Factors Influencing Residents' Satisfaction in Residential Aged Care

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Purpose: The aim of this study was to identify the important factors influencing residents' satisfaction in residential aged care and to provide a better understanding of their interrelationships. **Design and Methods:** A cross-sectional survey design was used to collect the required information, including resident satisfaction, resident dependency levels, and staff satisfaction. A stratified random sampling approach was utilized to select facilities. All residents satisfying the selection criteria (i.e., understand English, be sufficient cognitive competence, have a sufficient energy level to participate in the survey, and live in the facility for more than 4 weeks) and all care staff were invited to participate. A total of 996 residents and 895 staff from 62 facilities (36 hostels and 26 nursing homes) provided the required data. Structural equation modeling was used to examine the interrelationships among three sets of contributing factors, related to the facility, staff and residents, and resident satisfaction components, separately for nursing home and hostel residents. **Results:** Overall fits of both nursing home and hostel models were satisfactory. This study has revealed that staff satisfaction plays a crucial and central role in determining resident satisfaction in nursing homes, whereas it has less impact in hostels. The provision of more care hours has only a small, yet positive, impact on resident satisfaction. Larger facility size has a negative impact on resident involvement. Older residents were found to be more satisfied with staff care. **Implications:** The results provide a comprehensive understanding of what influences resident satisfaction. By accounting for important factors identified by residents, a resident-focused care model can be developed and implemented, leading to better service for aged care residents.

Key Words: Long-term care, Quality, Staff satisfaction, Care hours, Resident-focused care

Recently, there has been an increasing recognition of the importance of the resident's voice in determining the quality of residential aged care (Bartlett & Boldy, 2001; Boldy & Bartlett, 1998; Boldy & Grenade, 2001; Ryden et al., 2000; Schmitt, 2000). It has been stressed that residents provide a valuable source of information about the appropriateness and quality of service, and that such information should be used for quality improvement (Boldy & Bartlett, 1998; Phillips-Doyle, 1992). Understanding residents' views and the factors influencing their satisfaction can assist facilities to provide resident-focused services and enhance residents' quality of life.

Research into satisfaction with health care services has been extensive in acute care settings, whereas there has been only limited research in residential aged care settings (Kruzich, Clinton, & Kelber, 1992; Pearson, Hocking, Mott, & Riggs, 1993; Sikorska, 1999; Weihl, 1981). Factors influencing resident or patient satisfaction can be categorized into three areas: (a) resident or patient factors (Kruzich et al., 1992; Pearson et al., 1993; Sikorska, 1999; Thomas & Hayley, 1991); (b) facility factors (Kruzich et al., 1992; Pearson et al., 1993; Sikorska, 1999; Weihl, 1981); and (c) staff factors (Kruzich et al., 1992; Pearson et al., 1993), although some researchers categorized the latter group of variables under facility factors.

The findings from previous studies were mixed; for example, the impact of resident's age (Kruzich et al., 1992; Linn & Greenfield, 1982), facility size (Curry & Ratliff, 1973; Nyman, 1988; Sikorska, 1999; Weihl, 1981), staffing or care hours (Dellefield, 2000; Johnson-Pawlson & Infeld, 1996; Kruzich et al., 1992; Nyman, 1988), and staff satisfaction (Atkins, Marshall, & Javalgi, 1996; Tzeng & Ketefian, 2002)

Resident satisfaction

- Room
- Home
- Social interaction
- Meals service
- Staff care
- Resident involvement

Facility factors

- Size
- Location
- Age
- Ownership

Staff factors

- Staff satisfaction
- Professional development
- Care hours/staffing level
- Work experience

