working in long-term care (LTC) (eg, nursing homes, home health) and non-LTC settings (eg, hospitals, ambulatory care) and whether differences are associated with the characteristics of the RN workforce between and within settings.

Study Design: This was a cross-sectional design. This study used the 2018 National Sample Survey of Registered Nurses (NSSRN) public-use file to examine RN employment and earnings.

Methods: Our study population included a sample of 15,373 RNs who were employed at least 1000 hours in nursing in the past year and active in patient care. Characteristics such as race/ethnicity, type of RN degree completed, census region, and union status were included. Multiple regression analyses examined the effect of these characteristics on wages. Logistic regression was used to predict RN employment in LTC settings.

Results: RNs in LTC experienced lower wages compared with those in non-LTC settings, yet this difference was not associated with racial/ethnic or international educational differences. Among RNs working in LTC, lower wages were associated with part-time work, less experience, lack of union representation, and regional wage differences.

Conclusion: Because RNs in LTC earn lower wages than RNs in other settings, policies to minimize pay inequities are needed to support the RN workforce caring for frail older adults.

Key Words: registered nurses, wages, equity, racial/ethnic diversity, long-term care

BACKGROUND

Nursing is the largest health profession in the United States, and nurses play a central role in providing high-quality care in a wide variety of health care settings. The nursing workforce includes over 3.8 million registered nurses (RNs),[1] of whom over 55% work in acute care and 9.4% work in ambulatory care settings. The Bureau of Labor Statistics estimates that 6.1% of RNs worked in the long-term care (LTC) settings of nursing homes and assisted living facilities in 2018, with a high rate of employment growth projected for assisted living facilities between 2018 and 2028.[2] This projected growth in LTC aligns with the rapid aging of the US population; by 2030, 21% of people will be age 65 years and over.[3]

Not only is the older population growing, but it also is becoming more diverse. In 2016, 61% of people 65 years and older were non-Hispanic White, and this percentage is projected to decrease to 56% by 2030. During this short period of time, the percentages of Hispanic/Latinos will grow from 18% to 21%, of Blacks from 13% to 14%, and of Asians from 6% to 7%.[3] There are important racial and ethnic health disparities among older adults, with a large body of research reporting unequal treatment for non-White older adults compared with their White counterparts, high rates of disability, and high rates of poverty[4,5]; addressing these disparities requires a diverse workforce with strong cultural competency.[5] Race/ethnicity, language, and social concordance between care providers and their patients are associated with positive health outcomes among minority populations.[6–8]

The LTC workforce is racially and ethnically diverse with 28% identifying as Black, 28% as Asian, 12.4% as Hispanic/Latino, and only 51% identifying as White.[9] However, the data demonstrate an inverse relationship between racial/ethnic diversity and educational attainment: 58% of nursing, psychiatric, and home health aides are non-White, compared with 46% of licensed practical/licensed vocational nurses (LPN/LVN) (who have some postsecondary education) and only 35% of RNs (who have an associate or higher degree).[9] Similarly, 23.5% of LTC workers were immigrants in 2017, with higher percentages of immigrants in jobs that did not require postsecondary education.[10]

RNs are a key component of the LTC workforce; they are the largest licensed health profession in the United States,

and extensive literature demonstrates their importance to ensuring patient safety in LTC settings.[11] The RN workforce is predominantly White and female but is increasing in diversity.[12] Internationally educated RNs contribute to this diversity, particularly in LTC settings, with immigrants especially concentrated in urban areas across 6 states: New Jersey, New York, California, Illinois, Florida, and Texas.[13]

The job demands and risks experienced by RNs at a hospital are different than those experienced by their counterparts in LTC settings.[14] Further, it is well-documented that RNs who work in LTC settings earn less than those who work in hospitals; the Bureau of Labor Statistics reported that median annual earnings for RNs in hospitals were $75,030 but in nursing and residential care facilities were $66,250.[15] It also has been demonstrated that Black and Hispanic RNs employed in urban hospitals earn less than White and Asian nurses, even after controlling for differences in education and experience.[16] It is unknown whether the wage difference between LTC and hospital employment is associated with differences in the percentage of non-White and/or immigrant RNs in LTC compared with hospitals, nor is it known whether there are wage differences between White, non-White, and immigrant RNs within LTC. Therefore, this study seeks to measure wage differences between LTC and other settings and assess whether differences are associated with the characteristics of the RN workforce between and within settings.

