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Racial disparities in job strain among American and immigrant long-term care workers

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Abstract

Background—Nursing homes are occupational settings, with an increasing minority and immigrant workforce where several psychosocial stressors intersect.

Aim—To examine racial/ethnic differences in job strain between Black (n=127) and White (n=110) immigrant and American direct-care workers at nursing homes (total n=237).

Methods—Cross-sectional study with data collected at four nursing homes in Massachusetts, during 2006-2007. We contrasted Black and White workers within higher-skilled occupations such as Registered Nurses (RNs) or Licensed Practical Nurses (LPNs, n=82) and lower-skilled staff such as Certified Nursing Assistants (CNAs, n=155).

Results—Almost all Black workers (96 percent) were immigrants. After adjusting for demographic and occupational characteristics, Black employees were more likely to report job strain, compared to Whites (Relative Risk [RR]: 2.9, 95% CI 1.3 to 6.6). Analyses stratified by occupation showed that Black CNAs were more likely to report job strain, compared to White CNAs (RR: 3.1, 95% CI: 1.0 to 9.4). Black workers were also more likely to report low control (RR: 2.1, 95% CI: 1.1 to 4.0). Additionally, Black workers earned $2.58 less per hour and worked 7.1 more hours per week on average, controlling for potential confounders.

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Author contributions: DH proposed the concept of the study, analyzed the data and lead the drafting and revising the manuscript. LB obtained research funding for the study. LB and OB were involved in the design, data collection as well as critical revisions of the analyses and manuscripts. ES was involved in data analyses, drafting and revising the manuscript. KE contributed with the conceptual framework, statistical expertise and the revision of the manuscript.

Conclusion—Black immigrant workers were 2.9 times more likely to report job strain than Whites, with greater differences among CNAs. These differences may reflect organizational and job characteristics, individual characteristics, or potentially interpersonal or institutional racial or ethnic discrimination. Further research should consider the role of race/ethnicity in shaping patterns of occupational stress.

Keywords

Long-Term Care; Race Relations; Work Stress; Emigrants and Immigrants; Nursing Homes; Nursing Staff; United States of America

Introduction

Addressing racial and ethnic health disparities has been a public health priority (Smedley et al., 2003), where several studies have shown higher burden of mental health issues (Hammond et al., 2010), and work-related injuries among Black nurses in the American health care sector (Tak et al., 2010; Simpson and Severson, 2000). Less is known, however, about potential racial disparities in social and occupational stressors in the long-term care industry. Despite the identification of several adverse occupational and organizational conditions at nursing homes (Almost and Laschinger, 2002, Gruss et al., 2004), research is needed to address potential racial/ethnic differences in their distribution. Although studies have examined racial/ethnic disparities on indicators of service quality for residents at nursing homes (Smith et al., 2007), there is less emphasis on racial/ethnic or other socio-demographic differences in the distribution of psychosocial occupational hazards among workers.

Examining working conditions at nursing homes is important because regulatory and financial policies, as well as organizational and psychosocial characteristics in these workplaces, may affect the health of direct-care workers and the quality care for the elderly. Given the financial limitation associated to *prospective* payment system in the American long-term care, and other factors such as the nursing shortage in the US, many nursing homes have been undergoing an occupational transition, wherein the proportion of care provided by higher-skilled professionals such as Registered Nurses (RNs) or Licensed Practical Nurses (LPNs) has decreased, while the duties of less-skilled workers like Certified Nursing Assistants (CNAs) have increased (Pennington et al., 2003). From 1997 to 2007, RNs' hours per resident day decreased 20 percent, while CNAs' hours increased 9 percent. Hence, CNAs have moved into a prominent role at nursing homes, providing nearly 80 percent of residents' non-medical care (Seblega et al., 2009). This staffing model optimizes financial limitations related to state-based Medicaid prospective reimbursements, that, although paying 47.5 percent of total costs, resources, are fixed before the provision of care (Feng et al, 2010, Mor et al, 2004). In order to compensate for this often insufficient payment, which is only partially offset by private and out-of-pocket payments, a staffing model weighted towards low-wage workers is most profitable for these facilities.

