Frontline Caregiver Daily Practices: A Comparison Study of Traditional Nursing Homes and The Green House Project Sites

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OBJECTIVES: To describe differences in frontline caregiver daily practice in two types of skilled nursing facility (SNF) settings, Green House (GH) homes and traditional SNF units, related to overall staffing (nursing and nonnursing departments), direct care and indirect care time per resident day, and staff time interacting with residents.

DESIGN: Observational, interview, and survey study comparing frontline caregiver daily practice in GH homes and traditional SNFs.

SETTING: Twenty-seven sites (GH homes and traditional SNF units).

PARTICIPANTS: Two hundred forty staff from participating sites.

MEASUREMENTS: Site and resident characteristics, nursing and nonnursing department staff hours per resident day (HPRDs), certified nursing assistant (CNA) direct and indirect care HPRDs, and CNA HPRDs engaged with residents.

RESULTS: Staffing from nursing and nonnursing departments combined, excluding administrative, was 0.3 less HPRDs (18 minutes) in GH homes than in traditional SNFs. CNAs in GH homes, although responsible for more nonnursing activities such as laundry and housekeeping, spent 0.4 more HPRDs (24 minutes) in direct care activities than CNAs in traditional SNFs.

CONCLUSION: The results challenge the assumption that staffing efficiencies cannot be achieved in small environments such as a GH home. Although the GH model has higher ratio of CNA staff to residents than traditional SNF units, overall staff time (combined total of nursing and nonnursing HPRDs) is slightly less in GH homes. The GH model allows for expanded responsibilities of CNAs in indirect care activities and more time in direct care activities and engaging directly with resident. **J Am Geriatr Soc 2010.**

Key words: Green House model; skilled nursing facility frontline caregiver daily practices; culture change in long-term care; Shahbaz and CNA comparison

Since the mid-1990s, there has been a focus on culture change in delivery of care to older adults in skilled nursing facilities (SNFs). Many efforts have aimed to redesign structure, roles, and processes within existing SNFs, such as reconfiguring physical environment, developing processes and staff skills related to person-centered care, and redesigning staff roles to increase areas of responsibility and empowerment.[1–9] One approach, the Green House (GH) model, provided a new concept for SNF care designed to "create a small intentional community for a group of elders and staff."[10,11]

GH homes aim to deinstitutionalize long-term care and create a supportive environment for elders. Important components are:

Environment and philosophy: A GH home is a "self-contained residence" for nine to 12 older adults, each with a private room and bathroom. Physical space is designed as a home (large great room with fireplace, communal dining table, and walk-in kitchen open to dining room and great room).

Redesigned role of certified nursing assistants (CNAs): CNAs in GH homes are specially trained universal workers called Shahbazim (CNAs who take on extra duties and are responsible for managing the home). Scope of Shahbazim responsibilities includes personal care, meal preparation and service, housekeeping, laundry, and activities.

Self-managed team approach: Shahbazim work as a self-managed team with coaching and supervision from a guide.

Clinical support team: nurses, social workers, activities, therapists, nutritionists, pharmacist, and medical director partner with Shahbazim.

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The Green House Replication Initiative, started in 2005, has partnered with organizations in 26 states to build GH homes.[12,13] With questions about the GH model growing, this study was conducted to measure differences in frontline (registered nurse (RN), licensed practical nurse (LPN), or CNA) caregiver daily practice in GH homes and traditional SNF units. Questions addressed were:

- Are there differences in overall staffing hours per resident day (HPRDs) (including nursing and nonnursing departments such as food services, housekeeping, and activities)?
- How do CNA HPRDs in direct care and indirect care activities compare?
- In which specific activities do CNAs spend significant differences in time?

METHODS

Design

This observational study examined overall staffing (nursing and nonnursing departments) and CNA time spent in direct and indirect care activities in two types of SNF settings: GH homes and traditional SNF units. Data were collected from study sites from October 2008 to March 2009 using observational, interview, and survey methods.

Settings

The study included two types of organizations: SNFs with (GH organization) and without (comparison) GH homes. GH organizations had at least one GH home opened for 9 to 12 months with geographic distribution in the east, midwest, and west. Comparison organizations had a SNF with between 80 and 153 beds in the same community as the GH organization, with at least one unit with chronic long-term care residents. Excluded were hospital-based SNFs and Veterans Affairs facilities, facilities at a high stage of culture change (e.g., retrofit building; convert to all private rooms; redesign with self-managed work teams of frontline clinical staff), or facilities with majority of residents in rehabilitation or subacute care units.