METHODS

Data and Study Population

This study used the 2018 National Sample Survey of Registered Nurses (NSSRN) public-use file to examine RN employment and earnings. The NSSRN survey was fielded every 4 years from the late 1970s to 2008 and then again in 2018. The US Department of Health and Human Services (HHS), Health Resources and Services Administration (HRSA), National Center for Health Workforce Analysis (NCHWA) conducted this survey to understand the registered nursing workforce in the United States[17]; the data guide various HRSA Title VIII programs. Further details regarding the NSSRN are available at the HRSA Web site.[18]

Our study population included RNs employed in nursing as of December 31, 2017, active in patient care, with no reported training as an advanced practice RN, and whose computed hourly wage was at least the federal minimum wage ($7.25). The public-use file has 50,273 observations. After excluding anyone with advanced practice training, total sample cases dropped to 23,454, and the exclusion of those not employed in nursing reduced the cases to 19,213. After excluding anyone who reported that their primary nursing position involved no patient care, total sample cases were 15,652. Finally, excluding those with a calculated hourly wage for the primary nursing position less than the federal minimum wage, total sample cases were 15,373.

Study Variables

We described RNs' human capital variables and employment patterns. The primary outcome variable is the hourly wage in the RN's position, which was constructed as total annual earnings divided by total annual hours in the principal nursing position. In our regression analysis (described below), the dependent variable was the natural logarithm of wages, which normalizes the skewed distribution of wages. We defined LTC settings as nursing home units (nonhospital), rehabilitation/LTC facilities, and home health, and defined all other settings as non-LTC settings (eg, hospital, ambulatory care, dialysis center, and telehealth). Other variables included in the analysis were race/ethnicity, age (in 10-y age groups), type of initial RN degree completed, whether initial RN education was completed in another country, years since graduation from initial nursing education (labeled "experience"), highest education, census region, family structure (eg, marital status, children), and non-nursing household income (calculation description available from authors). We also compared earnings for those employed full-time versus part-time in their primary nursing position, with full-time employment following the US Bureau of Labor Statistics definition of annual hours of 1820 or more.[19]

Statistical Analysis

Data were analyzed using Stata, version 15. We first calculated descriptive statistics and used χ^2 tests to assess whether differences were statistically significant between RNs employed in LTC versus non-LTC. We then estimated multiple regressions in which the dependent variable was the log-wage to examine the effects of demographic, human capital, and employment differences on wages. We first estimated a model for all nurses, including an indicator for LTC employment and interaction terms between LTC employment and race/ethnicity. The explanatory variables for the wage equation included race/ethnicity (White was the excluded category), sex, highest degree in any field (nondegree holder —ie, diploma in nursing—was the excluded category), foreign nursing education, current enrollment in an education program, experience and experience squared, prior licensure as an LPN/LVN, union representation, an indicator for full-time employment, an indicator for being married, indicators for caring for children ages 5 or younger and for children ages 6–18 years, and a set of dummy variables identifying census division to control for regional differences (Pacific region was excluded). Finally, we estimated separate models for RNs employed in LTC and for those employed in non-LTC settings.

Wages were observed only for RNs employed in nursing. Because the decision to work is unlikely to be a random one, a standard wage regression may produce biased results. To account for possible sample selection bias, we estimated a Heckman selection model for nursing employment using a maximum likelihood estimator.[20,21] The selection equation's dependent variable indicated whether or not an RN was employed in nursing and added to our analysis the 6313 RNs who reported they were not working as a nurse. The covariates included in the selection equation for RN employment were the same as those in the wage equation with the addition of non-nursing household income. The coefficients for the wage regression resulting from the Heckman model were compared with those produced using a

standard log-linear regression. The 2 approaches yielded nearly identical coefficients and thus we present the standard log-linear model for simplicity.

Last, we estimated a logistic regression model predicting employment in a LTC setting that included all of the aforementioned covariates, as well as variables indicating employment through an agency and for current or past military service.

RESULTS

Our study sample included 15,373 RNs. Those employed in LTC settings comprised 12% of the overall sample (Table 1). Nurses employed in LTC were significantly less likely to be Hispanic than RNs in other settings (9.2% vs.

11.3%) and significantly more likely to be Black (10.2% vs. 7%) ($P = 0.02$ for grouped race/ethnicity comparison). LTC-employed RNs were older than those employed in other settings, with only 14.2% of LTC RNs being under 35 years old compared with 27% in non-LTC settings and 38.5% of LTC RNs being 55 years and older compared with 25.7% in non-LTC settings ($P < 0.001$ for grouped age group comparisons). There was a significantly greater percentage of nurses employed in LTC who reported their initial RN license as an associate degree (65.3%) compared with non-LTC settings (50.6%). Almost 30% of LTC RNs had previously been licensed as an LPN/LVN compared with only 15% in non-LTC settings ($P < 0.001$).