Staffing-related changes might have negative health consequences for both direct care workers (i.e. RNs, LPNs and CNAs) and residents (Mor et al., 2004). Typically, CNAs are supervised by LPNs (who may perform basic medical procedures); LPNs in turn report to RNs, who balance adminsitrative and supervisory duties with medical care provision (Neisner and Raymon, 2002). The increment of care provided by CNAs, relative to other direct-care workers, has been mostly studied in terms of effect on the quality of care for residents (Fennell et al., 2000). However, there are some studies regarding negative occupational outcomes among direct-care workers, for example, increased turnover (Castle et al., 2007) and lower job satisfaction (Chu et al., 2003). Besides emotional demands (e.g.

burnout) associated with the provision of care, psychosocial and organizational features of nursing home work environments--such as conflicting interactions with residents to whom care is provided (Gruss et al., 2004), or non-supportive or inflexible working conditions (Almost and Laschinger, 2002)--have also been identified as occupational stressors for direct-care workers. However, CNAs' roles and duties may be more stressful than those of other direct care workers; for instance, studies have shown that demands associated with care integration and coordination, especially for severely ill residents (Brodaty et al., 2003), along with repetitive tasks and lack of intellectually engaging skills, could explain the higher prevalence of job strain among CNAs relative to LPNs or RNs (Morgan et al., 2002). Likewise, models of work stress have highlighted the negative role that financial factors, such as low salaries or subpar benefits, might have for health (Siegrist, 1996), issues that are very common in the CNA workforce (Feng et al., 2010).

Certification as a nursing assistant is a targeted career opportunity for persons of low socioeconomic position, racial/ethnic minorities (Yates et al., 2003), and immigrant populations (Yamada, 2002). According to a 2004 nationally representative survey among American CNAs, 53.2 percent of this workforce was non-White and 37 percent of workers were African-American (Probst et al., 2009). Several strategies have been deployed to recruit a diverse CNA workforce, including agreements among communities, training institutions and health care facilities (Noone, 2008). Furthermore, given professional nursing shortages, there are incentives for immigrant nurses to join the North American nursing workforce, and in some cases, internationally qualified professional nurses from developing countries may start working as nursing aides in order to obtain legal immigrant status (Jose, 2011). Given the physical and psychosocial strains associated with direct care nursing, coupled with immigration-related stressors and lack of familiarity with American workplace regulations and norms, there is reason for concern that CNAs might face particularly high physical and psychological burdens at work. Hence, as more vulnerable and diverse populations enter the direct-care workforce, we believe it is important to explore racial/ethnic disparities in psychosocial working conditions.

Based on the knowledge gap for this particular racially diverse workforce, in this study we explored racial/ethnic disparities in the psychosocial work environment among direct-care workers at nursing homes. We focused our attention on CNAs, given previous evidence of high prevalence of occupational stressors and because this profession is dominated by racial and ethnic minorities. To this end, we sought to measure racial/ethnic differences in job strain, drawing on Karasek's model that defines job strain as the result of high psychological demands (i.e., workload and pace) and low control (i.e., decision latitude and skill discretion) (Karasek et al., 1981), effects that could be moderated by levels of social support (Sargent et al., 2000). We used the job strain model, given the supporting evidence that shows strong associations of this exposure with multiple adverse health outcomes like cardiovascular (Berkman et al., 2010), sleep (Ertel et al., 2011), mental health (Ertel et al., 2008), among others. We paid particular attention to the dimension of job control, given that past research has shown that low control alone is often predictive of disease outcomes, even when a combined measure of high demands and low control is not (Landsbergis, 1988).