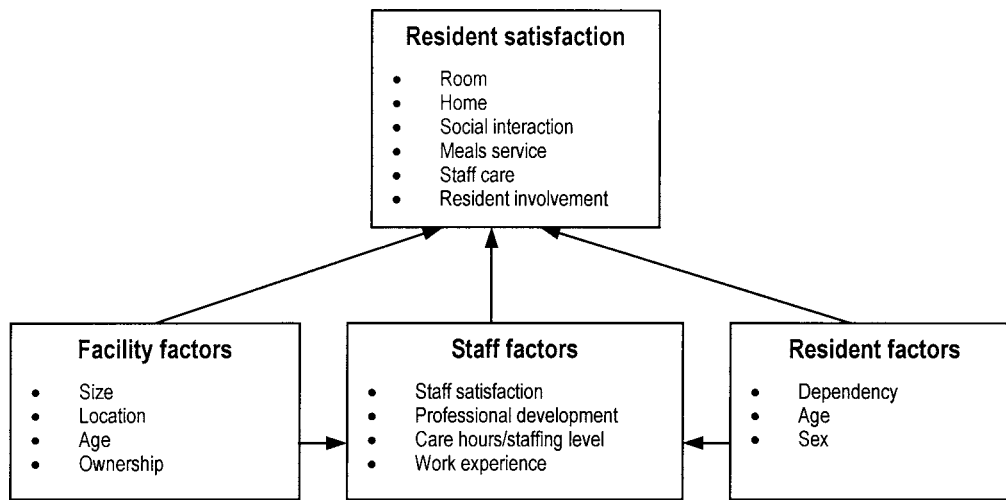**Resident factors**

- Dependency
- Age
- Sex

Figure 1. Conceptual framework.

on resident or patient satisfaction or quality of care indicators were found to be inconsistent. In addition, earlier studies have typically limited their scope to examining the relationship between one or two sets of contributing factors (e.g., facility, resident, or staff related) and a single satisfaction component or index (Sikorska, 1999; Weihl, 1981), or they have relied on an overall satisfaction measure (Duffy & Ketchand, 1998). To our knowledge, no studies have yet been conducted to assess how facility, staff, and resident factors might simultaneously influence components of resident satisfaction. Such fragmented information cannot provide a comprehensive understanding of resident satisfaction. The present study, in contrast, aims to assess how facility, staff, and resident factors might *simultaneously* influence components of resident satisfaction.

Conceptual Framework and Research Hypotheses

The conceptual framework presented in Figure 1 summarizes how the relationship between the three sets of influencing factors and resident satisfaction is broadly envisaged. Other factors that are likely to have an effect on resident satisfaction, such as individual preference, previous life experience, value system, mental status, mood, and leadership within the facility, are beyond the scope of this investigation.

The primary research question was "How do staff, facility, and resident factors interact with resident satisfaction components simultaneously?" In Australia, there are two types of long-term care facilities for older people, namely high care (nursing home) and low care (hostel). Most hostels broadly fit the definition of congregate care in the United States; that is, they are typically for frail but semi-independent residents who receive personal care, such as group meals, housekeeping, and other support services, but not nursing care. In contrast, a nursing home is a high-care facility catering to

more dependent residents who have a higher level of care needs and receive both personal (e.g., assistance with ambulation and feeding) and nursing care. Nursing homes generally require more staff who are more qualified (such as registered nurses) and who have received more formal training.

In view of the different environments, resident characteristics, care needs, and staff requirements (Chou, Boldy, & Lee, 2002a), it is to be expected that the relationships among the three sets of contributing factors and resident satisfaction components will be different between the two types of facilities; they were therefore investigated separately.

The (alternative) hypotheses are as follows.

H_1. Lower resident dependency has a positive effect on residents' satisfaction with room and social interaction.
Less dependent residents are able to move around and are more likely to engage in social activities. They are also more likely to have control over their own rooms and use them as their personal space to manage relationships in the ways they want (Hugman, 2000). It is, therefore, expected that lower dependency levels would be positively associated with satisfaction with rooms and social interaction.

H_2. Resident age is positively associated with residents' satisfaction with staff care.
It is expected that older residents are more satisfied with their care (Linn & Greenfield, 1982).

H_3. Staff professional development has a positive effect on staff satisfaction.
Professional development is one way of educating and enriching staff. It is assumed that, by attending professional development activities, staff can learn new skills and knowledge, have a more interesting job, and hence perform their job better, leading to a higher level of job satisfaction.

H₄. Care hours adjusted for resident dependency has a positive effect on residents' satisfaction with staff care.