Table 2 summarizes characteristics of RNs by race/ethnicity for all care settings. Hispanic nurses tended to be

TABLE 1. Characteristics of Employed RNs (N = 15,373)

Variables [χ^2 (*P*)]	Long-term Care (12% of Employed RNs)		Non–Long-term Care (88% of Employed RNs)		All RNs	
	Weighted %	Unweighted n	Weighted %	Unweighted n	Weighted %	Unweighted n
Race/ethnicity [$\chi^2 = 117.65$ (*P* = 0.02)]						
Hispanic	9.2	78	11.3	610	11.0	688
White	71.4	1572	71.9	10786	71.8	12358
Black	10.2	135	7.0	611	7.4	746
Asian	6.4	150	5.8	868	5.9	1018
Other	2.9	58	4.1	505	4.0	563
Age group [$\chi^2 = 755.35$ (*P* < 0.001)]						
< 35	14.2	243	27.0	3192	25.5	3435
35–44	23.4	363	25.5	3067	25.2	3430
45–54	23.9	480	21.9	2909	22.1	3389
55–64	27.3	623	20.1	3282	21.0	3905
≥ 65	11.2	284	5.6	930	6.2	1214
Initial RN degree [$\chi^2 = 590.6$ (*P* < 0.001)]						
Associate degree	65.3	1253	50.6	6635	52.3	7888
Bachelor of science degree	24.8	529	40.7	5539	38.8	6068
Other program type	9.9	211	8.7	1206	8.9	1417
Agency vs. direct employee [$\chi^2 = 129.73$ (*P* < 0.001)]						
Direct employee	90.8	1812	96.5	12850	95.8	14662
Not a direct employee	9.2	181	3.5	530	4.2	711
Veteran status [$\chi^2 = 6.01$ (*P* < 0.10)]						
Current or former active duty	94.3	1889	95.6	12752	95.4	14641
Never served	5.7	104	4.4	628	4.6	732
Program location [$\chi^2 = 14.76$ (*P* = 0.159)]						
United States	93.8	1861	94.9	12744	94.8	14605
Outside United States	6.3	132	5.1	636	5.2	768
Previously licensed as LPN/LVN [$\chi^2 = 756.08$ (*P* < .001)]	29.2	587	15.0	2215	16.7	2802
Highest degree [$\chi^2 = 1025.61$ (*P* < 0.001)]						
RN diploma	5.3	117	4.1	629	4.3	746
Associate degree	48.0	890	28.4	3746	30.7	4636
Bachelor of science degree	42.3	843	59.5	7784	57.5	8627
Graduate degree	4.5	114	8.0	1074	7.6	1188
Census division [$\chi^2 = 191.79$ (*P* < 0.001)]						
New England	7.7	301	5.5	1445		
Mid-Atlantic	15.5	156	12.6	882		
East North Central	16.9	190	16.4	1317		
West North Central	10.2	278	8.5	1656		
South Atlantic	16.7	297	18.9	2460		
East South Central	6.5	135	6.5	921		
West South Central	9.7	125	11.1	966		
Mountain	7.3	339	6.9	2254		
Pacific	9.5	172	13.7	1479		

Data are weighted using standard methods to ensure the results are representative of each state's RN population with adjustments made for RNs who have multiple licenses. LPN/LVN indicates licensed practical nurse/licensed vocational nurse; RN, registered nurse.

TABLE 2. Registered Nurse (RN) Characteristics by Race/Ethnicity (N = 15,373)

