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DOI: 10.1111/1475-6773.12431

SPECIAL ISSUE—GREEN HOUSE MODEL OF NURSING HOME CARE

Workforce Characteristics, Perceptions, Stress, and Satisfaction among Staff in Green House and Other Nursing Homes

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Objective. To compare workforce characteristics and staff perceptions of safety, satisfaction, and stress between Green House (GH) and comparison nursing homes (CNHs).

Data Sources/Study Setting. Primary data on staff perceptions of safety, stress, and satisfaction from 13 GHs and 8 comparison NHs in 11 states; secondary data from human resources records on workforce characteristics, turnover, and staffing from 01/01/2011–06/30/2012.

Study Design. Observational study.

Data Collection Methods. Workforce data were from human resources offices; staff perceptions were from surveys.

Principal Findings. Few significant differences were found between GH and CNHs. Exceptions were GH direct caregivers were older, provided twice the normalized hours per week budgeted per resident than CNAs in CNHs or Legacy NHs, and trended toward lower turnover.

Conclusions. GH environment may promote staff longevity and does not negatively affect worker's stress, safety perceptions, or satisfaction. Larger studies are needed to confirm findings.

Key Words. Nursing home workforce characteristics, Green House homes, safety culture, stress, and satisfaction, staff turnover

Much research on staff type and staffing ratios in nursing homes suggests that staffing has important effects on quality of care for residents (Bowers, Esmond, and Jacobson 2000; Harrington et al. 2000; Horn et al. 2005; Castle 2008). However, little research has compared nurse and certified nurse assistant (CNA) staffing data in Green House (GH) homes with other nursing homes (NHs), with two exceptions. One study found that CNAs in GHs spent more time on direct care with residents than CNAs in traditional nursing homes (Sharkey et al.

2011), while another identified different roles taken by nurses in GH (such as the “visitor” role) compared to other NHs (Bowers and Nolet 2011).

There is reason to expect staffing-related differences in GHs. They differ from other homes in organizational and staffing structures (e.g., small scale, self-empowered work teams; Doty, Koren, and Sturla 2008; Bowers and Nolet 2014; Cohen et al. 2016). Also, GH staff are newer to their positions (given the recency of the model) and they generally have transferred to these positions; consequently, they might exhibit higher turnover if they find the model incompatible with their style, as nurses are not uniformly supportive of staffing roles in GHs (Bowers and Nolet 2014). For similar reasons, it may be expected that staff in GHs have different experiences and perceptions—such as related to floating, satisfaction, stress, and the care environment—than those in other NHs (Bowers, Esmond, and Jacobson 2000). If consistent differences exist, they could drive future research to determine the cause and potential impact of these differences on quality of care. This brief report uses data from 13 GHs and 8 comparison nursing homes to draw preliminary conclusions about differences in staffing hours, turnover, and staff experiences and perceptions, and to suggest areas for future research.

METHODS

Green House organizations with at least one home that housed residents as of December 31, 2010 were recruited in 11 states; comparison nursing homes (CNHs) were selected within the same vicinity (urban/rural) and state, based on similarity of organization bed size, ownership status, and number of inspection deficiencies reported in Nursing Home Compare (Center for Medicare & Medicaid Services [CMS] 2014). From each organization, two long-term care

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units were selected at random, yielding a sample of 26 GH units (from 13 organizations) and 15 CNH units (from 8 CNHs; one CNH had only one unit). Data were collected for two units, as opposed to the entire home, because data were collected from sites that were part of a larger study; data also were obtained for legacy NHs (the original nursing home that remains open alongside its GH). Further details comparing study facilities are presented elsewhere (Cohen et al. 2016). The study was approved by IRBs at the University of Utah and University of North Carolina.

Data were collected to describe the workforce (age, gender, tenure, pay rates), turnover, staffing hours, and staff perceptions of safety, stress, and satisfaction. All data on staffing and workforce characteristics were provided by NH human resources employees based on facility records. Staff perceptions of safety, stress, and satisfaction data were obtained from anonymous questionnaires completed by direct care staff (CNAs in CNHs and their counterparts, *Shahbazim* in GHs) and nurses (RNs and LPNs). Questions related to employee background and work history (e.g., tenure at present organization and time working in long-term care) as well as scales from established measures. Questionnaires and an envelope were distributed by an NH liaison; staff were requested to complete the survey, put it into a sealed envelope, and return the sealed envelope to the liaison who mailed the envelopes to the study office. The following constructs were measured:

Work Stress

The modified Work Stress Inventory (Schaefer and Moos 1996) was used to measure respondents' stress related to events, resident care, and workload and scheduling. Items referred to the last 30 days, and asked, for example: "How often have you had to do tasks for which you have little or no training?"; "How often have you cared for a resident who was uncooperative, angry, or complaining?"; and "How often have you had to work with staff who are inexperienced and poorly trained?" Other studies using this measure found higher stress in the subscale related to caring for residents (Zimmerman et al. 2005) and concerns related to morale, job satisfaction, and intent to stay on the job (Schaefer and Moos 1996).