Comparison organizations were "typical" traditional SNFs with populations comparable with those in GH homes. Organizations at a high stage of culture change were excluded because they are not typical SNFs. Before finalizing comparison organizations for participation, quality measure and deficiency data were reviewed from Nursing Home Compare to ensure similarity to the sample of GH organizations.[14] Also, comparison organization staffing data from Nursing Home Compare were compared with national averages to confirm that comparison sites represented typical SNFs. Comparison organization CNA HPRDs at time of selection were 2.6 (2008 Quarter 1 (Q1)); median for all SNFs in 2008 was 2.3. Comparison organization licensed staff HPRDs at time of selection were 1.3 (2008 Q1); median for all SNFs in 2008 was 1.3.

Thirteen GH and comparison organizations participated. Seven GH organizations were selected, all still operating a traditional SNF, or "main" building. From each GH organization, one to four GH homes and one unit from its traditional SNF were selected. GH home mean (also median and mode) size was 10 beds (range 9–12 beds). Traditional SNF unit mean size was 34 beds (range 24–50 beds).

Six comparison organizations were selected from local communities. A comparison site could not be found for one GH organization because of scheduling difficulties. One SNF unit per organization was selected based on the following criteria: long-term care unit, excluding specialty units such as Alzheimer's, rehabilitation, or subacute units. The mean size of each SNF unit was 42 beds (range 20–60 beds).

In summary, 13 organizations (7 GH and 6 comparison) and 27 sites (14 GH homes and 13 traditional SNF units) were studied. Traditional SNF units included two subgroups: seven units from seven GH organizations and six units from six comparison organizations.

Data Sources and Measures

Data were collected using three methods: on-site visit by research team (2–4 people per visit), surveys, and staff interviews. The University of Utah institutional review board reviewed and approved the study as a minimal risk study. No identifiers were collected on staff surveys, 3-day log sheets, or interview notes. Staff participation was voluntary.

Surveys included:

Site profile survey: data on organization characteristics (e.g., size, occupancy, location, ownership, payer mix, leadership tenure) and labor budget hours for nursing and nonnursing departments.

Centers for Medicare and Medicaid Services (CMS) Resident Census and Conditions of Residents form: completed by each site to measure resident characteristics coinciding with the on-site visit date.

Staff surveys: completed by nonnursing department managers at each organization to confirm labor budget and daily process (e.g., how work is completed, including major tasks, typical steps, typical interactions with other staff, how information is exchanged).

3-day log sheets: completed by CNA or Shahbaz staff on each shift to document time spent on activities each hour. Used to supplement research team observations.

A one-day on-site visit at each site focused on observations of CNA or Shahbaz daily work. Each site visit lasted 8 to 10 hours and spanned day, evening, and night shifts. Full site visits were conducted at 25 sites: 13 traditional SNF units and 12 GH homes (schedule did not permit an 8- to 10-hour site visit to 2 GH homes). For each visit, the standard agenda included arrival meeting with leadership, shadowing of CNAs or Shahbazim to make detailed observations about daily work, group discussion with CNAs or Shahbazim, and brief interviews with frontline caregivers (RN, LPN, CNA) and department managers (5 per organization). Two CNAs or Shahbazim were observed per day and evening shifts.

Brief interviews (10–20 minutes each) were conducted with staff to supplement survey information. For example, CNAs and Shahbazim were asked to describe a typical day's activities hour by hour and elaborate on delays or breakdowns in their process.

Department managers were interviewed to supplement information provided on workflow surveys and confirm labor hours to support the unit or GH home(s). Also, an administrator or director of nursing was interviewed to confirm data on the site profile survey. Information on nursing HPRDs (direct care staff, excluding administrative nursing) and nonnursing department HPRDs (e.g., housekeeping, food services) was collected.

Measures of staff time included direct and indirect care time. Information on CNA and Shahbazim HPRDs in direct and indirect care activities came from three sources: direct observation, 3-day log sheets completed by staff, and staff interviews. Observation tools were developed to document and quantify daily practices of CNAs and Shahbazim using a set of direct and indirect care activities (based on CMS Staff Time and Resource Intensity Verification Project definitions).[15–18] For each activity, the tool helped capture time start and stop and location (to and from if relevant).