The aim of the present study is to analyze racial/ethnic disparities in job strain in a sample of RNs, LPNs, and CNAs from four nursing homes in Massachusetts, USA. We hypothesized that the association of race/ethnicity with job strain would vary by occupational status, testing whether Black nurses would report higher job strain than their White counterparts within both higher-skilled (RNs/LPNs) and lower-skilled (CNAs) occupational categories. We also hypothesized immigrant workers would report higher job strain, relative to US-born workers. Finally, to assess other indicators of racial/ethnic disparities in working conditions,

we hypothesized that Black direct-care care workers would report lower hourly salary and more hours worked per week.

Methods

This study was conducted by the Work, Family and Health Network, a federally funded research program with the primary aim of evaluating worksite characteristics in order to improve work-family balance. We chose the long-term care sector because of interest in small-sized businesses that employ lower wage and racially/ethnically diverse workforces. We included nursing homes that had a similar socio-demographic profile of New England facilities in terms of workers' characteristics such as age, sex, ethnicity, salary, household income, job benefits, among others (Scanlon, 2001; Yamada, 2002). We analyzed a cross-sectional cohort of employees at four nursing homes in Massachusetts. The nursing homes were selected to be diverse from one another in terms of profit status, size, and religious affiliation. Out of 590 eligible employees at the four nursing homes studied (e.g. direct care workers, managers or office workers and service and maintenance), 452 participated in the study (response rate 76.6%). Information was collected though structured interviews in English, Spanish, and Haitian Creole, performed by trained research assistants –not matched with the respondent on any other characteristic but language to prevent any potential source of response bias--between July 2006 and September 2007. Interviews took approximately 40 minutes and occurred during employees' work shifts; employees were given debit cards as incentive for participation. Inclusions criteria for the current analysis were direct care work (RNs, LPNs or CNAs; n=306 of 452), and consent to participate in the study. We excluded participants with incomplete socio-demographic or occupational information to perform a complete case analysis. In addition, we excluded 17 individuals who self-identified as Hispanic, as the small size of this ethnic subgroup precludes meaningful analysis of job strain by Hispanic origin. An individual who reported being both White and Black was also excluded. Thus, we included workers who self-identified as non-Hispanic Black (n=127) or non-Hispanic White (n=110) for a total sample size of 237 workers. This study was approved by the Institutional Review Board at the Dana-Farber Cancer Institute, Boston MA.

Measures

Outcome—We used questions from the Job Content Questionnaire (Karasek et al., 1998) to measure job strain, the main outcome. We assessed three dimensions of job strain: control (i.e., *my job allows me to make a lot of decisions on own*), demands (i.e., my job requires rapid and continuous physical activity) and social support from managers/colleagues (i.e., *I get help and support from colleagues/managers)*. We scored each subscale as the sum of the ordinal response options (reverse coding as appropriate) and dichotomized each subscale at its median value to create high and low exposure groups for each dimension. Job strain was defined as the combination of high demands and low control. These scales showed adequate internal consistency, as measured by Cronbach's alpha: for job demands, alpha = 0.66; for job control, alpha =0.82; and for social support, alpha =0.75.

Socio-demographic variables—Race/ethnicity and other demographic information were self-reported. Participants were first asked whether they were Hispanic (yes/no), and then asked the following question: "Which of the following applies to you? Please tell me all that apply to you". Options included American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or other Pacific Islander, White, or Other. We also controlled for age in years (continuous variable), sex (female set as reference), marital status (married or living with partner as reference), immigrant origin (US-born set as reference),

educational attainment (less than high school completion as reference), and language of the survey (English as reference).

Occupational information—Based on evidence that job strain is highly associated with job type, we controlled for this variable in all analyses, contrasting CNAs vs. RNs/LPNs (set as reference). We also included self-reports of total weekly worked hours (including overtime), job duration at current position (in months) and hourly salary (in US dollars). We also adjusted for site in all models to control for facility-level confounding factors such as different shifts, full vs. part-time status or different benefits packages.