Variable [χ^2 (*P*)]	Hispanic	White	Black	Asian	Other
			Weighted %		
Age group [χ^2 = 952.51 (*P* < 0.001)]					
< 35	33.4	25.1	18.8	22.9	26.8
35–44	31.0	24.1	28.0	24.4	25.7
45–54	19.2	21.0	28.1	31.1	25.6
55–64	12.6	22.9	19.1	18.6	15.7
≥ 65	3.8	6.9	6.0	3.0	6.2
Initial RN degree [χ^2 = 1355.27 (*P* < 0.001)]					
Associate degree	57.9	53.1	60.8	26.3	45.8
Bachelor of science degree	34.9	37.4	31.4	66.8	46.7
Other	7.2	9.5	7.8	6.9	7.5
Program location [χ^2 = 14300 (*P* < 0.001)]					
United States	96.3	99.0	93.5	48.9	84.5
Outside United States	3.7	1.0	6.5	51.1	15.5
Highest degree [χ^2 = 941.77 (*P* < 0.001)]					
RN diploma	2.7	5.1	1.5	2.0	2.4
Associate degree	32.5	32.5	29.0	11.6	24.6
Bachelor of science degree	56.7	55.4	59.0	77.9	64.9
Graduate degree	8.1	7.1	10.6	8.5	8.1
Census division [χ^2 = 6722.75 (*P* < 0.001)]					
New England	5.4	82.1	6.2	3.2	3.0
Mid-Atlantic	9.4	71.5	9.0	8.0	2.1
East North Central	5.1	84.4	4.8	3.5	2.2
West North Central	3.7	88.8	3.5	1.5	2.5
South Atlantic	10.8	68.2	13.5	3.9	3.6
East South Central	2.1	83.5	10.2	1.2	3.0
West South Central	23.2	58.3	9.4	4.6	4.6
Mountain	17.1	70.9	2.8	5.1	4.1
Pacific	18.7	51.7	2.8	17.2	9.7

younger than other nurses, with 33.4% under 35 years old compared with 18.8%–26.8% for other groups (*P* < 0.001). More than half of Asian RNs were educated outside of the United States, compared with only 1%–15.5% of non-Asian RNs (*P* < 0.001). Black and Hispanic RNs more often reported an associate degree as their initial RN education level (60.8% for Black, 57.9% for Hispanic), and Black RNs less often reported completing a graduate degree than other RNs (7.1% for Black vs. 8.1%–10.6% for others, *P* < 0.001).

Table 3 summarizes hourly wages, union representation, secondary job-holding, and turnover for RNs. Weighted median hourly wages were $30.00 in LTC settings compared with $34.21 in non-LTC settings (*P* < 0.001). A significantly greater proportion of RNs in LTC were employed in a different setting in the prior year (22.7%) compared with those in non-LTC settings (15.9%) (*P* = 0.001). There was no statistically significant difference between rates of holding > 1 RN jobs between LTC and non-LTC RNs (11.3% vs. 10.2%, *P* = 0.346). Only 6% of RNs in LTC were represented by unions, compared with 20.3% in non-LTC settings (*P* = 0.001). Median hourly wages among union nurses were higher for both LTC ($29.76) and non-LTC ($42.11) RNs compared with nonunion wages. Wages varied widely across census divisions for both LTC and non-LTC RNs. For example, LTC nurses in East South Central region (Kentucky, Alabama, Tennessee, Mississippi) had the lowest mean hourly wages at $26.19, compared with the highest level of $38.10 in the Pacific (California, Oregon, Washington, Arkansas, Hawaii) region.

TABLE 3. Hourly Wages, Union Representation, Secondary Job-holding, and Turnover of Registered Nurses (RNs) (N = 15,373)

Variable [χ^2 (*P*)]	Long-term Care (12% of Employed RNs)		Non–Long-term Care (88% of Employed RNs)		
	Weighted %	Unweighted n	Weighted %	Unweighted n	
Union represented [χ^2 = 715.67 (*P* = 0.001)]	6.0	105	20.3	2628	
Has > 1 RN job [χ^2 = 7.25 (*P* = 0.346)]	11.3	207	10.2	1373	
Employed in a different setting prior year [χ^2 = 177.1 (*P* = 0.001)]	22.7	453	15.9	2142	
	Long-term care (weighted median) ($)		Non–long-term care (weighted median) ($)		*P*
Hourly wage	30.00		34.21		< 0.001
Nonunionized hourly wage	29.76		32.86		< 0.001
Unionized hourly wage	36.19		42.11		0.002
Hourly wage by race/ethnicity					
Hispanic	28.95		35.26		< 0.001
White	29.52		33.33		< 0.001
Black	30.08		34.76		< 0.001
Asian	38.10		42.86		< 0.001
Other	35.29		36.96		0.478
Hourly wage earnings by census division					
New England	32.05		39.13		< 0.001
Mid-Atlantic	32.35		37.14		< 0.001
East North Central	28.57		31.58		< 0.001
West North Central	27.62		31.25		< 0.001
South Atlantic	28.57		31.58		< 0.001
East South Central	26.19		28.50		0.134
West South Central	28.95		34.00		< 0.001
Mountain	30.77		34.00		< 0.001
Pacific	38.10		47.37		< 0.001
Non-nursing annual household income	23,500		29,500		< 0.001