Direct care activities included: activities of daily living (ADLs; e.g., bathing, toileting, bed mobility, transfer, eating), meal time (serving meal, assisting with eating, passing snack or ice and water), social activities, communication with staff, communication with resident and family, documentation, staff eating at table with resident, and time transporting resident or equipment.

Indirect care activities included: meal preparation (including food ordering), housekeeping, laundry, and administrative (staff break, scheduling).

Staff time engaged with resident included: Staff time engaged with resident was based on direct observation on day and evening shifts. Day shift calculation was based on observations from 8 a.m. to 2 p.m. (6 hours) and evening shift calculation on observations from 3 p.m. to 7 p.m. (4 hours). Two components were measured: time CNA or Shahbaz engaged with resident simultaneously with activity (ADLs, meals, transport, meal preparation, laundry) for at least 2 minutes and time CNA or Shahbaz engaged with resident as a specific activity: communication with resident and family or social activities.

Data Analysis

The unit of analysis was GH home or traditional SNF unit. Data from different sources were entered into Microsoft Access or Excel databases (Microsoft Corp., Redmond, WA). SAS version 9.1 (SAS Institute, Inc., Cary, NC) and SPSS version 13.0 (SPSS, Inc., Chicago, IL) statistical software packages were used to analyze data. Percentages, means, standard deviations, and ranges were computed for collected metrics. Nonparametric analysis of variance was used to test for statistical differences between settings.

- Organization characteristics: Frequencies were computed for each profile survey question.
- Resident characteristics: Frequencies were computed for each CMS Resident Census and Conditions of Residents form item. Using resident information for each site (traditional SNF unit or GH home), an ADL score was computed based on Resource Utilization Group (RUG)-III ADL Index with the following ADLs: dressing, transferring, toileting, and eating.[19–21]
- Nursing and nonnursing staffing hours: Nurse staff ratios and budget labor hours for nonnursing departments per year were used to compute HPRDs for each site and then averaged for the groups, using one GH home and one traditional SNF unit per organization. One GH home per organization was included in analysis because, within the same organization, all GH homes had the same nursing and nonnursing staffing time, so it was immaterial which GH home within a GH organization was selected.
- CNA or Shahbaz HPRDs in direct and indirect care activities: Mean HPRDs for direct and indirect activities were computed per shift based on site-specific staffing ratios. Total direct and indirect care HPRDs were computed by adding values for all three shifts. Lastly, overall group means were computed. *P*-values were computed based on nonparametric Wilcoxon two-sample tests or Kruskal-Wallis tests for three samples.
- Staff time engaging with resident: Observations were averaged for each hour according to site, HPRDs computed, and then averaged according to group.

RESULTS

Organization Characteristics

Participating organizations (GH and comparison) represented a similar distribution of ownership, organization structure, tenure of leadership, and location (Table 1). None of the differences were statistically significant.

Table 1. Organization-Level Characteristics of Participating Organizations

Characteristic	Green House Organizations (n = 7)	Comparison Organizations (n = 6)	*P*-Value
Number of long-term care beds, mean	109.4	104.3	.94*
Occupancy rate (2008), %	93.1	89.5	.26*
Tenure of current administrator, years, %			
>5	57	33	.59†
0–5	42.9	66.7	
Tenure of current director of nursing, years, %			
>5	71.4	50	.59†
0–5	28.6	50	
Ownership			
Not for profit	85.7	83.3	>.99†
For profit or government	14.3	16.7	
Organization, %			
Continuing care retirement community	71.5	40.0	.37‡
Long-term care facility§	28.6	60.0	
Location, %			
Urban	42.9	50.0	.34‡
Suburban	28.6	16.6	
Rural	28.6	33.3	

* Two-sample Wilcoxon test.
† Fisher exact test.
‡ Chi-square.
§ Includes skilled nursing facilities that are stand-alone or part of a multiple-facility organization.

Table 2. Resident-Level Characteristics of Participating Sites

Characteristic	Green House Home (n = 14)	Main: Traditional SNF Unit (n = 7)	Comparison Organization: Traditional SNF Unit (n = 6)	Kruskal-Wallis *P*-Value
Payer, %				
Medicare	4.6	6.5	11.1	.18
Medicaid	38.9	70.6	54.3	.08
Overall ADL acuity score, mean	9.5	9.8	11.2	.10

SNF = skilled nursing facility; ADL = activity of daily living.

Resident Characteristics

There was no significant difference between overall ADL acuity scores in GH homes (9.5) and participating units in traditional SNFs (main 9.8, comparison 11.2, $P = .10$) (Table 2).