Statistical Analyses

We conducted descriptive and bivariate statistics to show the distribution of socio-demographic and occupational characteristics (Table 1). Next, we built log-binomial regression models, using a log link, to test the hypothesis that job strain is higher among Black relative to White workers, controlling for demographic and occupational covariates (Table 2). We computed relative risks (RR) with 95 percent confidence intervals (95% CI) as a measure of association; given that job strain was not a rare outcome (prevalence less than 10 percent) based on our median classification, we opted to use log-binomial rather than logistic regression. Because most Black workers were immigrant, we excluded immigrant status in the models to avoid collinearity issues. To test for racial/ethnic disparities in job strain within occupation, we stratified our analysis by occupation (RNs/LPNs vs. CNAs). These analyses were first conducted with job strain as the outcome and then repeated using as outcomes the subscales of psychological demands, job control (Table 3) and social support at work. Because Black workers were more likely to be immigrant, we conducted additional analysis by geographic origin to test for differences in job strain according to origin. We classified Black (n=127) workers by region of origin: United States (n=4; 3.1 percent), Africa (n=51, 40.1 percent) or the Caribbean (n=72, 56 percent). Given the low number of Black workers born in the United States, we excluded this group in these additional models. Therefore, we contrasted Black immigrant workers with White American-born employees. Finally, we compared other occupational indicators such as total work hours and salary to test racial/ethnic differences in such conditions; we contrasted hourly salary and total work hours between Black and White workers in a linear regression model, controlling for potential confounders such as site, occupation, job duration and education. All tests were two-tailed with a .05 level of significance, performed in a complete case analytic set and using the GENMOD procedure in SAS 9.2

Results

We compared Black and White workers on demographic and work-related characteristics (Table 1). Of note, 86.6 percent of Black workers were CNAs and 96.8 percent of Black workers were immigrant. There were statistically significant differences between Black and White workers in most characteristics, with the exception of sex and marital status. Across occupational categories, Black workers were more likely to be younger, immigrant, with lower educational attainment and to have worked less time at their current jobs. After adjusting for socio-demographic and occupational confounders (results not shown in tables), Black employees on average worked 7.1 more hours per week (β=7.1, SE. 1.6, 95% CI 3.9 to 10.4, $P<0.0001$), and earned $2.58 less per hour (β=-2.58, SE. 0.5, 95% CI −3.7 to −1.4, $P<0.0001$).

In fully adjusted log-binomial models that included all direct-care workers, Black workers had statistically significantly elevated relative risk of reporting high job strain, compared with White workers (RR=2.9, 95% CI 1.3 to 6.6, $P=0.0097$) (Table 2). All other covariates

in the model were not statistically significant, including occupation type or language of the survey. Stratified results by occupational type showed that among CNAs, Blacks had more than three times the risk of reporting job strain (RR=3.2, 95% CI 1.0 to 9.4, *P*=0.0461) (Table 2). Among higher-skilled workers (RN/LPN) there were no significant differences in job strain between Black and White workers (Table 2). However, few RNs/LPNs reported high job strain (8 out of 82), potentially limiting the statistical power to detect differences.

To test whether the relationship was being driven by one dimension of job strain (demand vs. control), we conducted the preceding analyses using each dimension alone as an outcome. Results showed that Black employees had twice the risk of reporting low control (RR=2.1, 95% CI 1.1 to 4.4, *P*=0.0181 (Table 3). Among CNAs, Black employees reported lower control compared with their White peers, but there were no significant differences among higher skilled workers like RNs/LPNs (Table 3). Regarding the other job strain dimensions (results not shown in tables), Blacks did not report significantly higher job demands (OR 1.05, 95% CI 0.5 to 2.2, *P* = 0.9904) or social support at work (OR 1.7, 95% CI 0.8 to 3.6, *P* =0.1669).

To test for job strain differences by region of origin, we built additional general log-binomial models controlling for demographic and occupational characteristics and having White US-born workers as the reference category (results not shown in tables). Black Caribbean (RR 3.5, 95% CI 1.3 to 9.5, *P* =0.0124) reported higher job strain, relative to White Americans. There were no significant differences between African and White Americans. In addition, there were no RNs or LPNs from the Caribbean. Among RNs/LPNs, there were no differences in job strain comparing African and White Americans. Among low-skilled workers (CNAs), Caribbean employees had borderline significant higher risk of reporting job strain (RR 2.1, 95% CI 1.0 to 4.4, *P*=0.0541). Additionally, hourly salary was also associated with low job control, where an additional dollar per hour was associated with 10 percent lower risk of reporting low control. Among CNAs, an additional dollar was associated with 20 percent lower risk of low control (Table 3).