It is expected that higher care hours would lead to a higher level of resident satisfaction with staff care, because staff would have more time available to spend on residents' care.

H₅. Size has a positive effect on residents' satisfaction with social interaction and staff satisfaction but has a negative effect on residents' satisfaction with involvement.

It is assumed that larger facilities may have more resources or benefits for staff and provide a greater diversity of social opportunities and amenities (Moos & Lemke, 1996), but residents may also be less involved because there is a less homely and more bureaucratic environment (Curry & Ratliff, 1973).

H₆. Metro rather than rural facilities are positively associated with residents' satisfaction with social interaction.

Residents in metro facilities have easier access to, or engage a greater diversity of, social opportunities and amenities provided by other organizations; thus, they are expected to be more satisfied with their social interaction.

H₇. Facility age has a negative effect on residents' satisfaction with room and home.

Older facilities are more likely to be out of date and less likely to meet building standards and residents' needs.

H₈. Staff satisfaction has a positive effect on residents' satisfaction with social interaction, staff care, and involvement.

Satisfied staff are more likely to share their positive feeling with residents and create a pleasant service atmosphere. Such an atmosphere is likely to improve the relationship between residents and staff and encourage residents to express any concerns and to interact with other residents and with staff.

Methods

Research Design and Participants

A cross-sectional survey design was used to collect the required data between April 1998 and April 1999. Random sampling, stratified by size of facility (small is <30 beds; medium is 30–59 beds, and large is ≥60 beds), type (nursing home or hostel), and location (metro or nonmetro), was used to select a variety of facilities from a total population of 294 facilities with more than 12,000 beds. All residents satisfying the selection criteria (i.e., understand English, have sufficient cognitive competence, e.g., have no diagnosis of Alzheimer's disease, have a sufficient energy level to participate in the survey, and live in the facility for more than 4 weeks) and all care staff were invited to participate. The study sample consisted of 1,146 residents and 983 staff from 70 residential aged care facilities in the state of Western Australia. Of the 70 facilities, 62 (36 hostels and 26 nursing homes; 996 residents and 895 staff) provided all required data. Overall response rates for the 62 facilities were 86% (range 36–100%) for residents and 63% (range 20–100%) for staff.

The majority of facilities sampled were metro (hostel, 75%; nursing home, 89%). Approximately half were of medium size (hostel, 44%; nursing home, 58%), and fewer than 20% were classified as large for both nursing homes and hostels. Further details regarding the sampling strategies and survey procedures are given in Chou, Boldy, and Lee (2001, 2002a, 2002b, 2002c). In this study, a resident represented the unit of analysis, and the role of facility and staff factors in relation to resident satisfaction components was the main interest.

Instruments and Measures

The instruments used are briefly discussed here, and the variables and items are presented in Tables 1 and 2, together with reliability estimates.

Resident Satisfaction Questionnaire (RSQ).— Resident satisfaction was measured by using the self-complete questionnaire from the resident satisfaction assessment package developed by Boldy and Grenade (1998). This package was developed from a review of relevant literature and extensive consultations with service providers, staff, and consumer representatives in a wide range of residential aged care facilities throughout Australia, using a focus group approach. Content validity was ensured through a rigorous development process, with the instrument being tested and refined several times. Six scales were adopted to assess different aspects of resident satisfaction: room, home, social interaction, meals service, staff care, and resident involvement (see Table 1), with a higher value indicating a greater satisfaction (Chou et al., 2001, 2002a). According to Chou and colleagues (2001), test–retest reliability for the six factors was also satisfactory (0.78–0.90). Demographic data on residents, such as sex, age, and dependency level, were also gathered. Further information regarding the RSQ is given by Chou and colleagues (2001).