TABLE 4. RN Wage Regression Coefficients

Variables	Wage Regression With All RNs, Indicator Variable for LTC Employment, and Interaction Terms (N = 15,373)[†]		Employment in LTC Settings (N = 1993)		Employment in Non-LTC Settings (N = 13,380)	
	Coefficient	*P*	Coefficient	*P*	Coefficient	*P*
Years since graduating from RN program	0.02	***	0.01	*	0.02	***
Squared value of years of experience	−0.003	***	−0.0001		−0.0003	***
Employed full-time	−0.15	***	−0.16	**	−0.10	***
Union represented	0.09	***	0.05	*	0.09	***
Black	0.05	**	0.02		0.05	**
Hispanic	−0.02		−0.05		0.04	
Asian	0.09	***	0.19	**	0.09	***
Other race (eg, Native Hawaiian)	0.05		0.14		0.05	
Male	0.07	***	0.01		0.07	***
Enrolled in education program	0.04	***	0.08	**	0.04	***
Married	−0.02	*	0.01		−0.02	*
Cares for children ages 5 or younger	0.01		−0.01		0.02	
Cares for children between ages 6–18	−0.003		0.03		−0.01	
Highest degree in any field						
Associate degree	0.04	*	0.04		0.04	
Bachelor's degree	0.09	***	0.09		0.09	***
Master's and PhD degree	0.10	***	0.15		0.10	***
Prior licensure as LPN/LVN	−0.01		0.02		−0.02	*
Foreign educated	0.01		0.04		0.01	
Census region						
New England	−0.18	***	−0.26	***	−0.16	***
Mid-Atlantic	−0.23	***	−0.21	***	−0.23	***
East North Central	−0.34	***	−0.32	***	−0.34	***
West North Central	−0.46	***	−0.33	***	−0.34	***
South Atlantic	−0.42	***	−0.33	***	−0.33	***
East South Central	−0.50	***	−0.36	***	−0.41	***
West South Central	−0.29	***	−0.36	***	−0.28	***
Mountain	−0.36	***	−0.26	***	0.27	***
LTC employment setting	−0.11	***				
Interaction LTC×Black	−0.01					
Interaction: LTC×Hispanic	−0.09					
Interaction: LTC×Asian	0.12					
Interaction: LTC×other race	0.09					
Constant	3.60	***	3.61	***	3.56	***
R^2	0.22		0.14		0.23	
Root mean square error	0.36		0.419		0.348	

The reference group is a White female RN from the Pacific region, not employed in LTC whose highest degree of any kind was a diploma in nursing.
[†]LTC indicator variable: odds ratio = −0.11 (95% confidence interval −0.15 to 0.07); $P < 0.001$.
LPN/LVN indicates licensed practical nurse/licensed vocational nurse; LTC, long-term care; RN, registered nurse.
*$P < 0.10$.
**$P \leq 0.05$.
***$P \leq 0.01$.

Table 4 presents the results of the regression equations in which the log of the hourly wage was the outcome variable. The first pair of columns provide results for all RNs, with an indicator variable for LTC employment and interactions between LTC employment and race/ethnicity. The results indicate that nurses employed in LTC settings earned 11% lower wages compared with RNs in other settings ($P < 0.01$). Among all RNs, Black RNs earned 5% more than White RNs ($P \leq 0.05$) and Asian RNs earned 9% more than White RNs ($P \leq 0.01$). The interactions between LTC employment and race/ethnicity were not statistically significant. As expected, greater experience was associated with higher wages among all RNs, albeit with diminishing returns, and union representation

was associated with 9% higher wages ($P \leq 0.01$). Wages also were greater for male RNs ($P < 0.01$), those enrolled in an education program ($P < 0.01$), those employed part-time, and those with a bachelor's or graduate degree ($P < 0.01$ for each).