Discussion

The objective of this study was to address a gap in the literature concerning racial/ethnic disparities in job strain among direct-care workers at nursing homes, a timely topic considering the increased demand for extended care services as the population ages (Eskildsen and Price, 2009), the rising proportion of minority and immigrants in this workforce (Yamada, 2002), and the debates regarding financial policies for long-term care (Feng et al., 2010, Mor et al., 2004). To our knowledge, this is the first study that examines racial/ethnic and disparities related to the psychosocial work environment in direct-care workers at nursing homes.

We found that Black employees had 2.9 times the risk of reporting job strain compared to White employees, after controlling for demographic and occupational characteristics. We did not find racial/ethnic differences among high-skilled workers such as RNs or LPNs, contrary to other studies that compared nurses in other health care settings, which have found greater burden of depression and anxiety symptoms (Hammond et al., 2010) or work-related injuries (Simpson and Severson, 2000) among professional nursing staff. In our study, racial/ethnic differences were higher among low-skilled workers such as CNAs, where Black employees reported 3.1 times higher risk of job strain. In addition, we found differences by region of origin, where Black Caribbean workers, had 3.5 times higher risk of job strain, as compared to White Americans. We also found racial/ethnic differences in job control, so that Black workers had double the risk of reporting low control.

Previous studies have posited that racial disparities may reflect systematic differences in organizational working conditions and interpersonal and behaviors. This includes discrimination based on racial/ethnic background such as country of origin, where the duties of immigrant or minority workers could be confined to less enriching or more hazardous tasks (Chung-Bridges et al., 2008). Our findings, then, could be explained based on differential occupational conditions, where Black workers may have higher occupational burden. However, several alternative explanations should be discussed as well. First, although we did not explicitly assess institutional discrimination (Jones, 2000), we found significant racial-ethnic differences in working hours and remuneration, namely that Black workers earned less and worked more relative to White workers of the same occupation. While these disparities could be evidence of unfair treatment, they could also be a product of the same factors (such as skill level, lower education) that are independent predictors of salary and work hours, or even a conscious choice to work more hours and thus increase earnings.

Second, we found differences in job strain by region of origin, wherein disparities were higher among Black Caribbean workers, regardless of language in which the survey was conducted. This pattern may suggest presence of discriminatory behaviors and practices, such as segregation within the workforce so that immigrant workers are assigned to less enriching tasks. However, these potential explanations are not fully testable in the present study; although we tried to assess institutional discrimination by testing for disparities in compensation, a true test of this hypothesis would be difficult to conduct because many theories of discrimination point to the negative effects of subtle interpersonal interactions and perceptions of unfair treatment, rather than gross inequities in working conditions that could be measured by an outside observer (Williams and Mohammed, 2009). Also, we lacked detailed information on racial/ethnic identity of either managers or resident populations or actual tasks assigned and performed by CNAs, and thus were not able to conduct similar comparisons for interpersonal discrimination, nor were we able to test a proxy measure of internalized discrimination. Likewise, we could not assess contextual variables like the proportion and organization of immigrant groups in the region. Further research on these conditions is important.

Limitations

Our study has several methodological limitations. First, this is a cross-sectional study; therefore we cannot confirm temporal and causal ordering of effects. However, given that race/ethnicity is a fixed effect, reverse causation bias is less plausible. Second, our outcome measure is self-reported job strain, rather than objective working conditions. In this sense, it is possible there could be differential reports of job strain by race/ethnicity. Third, our data lacked sufficient detail to more finely categorize country of origin instead of region, and thus our statistical power to detect further racial and ethnic differences by origin was limited. Fourth, we did not use a direct measure of perceived discrimination or unfair treatment (Kessler et al., 1999). Although we controlled for several potential confounders, we cannot rule out unmeasured confounding by a third factor. Fifth, our sampling strategy was not based on a random procedure and with the relatively small sample size, the conclusions about the external validity are limited.