Resident Dependency.—Resident dependency was measured by three items, namely the Resident Classification Scale, known as the RCS (Aged and Community Care Division, 1998; Chou et al., 2002a); "How much assistance do you need from staff with your everyday activities?"; and "Who filled out this questionnaire?"(see Table 2). The first item was extracted from the residents' medical records, whereas the last two items were completed by the residents as part of the RSQ. A single resident dependency

Table 1. Variables Used in the Full Structural Model: Dependent Variables

Variable	Description of Measure	No. of Items
η_1. ROOM (satis. w/ room)	*How would you rate the following:* the size of your room; the amount of storage space; the bathroom. How would you rate your room or unit overall?	4
η_2. HOME (satis. w/ home)	*Thinking now about the home as a whole, how would you rate:* its design, for being able to get around easily; the lounge area; the dining room; the outside areas.	4
η_3. SOCIAL (satis. w/ social interaction)	*Thinking about how you spend your time in the home:* Is there enough for you to do? As far as having things to do, how would you rate the home? Overall, how would you rate the social life in the home? As far as being able to keep in touch with life outside, how would you rate the home?	4
η_4. MEALS (satis. w/ meals service)	*How would you rate the following:* variety of food; amount of food; temperature of food; meal times.	4
η_5. STAFF (satis. w/ staff care)	*Thinking about the staff now, how would you rate:* their attitude toward you; their respect for your privacy; the promptness with which they respond to your calls for help; the help you received from the home at the time you moved in.	4
η_6. INVOL (satis. w/ resident involvement)	*Thinking now about opportunities for residents to be involved in things to do with the home and to have a say:* Does the home keep you informed enough about things which may affect you (e.g., staff changes or changes to services)? Do you think residents have enough opportunities to put their views to the management (e.g., resident meetings)? Would you feel comfortable about approaching staff yourself to discuss a concern you had about the home? Do staff ever approach you to ask if you have any concerns you'd like to discuss?	4
η_7. STSAT (overall staff satis.)	Measures staff job satisfaction on the following five components: Personal Satisfaction, Workload, Team Spirit/Coworkers, Training, and Professional Support. Two example items are given for each component respectively (e.g., the feeling of worthwhile accomplishment I get from my work; the extent to which I can use my skills; the time available for resident care; my workload; the people I talk to and work with; the contact I have with colleagues; time off to attend courses; the extent to which I have adequate training for what I do; the opportunities I have to discuss my concerns; the support available to me in my job). An overall staff satisfaction composite variable was then created by summing the proportionally weighted staff satisfaction components, after fitting a one-factor congeneric measurement model.	22

Notes: Resident satisfaction was assessed by using the Resident Satisfaction Questionnaire: Items are scored on a 3-point (no = 1, depends = 2, yes = 3) or 4-point (poor = 1, fair = 2, good = 3, excellent = 4) scale. Satisfaction scores for each factor were obtained by proportionally weighted factor score regressions to combine individual items, with a higher score indicating greater satisfaction. Staff satisfaction was assessed by using the Measure of Job Satisfaction. All staff satisfaction questions are preceded by a stem question, "How satisfied are you with this aspect of your job?" Items are scored on a 5-point scale (1 = very dissatisfied, 5 = very satisfied). Goodness of fit for the resident satisfaction component and overall staff satisfaction measurement models are as follows. Room: χ^2/df, 2.167; RMSEA, 0.033; NNFI, 0.997; CFI, 0.999; GFI, 1.000; AGFI, 0.997; composite reliability, 0.90. Home: χ^2/df, 1.365; RMSEA, 0.018; NNFI, 0.998; CFI, 0.999; GFI, 0.999; AGFI, 0.997; composite reliability, 0.90. Social: χ^2/df, 1.075; RMSEA, 0.008; NNFI, 1.000; CFI, 1.000; GFI, 1.000; AGFI, 0.998; composite reliability, 0.90. Meals: χ^2/df, 2.945; RMSEA, 0.042; NNFI, 0.992; CFI, 0.997; GFI, 0.999; AGFI, 0.995; composite reliability, 0.91. Staff: χ^2/df, 1.215; RMSEA, 0.014; NNFI, 0.999; CFI, 1.000; GFI, 1.000; AGFI, 0.998; composite reliability, 0.93. Invol: χ^2/df, 2.687; RMSEA, 0.042; NNFI, 0.982; CFI, 0.988; GFI, 0.998; AGFI, 0.994; composite reliability, 0.95. Stsat: χ^2/df, 1.66; RMSEA, 0.025; NNFI, 0.995; CFI, 0.998; GFI, 0.995; AGFI, 0.985; composite reliability, 0.83. RMSEA = root mean square error of approximation; NNFI = nonnormative fit index; CFI = comparative fit index; GFI = goodness of fit index; AGFI = adjusted GFI.

composite score was created, with higher values representing a lower dependency.