Safety Perceptions

Using the Nursing Home Survey on Patient Safety Culture (Agency for Healthcare Research and Quality [AHRQ] 2014), respondents were asked

questions about teamwork, compliance with procedures, training, handoffs, communication, and perceptions of resident safety. Studies using this measure found that safety culture was associated with clinical outcomes (Bonner et al. 2009), and that NH staff had few positive opinions of their work environment, reporting, for example, insufficient staffing and poor communication among staff (Castle et al. 2010).

Staff Satisfaction

Items regarding satisfaction were obtained from the National Nursing Assistant Survey, the first national study of CNAs working in U.S. NHs (Squillace et al. 2007; Bishop et al. 2009). Five items from the survey were used for this study (see Table 4). Studies using this instrument found correlations between CNAs' satisfaction and training (Han et al. 2014) and correlations with organizational climate, supervision, and perceptions of being valued (Probst, Baek, and Laditka 2010).

Analysis

The unit of analysis for most results is the GH or CNH, but in some cases it is the employee. Descriptive statistics and bivariate associations were used to compare staff characteristics between and within settings. Two sample *t*-tests, Wilcoxon tests, analysis of variance, or Kruskal–Wallis tests were used for continuous data, and chi-square or Fisher exact tests were computed for count data.

Staff Hours Per Resident Day. Normalized hours for RNs, LPNs, and CNAs/Shahbazim were calculated by taking hours budgeted per week (not actual hours) and dividing by the number of bed-days in a week (number of beds multiplied by total days in a week).

Turnover. Staff turnover was computed using a modified version of the Advancing Excellence definition (Advancing Excellence score derives monthly rates, but only yearly data were available for this study; thus, we used yearly rates). Turnover was calculated as number of terminations (voluntary and involuntary) in a given year divided by the average number of that staff

type employed in that year (average of the number employed on January 1 of year X and January 1 of year $X + 1$).

Work Stress. Three subscales included 4–8 items each, scored 1–5 (never to often). An average score was computed for each respondent, and then the mean and standard deviation (SD) for all staff in GH versus CNH settings were calculated.

Safety Culture (Higher Percentages Indicate More Perceived Resident Safety). Each subscale included 3–5 items, scored 1–5 (strongly disagree to strongly agree or never to always). For each subscale, percent positive response was calculated per GH or CNH as follows: if a question was positively worded, 4 or 5 was considered a positive response; if it was negatively worded, 1 or 2 was considered a positive response. Positive responses were added and divided by the total number of responses for that subscale for the GH or CNH. We then calculated a mean and SD for two types of settings: GHs and CNHs.

Satisfaction. As above, mean and SD were calculated for each item, and distributions were compared for staff working in GHs versus CNHs.

Comparison with National Data. To compare our sample respondents to national nursing home data on age and gender of CNAs and RNs, we used data from the National Nursing Assistant Survey and National Sample Survey of Registered Nurses, respectively. National data for LPNs were not readily available. We calculated an absolute difference in percentages of each distribution for gender and age, and considered differences under 5 percent to be immaterial; between 5 and 10 percent to be minor; and greater than or equal to 10 percent to be important (Corrigan et al. 2012; Cuthbert et al. 2012).

RESULTS

Staffing and Workforce Characteristics

Across positions and settings, the majority of staff was female (between 84 and 96 percent); significantly more males were working as RNs and direct care staff (CNAs/Shahbazim) in CNHs than in GHs (see Table 1). Staff ranged in

average age from 37 to 46 years, and GH Shahbazim were significantly older than their CNH counterparts (mean age 38.8 vs. 37.2). When comparing staff gender and age with national data, the majority of differences were immaterial, although GH CNAs were older and LPNs and RNs younger than national samples (see Appendix).

The mean and SD for full-time positions and proportionate hours/resident day by position in GHs versus CNHs are presented in Table 2. Most staff was full time in all positions and across settings. Wages did not differ significantly between settings, although the average hourly wage for Shahbazim in GHs was approximately \$0.60/hour more than the average for CNAs in the legacy home and \$0.25 more than CNHs. The only statistically significant difference was that GH Shahbazim had twice the normalized hours per week budgeted per resident than CNAs in CNHs or Legacy NHs.