However, several factors increase our confidence in the validity of the results. First, we relied on a validated theoretical model of job strain and our measure showed good psychometric properties. Second, we controlled for multiple occupational factors that are independent predictors of job strain (Landsbergis, 1988) and are associated with race/ethnicity in the present sample, such as job type and tenure (Melchior et al., 2005). All these factors, including occupation, were not statistically significant when added to the models. Third, the observed associations were high in both magnitude and significance, which makes

it less likely that these robust effects could be attributable to chance or unmeasured confounding. Fourth, we tried to follow measurement recommendations to capture and understand aspects of race/ethnicity in health research (LaVeist, 1994), assessing social and cultural indicators related to race/ethnicity such as language.

Conclusions and Future Directions

In our study, we found that Black direct-care workers, especially immigrant Certified Nursing Assistants reported higher risk of job strain relative to White workers of the same occupational grade and independently of other occupational or socio-demographic characteristics. Our analysis, in many ways, raises more questions than it provides answers, and it points to several next steps for research in this area. Future research should collect information on hypothesized mediators of the relationship between race/ethnicity and job strain, including self-reported discrimination or unfair treatment and detailed occupational conditions, to better understand the mechanisms driving the association. In order to test for interpersonal and institutionalized discrimination, these analyses might also gather information about workplace racial/ethnic composition; in a health care setting, this would include both nurse managers and the patient/resident population. Such information would permit more sensitive analyses of specific types of exposures or interpersonal interactions that may be driving the observed association, providing a starting point for intervention planning. If perceptions of discrimination are attributable to managers' differential treatment of employees, then modifying the workplace and improving cultural sensitivity could help mitigate perceived job strain. In this sense, some studies have provided interesting evidence of the benefit of collaborative tasks among CNAs to reduce negative occupational outcomes like turnover (Yeatts and Cready, 2007). However, if the association is seen to arise from residents' differential treatment of White and nonwhite workers, then the role of management in addressing the situation would be somewhat different. Finally, future studies might measure factors such as skills of employees, and social desirability bias or other indicators of response bias patterns that might vary by race/ethnicity, to ensure that the true latent construct under analysis is race/ethnicity rather than one of its sequelae.

Our results contribute to the evidence regarding disparities in working conditions of minority and immigrant populations in the context of a globalized nursing workforce (Kline, 2003). Racial/ethnic disparities in both workplace experiences and in health outcomes are long-standing societal problems that cannot be eliminated through simple interventions or modifications to a single type of workplace. However, by understanding the diverse factors that contribute to these disparities, we will be better equipped to make large-scale policy changes that address their root causes.

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Table 1

Distribution of demographic and occupational variables among direct care workers at nursing homes (n=237).

	Sample (n=237, 100%)	Non-Hispanic White (n=110, 46.2%)	Non-Hispanic Black (n=127, 53.8%)	*P*
Job Strain	70 (29.6%)	9 (8.3%)	61 (48.1%)	<.0001
Immigrant	129 (54.4%)	6 (5.5%)	123 (96.8%)	<.0001
Caribbean	72 (30.3%)	0 (0%)	72 (100%)	
African	57 (24.1%)	6 (10.5%)	51 (89.5%)	
Language of the Survey				<.0001
English	211 (89%)	110 (100%)	101 (79.5%)	
Haitian Creole	21 (8.86%)	0 (0%)	21 (16.5%)	
Age *Mean (SD)*	40.9 (11.3)	42.6 (12.2)	39.4 (10.4)	<.0001
Female (%)	217 (91.6%)	103 (93.6%)	114 (89.8%)	0.2848
Married or living with partner	141 (59.3%)	63 (57.3%)	78 (61.4%)	0.5169
Education lower than high school	93 (39.2%)	20 (18.2%)	73 (57.5%)	<.0001
Job type				<.0001
RN/LPN	82 (34.6%)	65 (59.1%)	17 (13.4%)	
CNA	155 (65.4%)	45 (40.9%)	110 (86.6%)	
Total Weekly hours *Mean (SD)*	40.6 (11.3)	36.9 (8.9)	43.7 (12.2)	<.0001
Job Duration (in years) *Mean (SD)*	4.2 (4.1)	4.4 (4.3)	3.9 (3.9)	<.0001
Hourly Salary *Mean (SD)*	17.2 (7.6)	21.8(7.9)	13.3 (4.8)	<.0001