Measure of Job Satisfaction (MJS).—Staff satisfaction was measured by using the self-complete MJS questionnaire (Chou et al., 2002b; Traynor & Wade, 1993). Twenty-two items covering five aspects of job satisfaction, namely personal satisfaction, satisfaction with workload, team spirit, training, and professional support, were used in this study. Example items are given in Table 1. An overall staff satisfaction composite variable was computed, with higher values representing a greater satisfaction.

Professional Development.—Professional development was measured as the sum of "yes" responses

Variable	Description of Measure	No. of Items
ξ_1. DEP (res. dependency)	3-item index: (i) The resident classification scale (ranging from 1 = most dependent to 8 = least dependent) (Aged and Community Care Division, 1998; Chou et al., 2002a); (ii) "How much assistance do you need from staff with your everyday activities?" (ranging from 1 = a lot of assistance to 4 = no assistance at all); (iii) "Who filled out this questionnaire?" (1 = assisted by others; 2 = resident only). A resident dependency composite score was then created by using factor score regression as proportional weights to combine item scores.	3
ξ_2. RAGE (res. age)	One item assessing a resident's age.	1
ξ_3. PD (prof. development)	The professional development scale is part of the staff satisfaction questionnaire. The scale asks: In the past 12 months have you undertaken any of the following professional development activities relevant to your current work? Watched a training video; attended lectures or talks within the facility; attended conferences or seminars outside the facility; attended a course or workshop; currently studying. Items are scored on a 2-point scale (yes = 1, no = 0). A total score, indicating the variety of professional activities undertaken in the past 12 months, is calculated by summing the "yes" responses.	5
ξ_4. CHAD (adjusted care hours)	Measures a ratio between TCH within a facility and its FD. TCH was computed as the sum of all the care staff members' actual hours within a facility over 2 weeks. FD, which represents the facility workload, was computed by summing the products of the number of residents within each category by the corresponding percentage weight (derived based on the basic subsidy amounts for residents by RCS category; Aged and Community Care Division, 1988).	2
ξ_5. SIZE	One item assessing number of beds in a facility.	1
ξ_6. LOC (location)	One item identifying two types of location: metro and nonmetro.	1
ξ_7. FAGE (facility age)	One item assessing a facility's age.	1

Notes: Goodness of fit for the resident dependency component measurement model is as follows. DEP: χ^2/df, 1.133; RMSEA, 0.011; NNFI, 1.000; CFI, 1.000; GFI, 1.000; AGFI, 0.999; composite reliability, 0.87. FD = Facility dependency level; RCS = Resident Classification Scale; TCH = total care hours; RMSEA = root mean square error of approximation; NNFI = nonnormative fit index; CFI = comparative fit index; GFI = goodness of fit index; AGFI = adjusted GFI.

to five types of professional development activities (watched a training video, attended a lecture or talks within the facility, attended courses or workshops, etc.) undertaken in the past 12 months, with a higher score indicating a greater variety of professional development activities being undertaken; see Table 2. This measure was included in the staff satisfaction questionnaire (MJS).

Staffing Profile.—Facility managers or survey coordinators provided data on the number of hours worked in the previous 2 weeks for each category of staff within the facility.

Facility Profile.—Information was obtained about the physical aspects of a facility, such as its size, ownership, type, location, design, age, and number of residents in each RCS category.

Care Hours Adjusted for Resident Dependency.—This instrument measures the ratio between the total care hours provided per fortnight (from staffing profile) and facility dependency (from facility profile), the latter being determined by summing the products

of the number of residents within each RCS category by the appropriate funding weight (Aged and Community Care Division, 1988); see also Table 2. This ratio was used as a proxy for relative staffing level.