Table 1: Comparison of Workforce Characteristics by Staff Position between Green House and Comparison Nursing Homes, and National Data, Where Available

	<i>Green House</i>	<i>Comparison Nursing Home</i>	
RN			National Sample Survey of RN%
Gender			
Female	95 (96.0%)	95 (86.4%)**	94.4%
Male	4 (4.0%)	15 (13.6%)	5.6%
Age (mean, SD)	45.54 (12.92)	41.41 (10.54)	
Years employed (mean, SD)	3.2 (4.7)	3.4 (3.7)	
LPN			
Gender			
Female	149 (94.3%)	123 (90.4%)	
Male	9 (5.7%)	13 (9.6%)	
Age (mean, SD)	45.14 (10.94)	43.23 (11.39)	
Years employed (mean, SD)	4.0 (4.7)	4.0 (5.1)	
CNA/Shahbaz			National Nursing Assistant Survey
Gender			
Female	502 (91.3%)	296 (83.6%)***	92.3%
Male	48 (8.7%)	58 (16.4%)	7.7%
Age (mean, SD)	38.8 (11.5)	37.2 (10.9)**	
Years employed (mean, SD)	4.1 (4.6)	3.8 (3.8)	

** $p \leq .05$; *** $p \leq .01$.

Table 2: Comparison of Salary and Hours by Staff Position between Green House, Legacy, and Comparison Nursing Homes

	<i>Green House Mean (SD)</i>	<i>Legacy Mean (SD)</i>	<i>Comparison Nursing Home Mean (SD)</i>
RN			
% Full-time RN	72.5% (26.3)	64.4% (28.5)	78.4% (37.4)
RN hours per resident day	0.72 (0.48)	0.48 (0.24)	0.48 (0.24)
Average RN hourly wage	\$23.60 (3.57)	\$23.10 (3.11)	\$23.00 (3.10)
High RN hourly wage	\$28.11 (2.15)	\$29.30 (2.91)	\$28.33 (3.93)
LPN			
% Full-time LPN	83.3% (28.9)	72.2% (16.5)	86.5% (23.4)
LPN hours per resident day	0.96 (0.48)	0.72 (0.48)	0.96 (0.00)
Average LPN hourly wage	\$17.82 (3.09)	\$17.30 (3.50)	\$19.00 (3.74)
High LPN hourly wage	\$22.27 (3.10)	\$22.50 (2.99)	\$25.40 (5.55)
CNA			
% Full-time CNA	77.6% (28.6)	73.2% (16.5)	86.6% (19.0)
CNA hours per resident day	4.20 (0.96)	2.16 (0.96)	2.16 (1.44)**
Average CNA/Shahbaz hourly wage	\$10.92 (1.31)	\$10.30 (1.34)	\$10.67 (2.34)
High CNA/Shahbaz hourly wage	\$14.25 (2.26)	\$14.30 (1.57)	\$15.80 (2.39)

** $p \leq .05$.

Table 3 presents mean and SD of turnover by year from 2010 to 2012 in GH and CNHs. Consistent with previous findings, annual turnover for nurses and direct care staff was high across all years (American Health Care Association [AHCA] 2011). Although no differences by staff type and by GH and CNH were statistically significant, GHs had lower turnover for CNAs and LPNs.

Table 3: Turnover Percent by Year by Staff Position in Green House (GH) and Comparison Nursing Homes: Mean (SD)*

	<i>RN</i>		<i>LPN</i>		<i>CNA/Shahbaz</i>	
	<i>GH</i>	<i>CNH</i>	<i>GH</i>	<i>CNH</i>	<i>GH</i>	<i>CNH</i>
2010	74.8 (112.6)	47.8 (31.4)	21.9 (23.7)	50.8 (31.8)	49.0 (52.9)	69.4 (41.6)
2011	79.1 (84.4)	38.6 (28.4)	44.1 (37.4)	42.8 (22.1)	50.1 (44.8)	65.0 (36.4)
2012	54.0 (52.7)	53.9 (45.7)	32.1 (37.8)	47.1 (31.5)	46.1 (41.2)	47.2 (26.4)
Average	73.6 (74.1)	49.9 (32.2)	35.2 (27.3)	46.9 (19.2)	47.4 (46.1)	60.5 (28.7)

*No differences are significant at .05.