Staffing

Nursing

Total nursing HPRDs (RN, LPN, and CNA) (excluding administrative hours) was 5.3 in GH homes and 3.6 in traditional SNF units, a difference of 1.7 more HPRDs of total nursing time in GH homes (Table 3, $P = .002$). The largest difference was in CNA or Shahbaz time; there were 1.56 more Shahbaz HPRDs in GH homes than CNA HPRDs in traditional SNF units ($P = .002$). The 0.16 more RN and LPN HPRDs in GH homes than in traditional SNF units was not statistically significant ($P = .17$).

Nonnursing Department Support

GH homes received 2 hours less per resident day (excluding administrative time) than traditional SNF units of department support from housekeeping, laundry, dietary, dietitian, activities, and staff education (Table 3). GH homes received on average 0.3 HPRDs from these departments, whereas traditional SNF units received on average 2.3 HPRDs ($P = .005$).

In summary, for overall staffing (nursing plus nonnursing departments), GH home staffing (5.6 HPRDs) was slightly less (0.3 HPRDs, or 18 minutes) than traditional SNF unit staffing (5.9 HPRDs).

CNA and Shahbaz HPRDs in Direct and Indirect Care Activities

Shahbaz HPRDs in direct care activities was significantly higher in GH homes (2.4 hours, or 141.5 minutes) than CNA HPRDs in traditional SNF units (2 hours, or 117.6 minutes) ($P = .004$) (Table 4). At a shift level, there was a significant difference on evening shift between total direct care HPRDs in GH homes (58 minutes) and traditional SNF units (43 minutes) ($P = .004$). Shahbaz HPRDs in indirect care activities was significantly higher in GH homes (1.8 hours, or 106 minutes) than CNA HPRDs in traditional SNF units (0.6 hours, or 34.1 minutes) ($P = .001$) and similar on all three shifts.

Preliminary Finding for Additional Study

In GH homes, Shahbaz HPRDs directly engaging with residents outside of ADL activities was 0.4 (23.5 minutes), compared with 0.09 (5.2 minutes) for CNA HPRDs in traditional SNF units. Approximately one-third of the total time (7.5 minutes) that Shahbazim spent engaging with residents in GH homes is spent engaging while

Table 3. Staffing Hours per Resident Day (HPRDs)

Staff	Mean (Range)		Difference: GH Home Versus Traditional SNF Unit	Wilcoxon *P*-Value
	GH Home (n = 7)	Traditional SNF Unit (n = 13)		
Nursing				
CNA	4.16 (4–4.98)	2.60 (2.04–3.08)	1.56	.002
Licensed nursing (excludes administrative nursing hours)	1.15 (0.82–1.78)	0.99 (0.79–1.19)	0.16	.17
Total nursing (registered nurse, licensed practical nurse, CNA) (excludes administrative nursing hours)	5.3 (4.95–6.76)	3.6 (3.02–4.08)	1.7	.002
Nonnursing				
Housekeeping	0.09 (0.01–0.19)	0.53 (0.13–0.93)	− 0.44	.005
Laundry	0.06 (0–0.29)	0.22 (0.06–0.46)	− 0.16	.04
Dietary	0.08 (0.03–0.14)	1.16 (0.62–2.46)	− 1.08	.005
Dietitian	0.03 (0.03–0.04)	0.08 (0.05–0.14)	− 0.05	.02
Activities	0.04 (0–0.10)	0.28 (0.06–0.81)	− 0.24	.006
Staff education	0.02 (0–0.06)	0.04 (0.02–0.06)	− 0.02	.08
Total nonnursing	0.3 (0.08–0.47)	2.3 (1.39–4.16)	− 2.00	.005
Total nursing and nonnursing	5.6	5.9	− 0.3	.19

Staffing hours total does not include administration or director of nursing.
GH = Green House; SNF = skilled nursing facility; CNA = certified nursing assistant.