The last 4 columns of Table 4 present results from regressions stratified by LTC versus non-LTC employment. Among LTC nurses, only Asian RNs had significantly higher wages than White RNs ($P < 0.05$), while both Asian and Black RNs had significant higher wages among non-LTC RNs. LTC nurses did not receive significantly higher wages as their experience increased, whereas non-LTC RNs did. Union represented LTC RNs also did not earn significantly higher wages than nonunion RNs ($P < 0.1$), but unionized

TABLE 5. Logistic Regression Predicting RN Employment in Long-term Care (N = 15,373)

Variables	Odds Ratio	95% Confidence Interval	P
Years since graduating from RN program	1.01	1.004–1.02	0.002
Black	1.54	1.17–2.03	0.002
Hispanic	1.01	0.74–1.39	0.885
Asian	1.43	0.96–2.13	0.079
Other race (eg, Native Hawaiian)	0.92	0.62–1.37	0.685
Male	0.85	0.65–1.11	0.224
Associate degree RN	1.54	1.20–1.97	0.001
Bachelor's degree RN	0.70	0.54–0.93	0.01
Master's and PhD degree RN	0.56	0.4–0.78	0.001
Prior education as LVN	1.90	1.61–2.25	0.001
Union represented	0.20	0.15–0.28	0.001
Secondary position	1.14	0.86–1.52	0.364
Foreign educated	1.29	0.9–1.84	0.161
Enrolled in education program	0.71	0.52–0.98	0.034
Married	0.85	0.73–0.99	0.04
Cares for children ages 5 or younger	0.97	0.8–1.18	0.758
Cares for children between ages 6–18	1.16	0.91–1.45	0.185
Non-nursing household income	1.00	0.99–1.01	0.282
Veteran	1.46	1.01–2.11	0.044
Self-employed or agency-based	2.38	1.52–3.73	0.001
Census region			
New England	1.75	1.37–2.24	0.001
Mid-Atlantic	1.36	1.05–1.76	0.02
East North Central	0.99	0.79–1.25	0.929
West North Central	1.12	0.65–1.93	0.675
South Atlantic	0.72	0.53–0.97	0.029
East South Central	0.83	0.63–1.09	0.186
West South Central	0.69	0.51–0.94	0.019
Mountain	0.93	0.70–1.23	0.61
Constant	0.09	0.05–0.16	

The reference group is a White female RN from the Pacific region, not employed in long-term care whose highest degree of any kind was a diploma in nursing.

Method used to calculate non-nursing household income is available from the authors.

LVN indicates licensed vocational nurse; RN, registered nurse.

non-LTC RNs had 9% higher wages (*P* < 0.01). There was not a significant difference in wages of LTC RNs based on highest education level received (*P* > 0.1), whereas non-LTC RNs earned significantly higher wages if they had a bachelor's or graduate degree.

Table 5 presents the coefficients for the logistic regression that predicted employment in a LTC setting. Nurses who were Black or Asian, held an associate degree, had prior education as an LPN/LVN, changed their job in the past year, and/or were agency or self-employed nurses were significantly more likely to be employed in LTC. Nurses in LTC were significantly less likely to be union-represented, married, and currently enrolled in an education program.

DISCUSSION

The results of this study only partially support the hypotheses regarding the wages of nurses employed in LTC settings. We found that nurses employed in LTC settings earned significantly less than RNs in other settings. LTC nurses were also significantly less likely to be represented by a labor union, and there was not a statistically significant wage difference for LTC RNs who were unionized. We found

that non-LTC RNs who were unionized earned 9% greater wages than nonunion RNs (*P* < 0.01); other research has reported that unionization does not have a positive impact on wages among hospitalized nurses but instead reduces variation in wages.[22] Further research is needed to determine whether those prior results still hold true as well as the impact that unions have on workplace safety.[23]

Despite the fact that prior research has reported that nurses from underrepresented groups earn less than their White and Asian counterparts,[16] this study found that both Black and Asian RNs earned more than White RNs overall, and that within LTC settings Asian RNs earned significantly higher wages than White RNs. The higher wages of Asian LTC RNs may be associated with the relatively high proportion of Filipino nurses holding administrative and management positions in LTC settings.[24]

While the literature reports mixed outcomes on the role that foreign-educated nurses play in care outcomes in LTC settings,[25] they continue to be a critical workforce in LTC. Our study did not show any significant differences in wages for foreign-educated nurses. Future research should explore workforce equity issues faced by immigrant nurses, both domestically and internationally educated, in LTC settings.[26,27] There has been a high concentration of coronavirus disease 2019 (COVID-19) cases and deaths among racial and ethnic minority nursing home residents,[28] and before the pandemic it was documented that ethnic/racial minority-concentrated nursing homes had lower quality of care[29] and lower RN staffing.[30] An examination of approaches to improve these outcomes should consider the wages paid to LTC RNs, including the lack of reward for education and experience documented in our analysis.