Staff Perceptions of Stress, Safety, and Satisfaction

A total of 48 RNs (17 in GHs [37 percent response rate] and 31 in CNHs [46 percent response rate]; 43 percent overall response rate), 81 LPNs (51 in GHs [53 percent response rate] and 30 in CNHs [27 percent response rate]; 39 percent overall response rate), and 235 CNAs/Shahbazim (158 in GHs [44 percent response rate] and 77 in CNHs [26 percent response rate]; 35 percent overall response rate) completed the staff survey. Responders were similar in age and gender to overall staff, based on information provided by human resources. Data are presented by staff position and setting in Table 4 (more detailed breakdown in Appendix). Perceptions related to safety culture and satisfaction indicated a generally favorable view across all disciplines and settings. LPNs from GHs indicated significantly less compliance with procedures and less training and skills compared to those from CNHs.

Regarding satisfaction, LPNs preferred working in a CNH setting. LPNs in GHs were less likely to recommend friends and family receive care at their facility, and they were less satisfied with their current job. However, they also indicated that staff absences created less interference if working in a GH compared to a CNH. Shahbazim also reported more positively on their ability to do their job in the event of unexpected absences than CNAs in CNHs. While not statistically significant, RNs also reported more positively in GHs. Finally, there were no significant differences between GHs and CNHs by staff position related to stress, and, as found in other work, there was more stress related to caring for residents than in the other two domains: work events, and work load and scheduling (Zimmerman et al. 2005). However, RNs and LPNs experienced significantly more stress than CNAs/Shahbazim in some areas: in GHs, RNs had more work event stress, and LPNs had more work load and scheduling stress than CNAs/Shahbazim; in CNHs, RNs reported more stress in all areas compared to LPNs and CNAs/Shahbazim, and LPNs reported more stress in caring for residents than CNAs/Shahbazim.

DISCUSSION

These data provide the most comprehensive picture to date of workers in GHs. Given the atypical roles and responsibilities of staff in GHs, one might expect to see a very different workforce than is present in other NHs, especially regarding direct care staff. In general, although we did observe some significant differences in characteristics of CNAs/Shahbazim (age and gender),

Table 4: Perceptions of Green House (GH) and Comparison Nursing Homes (CNH) Staff by Staff Type

	RN		LPN		CNA/Shahbaz	
	GH (N = 17)	CNH (N = 31)	GH (N = 51)	CNH (N = 30)	GH (N = 158)	CNH (N = 77)
Patient safety measures: Mean percent positive response						
1. Teamwork	83.6%	73.2%	59.6%	74.7%	69.0%	64.9%
2. Staffing	59.4%	51.9%	48.2%	51.1%	61.8%*	46.9%*
3. Compliance With Procedures	66.7%	61.9%	34.2%**	100.0%**	75.0%	85.2%
4. Training & Skills	69.4%	71.7%	43.9%**	74.1%**	71.2%	77.3%
5. Nonpunitive Response to Mistakes	52.5%	65.9%	43.5%	48.3%	55.4%	53.2%
6. Handoffs	60.9%	75.8%	73.4%	84.1%	63.7%	66.9%
7. Feedback & Communication About Incidents	83.3%	99.5%	82.0%	89.1%	83.3%	84.8%
8. Communication Openness	68.5%	72.3%	48.8%	71.5%	53.9%	49.3%
9. Supervisor Expectations & Actions Promoting Resident Safety	85.2%	86.1%	72.0%	80.1%	75.3%	75.8%
10. Overall Perceptions of Resident Safety	90.1%	95.9%	90.0%	93.2%	88.2%	92.6%
Staff satisfaction						
<i>If a friend or family member needed care, would you recommend they receive it here?</i>						
Recommend	94.1%	93.5%	88.2%*	100.0%*	88.0%	96.1%
<i>If a friend or family member needed a job, would you recommend they work here?</i>						
Recommend	82.4%	90.3%	90.2%	93.3%	87.3%	92.2%
Overall how satisfied are you with your current job?	88.2%	90.3%	82.4%*	96.7%*	91.8%	89.6%
Satisfied						

National Nursing Assistant Survey

Continued

Table 4. Continued

	RN		LPN		CNA/Shahbaz	
	GH (N = 17)	CNH (N = 31)	GH (N = 51)	CNH (N = 30)	GH (N = 158)	CNH (N = 77)
<i>How much does it interfere with your ability to do your job when other people are unexpectedly absent from work?</i>						
A lot or Some	76.5%	83.9%	60.8%**	83.3%**	58.2%***	80.5%***
<i>How much does it interfere with your job when other people unexpectedly quit or are fired?</i>						
A lot or Some	82.4%	83.9%	72.5%	80.0%	58.9%	68.8%
<i>Work Stress Inventory: mean (range 1–5) and (SD)</i>						
Work events subscale	2.48 (0.74)	2.52 (0.78)	2.17 (0.62)	2.19 (0.49)	1.97 (0.69)	1.97 (0.77)
Caring for residents subscale	2.84 (0.61)	3.2 (0.95)	3.08 (0.97)	3.16 (0.71)	2.89 (0.92)	2.76 (0.87)
Work and load scheduling subscale	2.38 (0.67)	2.53 (0.75)	2.46 (0.70)	2.28 (0.63)	2.01 (0.75)	2.05 (0.66)