Table 2

Log-binomial regression models predicting the relative risk of job strain (high demands and low control) among direct care workers, for whole population and stratified by occupational category[1].

	All direct care workers (n=237)			RN/LPN (n=82)			CNA (n=155)		
	Relative Risk	**95% CI**	***P***	**Relative Risk**	**95% CI**	***P***	**Relative Risk**	**95% CI**	***P***
Non-Hispanic Black [ref: non-Hispanic White]	2.9	1.3 – 6.6	0.0097	3.2	0.4 – 23.0	0.2498	3.1	1.0 – 9.4	0.0461
Creole [ref: English] [2]	1.9	0.9 – 3.9	0.0724	.	.	.	1.8	0.9 – 3.7	0.117
More than high school education [ref: high school] [2]	1.1	0.6 – 2.1	0.7212	.	.	.	1.1	0.6 -2.2	0.6042
CNA [ref: RN/LPN]	2.4	0.4 – 12.7	0.3158	.	.	.	.	.	.
Total work time per week (in hours)	1.0	1.0 – 1.0	0.5654	0.9	0.9 - 1.1	0.5027	1.0	0.9 - 1.0	0.4404
Job Duration (in months)	1.0	1.0- 1.0	0.1758	0.9	0.9 - 1.1	0.8636	1.0	0.9 - 1.0	0.496
Hourly Salary (in dollars)	0.9	0.8 – 1.0	0.0517	0.9	0.7 - 1.1	0.2607	0.8	0.6 – 1.0	0.08

[1] All analyses adjusted for age, sex, marital status and site (n=4).

[2] No higher skilled workers (RN/LPN) completed the survey in Haitian-Creole or had educational attainment lower than high school

Table 3

Log-binomial regression models predicting the relative risk of low control among direct care workers, for whole population and stratified by occupational category[1].

	All direct care workers (n=237)			RN/LPN (n=82)			CNA (n=155)		
	Relative Risk	**95% CI**	***P***	**Relative Risk**	**95% CI**	***P***	**Relative Risk**	**95% CI**	***P***
Non-Hispanic Black [ref: non-Hispanic White]	2.1	1.1 – 4.0	0.0181	2.6	0.4-17.1	0.3327	2.1	1.0-4.4	0.0541
Haitian-Creole [ref: English] [2]	1.3	0.7 -2.4	0.344	.	.	.	1.2	0.7-2.3	0.47
More than high school education [ref: high school] [2]	0.9	0.4 -1.9	0.7599	.	.	.	0.9	0.5-1.5	0.71
CNA [ref: RN/LPN]	1.9	0.5 – 8.0	0.3724	.	.	.	.	.	.
Total work time per week (in hours)	1.0	1.0 - 1.0	0.521	1.0	0.9 - 1.0	0.4393	1.0	1.0-1.0	0.9111
Job Duration (in months)	1.0	1.0 - 1.0	0.9897	1.0	0.9 - 1.1	0.8100	1.0	1.0-1.0	0.7866
Hourly Salary (in dollars)	0.9	0.9 - 0.9	0.0096	0.9	0.7 - 1.0	0.1504	0.8	0.7-0.9	0.0364

[1] All analyses adjusted for age, sex, marital status and site (n=4).

[2] No higher skilled workers (RN/LPN) completed the survey in Haitian-Creole or had educational attainment lower than high school.