Nearly one third of nurses in LTC were initially trained as an LPN/LVN. Career ladders that support advancement from an LPN/LVN degree to RN degree, particularly to a bachelor's degree, are critical to efforts that can reduce wage disparities for all RNs. Although prior LPN/LVN employment would be expected to develop the human capital of RNs, we did not find a statistically significant difference in wages of those who were previously licensed as an LPN/LVN. This is consistent with prior research that found that any initial salary advantages associated with prior LPN/LVN employment disappeared once baccalaureate-educated nurses reached ~10 years' experience.[20] Employers should be attentive to the incentives they provide staff to advance their education, as this can impact both wage equity and quality of care.

This study has a number of limitations. The data used for this analysis was a cross-sectional study accessed through public-use data. Our findings may change when considering wage differences in a longitudinal analysis. Some important variables were not available in the public-use dataset include the RN's job title and whether the RN lived in a rural location. If non-White RNs are less likely to live in rural communities and wages are systematically lower in rural areas, this could explain (at least in part) the higher wages measured for Black and Asian RNs.[16] However, prior research has controlled for rural residence and also reported higher wages for Black RNs compared with White RNs.[31] Further, we

excluded in our model whether RNs held a secondary position given the endogeneity of this variable. Nearly, 11% of RNs held a second job—a phenomenon that has been linked to the spread of COVID-19 in LTC[32] especially among LVNs/LPNs and nursing assistants.[33] The factors associated with second-job-holding should be analyzed further.

LTC settings are the most common work setting for LPNs/LVNs), with 31.7% employed in this setting[1] but the dataset used in our analysis did not include LPNs/LVNs. Further analysis needs to examine the wages of this workforce and the relationships between employment setting, race/ethnicity, and earnings. Future research also should continue to monitor the pipeline of RNs to LTC settings, especially those who are racially and ethnically diverse. The COVID-19 pandemic has not only exposed the workforce challenges[34] facing the LTC setting, but it also provides policymakers with the opportunity to ensure that RNs working in LTC are provided adequate support and equitable wages.

The LTC system of care needs to continue to advance its racial and ethnic diversity and, perhaps more importantly, advance workforce wage equity. The nursing profession has implemented a number of strategies in the past decade to enhance the diversity of the profession,[12] and it may still be too soon to tell what impacts these efforts have had on outcomes such as wage equity and health outcomes in LTC.