Table 4. Shahbaz and Certified Nursing Assistant (CNA) Time per Resident Day in Direct and Indirect Care

	Minutes, Mean (Range)			
Type of Care	GH Home (n = 12)	Traditional SNF Unit (n = 13)	Difference, Minutes	Wilcoxon *P*-Value
Direct				
Day shift	59.9 (46.6–92.3)	53.0 (37.3–62.3)	6.9	.16
Evening shift	58.1 (40.1–83.6)	43.1 (31.3–59.1)	15.0	.004
Night shift	23.5 (17–32.9)	21.5 (16.1–30.1)	2.0	.26
Total	141.5 (119.9–197.2)	117.6 (91.5–145.6)	23.9	.004
Indirect				
Day shift	45.6 (33.6–60.6)	15.0 (6.8–25.2)	30.6	<.001
Evening shift	34.8 (23.0–43.9)	11.1 (1.0–21.9)	23.7	<.001
Night shift	25.6 (15.1–32.1)	8.0 (5.7–12.6)	17.6	.001
Total	106 (71.7–136.6)	34.1 (12.9–59.7)	71.9	<.001

completing another activity such as preparing a meal or folding laundry. The small environment is conducive to Shahbazim engaging with residents while getting other work done. In traditional SNF units, there was little time spent engaging with residents while doing other work (0.6 minutes).

DISCUSSION

The findings provide measures to compare GH homes with units in traditional SNFs, answer questions about differences and similarities in how Shahbazim and CNAs spend time in daily activities, and address skepticism related to the operational feasibility of the GH model.

From a staffing perspective, the results challenge the assumption that staffing efficiencies cannot be achieved in small environments like a GH home. In fact, the findings suggest that that there are fewer total staffing HPRDs in GH homes, approximately 0.3 fewer HPRDs in GH homes than intraditional SNF settings; licensed nursing time was essentially the same, Shahbaz time was 1.6 more HPRDs in GH homes, and nonnursing department time was approximately 2 fewer HPRDs in GH homes. The smaller number of nonnursing department support hours in GH homes can be attributed to the fact that work has been shifted from departments such as housekeeping, laundry, and food services to Shahbazim.

A common question is whether Shahbazim in the GH model can assume more responsibilities such as additional indirect care activities and still spend the same amount of time on direct resident care as CNAs in traditional SNFs. It was found that Shahbazim were able to assume expanded responsibilities defined in the GH model without negatively affecting time spent on resident care. Although the role of Shahbazim in the GH homes differed from that of CNAs in traditional SNFs, responsible for more indirect activities (e.g., food preparation, laundry), residents in GH homes received approximately 0.4 more HPRDs (24 minutes) of direct care time from a Shahbaz than residents in traditional SNF settings.

What are other implications of the GH model on frontline daily practices? Preliminary findings are that Shahbazim spent 0.4 HPRDs (25 minutes) directly engaging with residents outside of ADL activities, compared with 0.08 HPRD (5 minutes) for CNAs in a traditional SNF setting. CNA and Shahbaz comments during on-site observation and interviews supported this finding. For example, typical Shahbaz comments were "We have time to focus on individual elder needs here compared to when I worked in the main building." Typical CNA comments were, "We are running the entire shift. As soon as we get residents back from meal, toileted, and rested, we start getting them ready for the next meal."

These findings suggest several areas for future study of how differences in environment and frontline caregiver practices affect quality of care and quality of life of residents. For example, How does rate of ADL decline differ? How does time spent with residents and a less-structured meal approach affect weight loss? How do smaller caseloads affect the rate of transfers to the hospital or emergency department?

There are several limitations of the study. First is the possibility of error in important measures—time spent in direct and indirect care activities. Approximately 8 to 10 hours of data at each site were based on direct observation by two to three members of the research team. The remaining 14 to 16 hours of data, primarily half the evening and the night shift, were based on staff interviews and log sheets completed by staff. This limitation was addressed by collecting three to five log sheets per shift completed for 3 days per site and cross-referencing with interview data and researcher notes from observation. Observations, interviews, and log sheets were compared and found to have more than 80% agreement.

Second, two CNAs were observed in traditional SNF units, versus all CNA staff working on the unit. Although this matched the observation of two Shahbazim in each GH home, it was only a representative sample of traditional SNF unit staff.

Third is representativeness of the sample. Although selection criteria for comparison organizations were defined and used, it was likely that they agreed to participate because they were interested in gaining comparative information on staffing and daily practices.

CONCLUSIONS

Although the GH model has a higher ratio of CNA staff to residents than traditional SNF units, overall staff time (combined total of nursing and nonnursing HPRD) is slightly less in GH homes. The GH model allows for expanded responsibilities of CNAs in indirect care activities and more time in direct care activities and engaging directly with residents. Future studies will focus on resident outcomes associated with differences in frontline caregiver staffing and practices in GH and traditional units.

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Sponsor's Role: The Robert Wood Johnson Foundation project officer was engaged in the study. She participated in discussions related to study design and review of preliminary and final analyses.

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