Note: Groups with significant differences are underlined and significant differences are as indicated: * $p \leq .1$; ** $p \leq .05$; *** $p \leq .01$.

these were small and likely not meaningful. Indeed, average age of direct caregivers in GHs (39) was the same as that observed in national samples of CNAs, as is percent of female workers (91 percent our sample of GHs and 92 percent nationally) (Squillace et al. 2007).

Direct caregivers were paid between \$10.30 (legacy) and \$10.92 (GH) per hour; in CNHs, CNAs hourly wage was \$10.67. Although not significant, it is notable that GH caregivers made an average of \$0.60/hour more than their counterparts in the legacy home, and also \$0.25/hour more than caregivers in CNHs, likely a result of the GH model, suggesting Shahbazim should be more highly compensated due to additional work responsibilities. The fact that GH Shahbazim had roughly twice the normalized hours per week budgeted per resident reflects the GH model of staffing where Shahbazim not only take care of resident needs but also do laundry, plan and make meals, do light housework, and manage staff schedules. This finding is consistent with research from Sharkey et al. (2011), cited above, that found 1.56 more Shahbazim “hours per resident day” in GHs than CNA hours per resident day in traditional NHs.

Although differences were not statistically significant, CNA/Shahbaz and LPN turnover trended lower in GHs compared to CNHs. This finding may relate to higher wages noted above, and also that the GH model creates an environment in which employees appreciate being more involved in decision making, a key factor in caregiver retention (Zhang, Punnett, and Gore 2014). While self-managed work teams that characterize GHs may not always function optimally (Zimmerman and Cohen 2010; Bowers et al. 2016), the possible association between empowerment structures and lower turnover in GHs (even with similar levels of stress and satisfaction as in traditional NHs) merits further study. Also, the structure of GHs allows more flexibility, especially for CNAs, which also may contribute to lower turnover (Castle and Engberg 2005; Wiener et al. 2009).

Regarding differences noted between GHs and CNHs in responses to the question about staff absences, this may be attributed to the scheduling process at GHs: Shahbazim manage their own schedules, they are prepared to make adjustments as needed (unlike in CNHs), and as LPNs are not involved in scheduling in GHs, they may be less likely to perceive interruptions due to unexpected staffing absences.

Finally, results suggest that the relative autonomy of direct care staff in GHs does not negatively affect the culture of safety, increase their stress, or negatively affect their satisfaction; these are reassuring findings. Further research with larger sample sizes is needed to identify whether there are other variables that differ between the two groups of staff and also to better understand small differences that were identified.

Limitations and Next Steps

Limitations of this study include a relatively small sample size compared to other studies of nursing home workforce as well as potential biases due to a low survey response rate. Consequently, results should be considered suggestive and those that are most relevant—such as staff turnover—merit additional study. Also, staff floating, mostly of nurses, could impact results if records incorrectly classified their primary work location (in GH and CNHs, staff float across units in 73 and 87 percent of homes, respectively), and also because such floating and seasonality may affect the precision of staff hours per resident day.

ACKNOWLEDGMENTS

Joint Acknowledgment/Disclosure Statement: This project was supported by the Robert Wood Johnson Foundation as part of the evaluation of the Green House Project. RWJF grant ID#: 69733. Title: Assessing turnover in management and staff at Green House homes compared with other skilled nursing facilities. We acknowledge the contribution of the late Siobhan S. Sharkey, MBA, whose dedication and commitment to improving the quality of life for elders in the nursing home environment was instrumental in the vision and success of the component of the THRIVE project reported in this manuscript.

Disclosures: None.

Disclaimers: None.

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article:

Appendix SA1: Author Matrix.

Table S1. Direct Care Worker Survey Comparison with National Demographic Data.

Table S2. Direct Care Worker Survey Scales.

Table S3. Direct Care Worker Survey Work History and Background.

Table S4. Perceptions of RNs, LPNs, and CNA/Shahbaz in Green House (GH) and Comparison Nursing Homes (CNHs).