REFERENCES

1. Smiley RA, Lauer P, Bienemy C, et al. The 2017 National Nursing Workforce Survey. *J Nurs Regul*. 2018;9:S1–S88.
2. Bureau of Labor Statistics. Occupational projections data, Table 1.9: 2018–28 industry-occupation matrix data, by industry. Available at: www.bls.gov/emp/data/occupational-data.htm. Accessed July 6, 2021.
3. Vespa J, Armstrong DM, Medina L. Demographic turning points for the United States: population projections for 2020 to 2060, current population reports, P25-1144; 2018.
4. Cantu PA, Hayward MD, Hummer RA, et al. New estimates of racial/ethnic differences in life expectancy with chronic morbidity and functional loss: evidence from the National Health Interview Survey. *J Cross Cult Gerontol*. 2013;28:283–297.
5. Periyakoil VS. Building a culturally competent workforce to care for diverse older adults: scope of the problem and potential solutions. *J Am Geriatr Soc*. 2019;67(suppl 2):S423–S432.
6. Meghani SH, Polomano RC, Tait RC, et al. Advancing a national agenda to eliminate disparities in pain care: directions for health policy, education, practice, and research. *Pain Med*. 2012;13:5–28.
7. Shen MJ, Peterson EB, Costas-Muñiz R, et al. The effects of race and racial concordance on patient-physician communication: a systematic review of the literature. *J Racial Ethn Health Disparities*. 2018;5:117–140.
8. Alsan M, Garrick O, Graziani G. Does diversity matter for health? Experimental evidence from Oakland. *Am Econ Rev*. 2019;109:4071–4111.
9. Bates T, Amah G, Coffman J. Racial/ethnic diversity in the long-term care workforce. UCSF Health Workforce Research Center on Long-Term Care. 2018.
10. Zallman L, Finnegan KE, Himmelstein DU, et al. Care for America's elderly and disabled people relies on immigrant labor. *Health Aff (Millwood)*. 2019;38:919–926.
11. Harrington C, Dellefield ME, Halifax E, et al. Appropriate nurse staffing levels for U.S. nursing homes. *Health Serv Insights*. 2020;13:1178632920934785.
12. American Association of Colleges of Nursing. Fact sheet: enhancing diversity in the nursing workforce; 2019. Available at: www.aacnnursing.org/Portals/42/News/Factsheets/Enhancing-Diversity-Factsheet.pdf. Accessed July 6, 2021.
13. Brush BL. Global nurse migration today. *J Nurs Scholarsh*. 2008;40:20–25.
14. Broetje S, Jenny GJ, Bauer GF. The key job demands and resources of nursing staff: an integrative review of reviews. *Front Psychol*. 2020;11:84.
15. Bureau of Labor Statistics. Registered Nurses. Pay; 2019. Available at: www.bls.gov/ooh/healthcare/registered-nurses.htm#tab-5. Accessed July 6, 2021.
16. Moore J, Continelli T. Racial/ethnic pay disparities among registered nurses (RNs) in U.S. hospitals: an econometric regression decomposition. *Health Serv Res*. 2016;51:511–529.
17. US Census Bureau. National Sample Survey of Registered Nurses. Available at: www.census.gov/nssrn. Accessed July 6, 2021.
18. US Department of Health and Human Services Health Resources and Services Administration Bureau of Health Workforce National Center for Health Workforce Analysis. National Sample Survey of Registered Nurses (NSSRN); 2020. Available at: https://bhw.hrsa.gov/health-workforce-analysis/data/national-sample-survey-registered-nurses. Accessed July 6, 2021.
19. US Bureau of Labor Statistics. Labor force statistics from the current population survey: concepts and definitions. Available at: www.bls.gov/cps/definitions.htm#. Accessed February 23, 2021.
20. Yoo B-K, Kim M, Lin T-C, et al. The effect of prior healthcare employment on the wages of registered nurses. *BMC Health Serv Res*. 2016;16:412–412.
21. Spetz J, Bates T. Is a baccalaureate in nursing worth it? The return to education, 2000–2008. *Health Serv Res*. 2013;48(pt1):1859–1878.
22. Spetz J, Ash M, Konstantinidis C, et al. The effect of unions on the distribution of wages of hospital-employed registered nurses in the United States. *J Clin Nurs*. 2011;20:60–67.
23. Kim W-Y, Cho H-H. Unions, health and safety committees, and workplace accidents in the Korean Manufacturing Sector. *Saf Health Work*. 2016;7:161–165.
24. Xu Y, Kwak C. Characteristics of internationally educated nurses in the United States. *Nurs Econ*. 2005;23:233–238; 211.
25. Wagner LM, Brush BL, Engberg JB, et al. Quality care outcomes in nursing homes: the effects of a nurse's country of origin and education. *J Nurs Regul*. 2015;5:49–56.
26. Brush BL, Sochalski J. International nurse migration: lessons from the Philippines. *Policy Polit Nurs Pract*. 2007;8:37–46.
27. Hawkins M, Rodney P. A precarious journey: nurses from the philippines seeking RN licensure and employment in Canada. *Can J Nurs Res*. 2015;47:97–112.
28. Li Y, Temkin-Greener H, Shan G, et al. COVID-19 infections and deaths among connecticut nursing home residents: facility correlates. *J Am Geriatr Soc*. 2020;68:1899–1906.
29. Rivera-Hernandez M, Kumar A, Epstein-Lubow G, et al. Disparities in nursing home use and quality among African American, Hispanic, and White Medicare residents with Alzheimer's disease and related dementias. *J Aging Health*. 2019;31:1259–1277.
30. Li Y, Harrington C, Mukamel DB, et al. Nurse staffing hours at nursing homes with high concentrations of minority residents, 2001–11. *Health Aff (Millwood)*. 2015;34:2129–2137.
31. Fisher JD, Houseworth CA. The reverse wage gap among educated White and Black women. *J Econ Inequal*. 2012;10:449–470.
32. Chen MK, Chevalier JA, Long EF. Nursing home staff networks and COVID-19. NBER Working Paper Series 27608. National Bureau of Economic Research; 2020.
33. de Freytas-Tamura K. 'They call me a criminal': Nursing home workers who may spread the virus. *New York Times*; 2020. Available at: www.nytimes.com/2020/09/10/us/virus-florida-nursing-homes-contract-workers.html. Accessed July 6, 2021.
34. Ouslander JG, Grabowski DC. COVID-19 in nursing homes: calming the perfect storm. *J Am Geriatr Soc*. 2020;68:2153–2162.