Statistical Analysis

Structural equation modeling (SEM), using LIS-REL (Jöreskog & Sörbom, 2001), was adopted to fit the proposed models. SEM allows the simultaneous examination of a set of dependent and independent variables and accounts for measurement error. The modeling process was undertaken in two stages—measurement model and structural model fitting (Anderson & Gerbing, 1988; Byrne, 1998).

Measurement Model.—A one-factor congeneric measurement model, as illustrated by Holmes-Smith and Rowe (1994), Jöreskog (1971), and Rowe and Rowe (1999), was first fitted to each of the study constructs (i.e., six resident satisfaction variables, one overall staff satisfaction variable, and one

resident dependency variable) to assess their validity and reliability. This approach is the simplest form of measurement model within which a single latent variable (factor) is measured by a set of observed variables (items), while each item in the set purports to assess the same construct (Holmes-Smith & Rowe, 1994; Jöreskog & Sörbom, 1996). Composite variables and reliabilities are then computed by using factor score regression weights obtained from fitting one-factor congeneric measurement models for related observed variables (Holmes-Smith & Rowe, 1994; Rowe & Rowe, 1999). Each item is weighted for its relative contribution to the composite (Rowe & Rowe, 1999). This approach minimizes measurement error in the observed variables contributing to each composite, thereby improving their reliability and validity (Holmes-Smith & Rowe, 1994; Rowe & Rowe, 1999).

Structural Model.—The relationships among the six key resident satisfaction components, that is, Room (η_1), Home (η_2), Social Interaction (η_3), Meals Service (η_4), Staff Care (η_5), and Resident Involvement (η_6), were then investigated. The results indicate that the relationships vary according to facility type, that is, nursing home or hostel (Chou et al., 2002a). This article only focuses on the relationship between resident satisfaction components and their contributing factors, that is, staff satisfaction (η_7), resident dependency (ξ_1), resident age (ξ_2), staff professional development (ξ_3), adjusted care hours (ξ_4), facility size (ξ_5), facility location (ξ_6), and facility age (ξ_7). The hypothesized relationships were tested separately for nursing homes and hostels, with a view to modification as a result of the model fitting. Apart from theoretical and practical considerations, the assessment of model adequacy was determined on the basis of a variety of fit indices; namely normed chi-square (χ^2/df) < 3, root mean square error of approximation (RMSEA) < 0.05, standardized root mean squared residuals (SRMR) ≤ 0.05, nonnormed fit index (NNFI) > 0.90, comparative fit index (CFI) > 0.90, goodness of fit index (GFI) > 0.90, and adjusted goodness of fit index (AGFI) > 0.90 (Byrne, 1998; Jöreskog & Sörbom, 2001; Kline, 1998; Maruyama, 1998).

Decomposition of effects based on the standardized solution was computed, and all significant direct, indirect, and total effects (p < .05) were reported.

Results

Preliminary Analysis

The sample of residents was split into hostel (n = 640) and nursing home (n = 356) groups, in view of their underlying differences. Generally, nursing homes were larger (64.4 ± 44.6 beds compared with 46.4 ± 23.4 beds; p < .001) and older (25.7 ± 16.9

years compared with 20.0 ± 10.6 years; p < .001) than hostels. Most residents were female and from nonprivate, metro, and medium size facilities; see Table 3. Hostel residents were also significantly older than nursing home residents (83.5 ± 8.4 vs. 82.2 ± 9.4 years; p < .029); see Table 3. As expected, nursing home residents were more dependent than hostel residents (mean RCS, 2.6 ± 0.9 vs. 6.6 ± 1.0; p < .001). Further descriptions of the study sample are given in earlier articles for both staff (Chou et al., 2002b, 2002c) and residents (Chou et al., 2001, 2002a).

In terms of professional development, hostel staff received more variety than nursing home staff (2.8 ± 0.6 vs. 2.5 ± 0.3; p < .001). Regarding care hours adjusted for resident dependency, overall hostels provided approximately 32% more than nursing homes. The overall staff satisfaction score for nursing homes was also slightly lower than for hostels (3.6 ± 0.2 vs. 3.9 ± 0.3; p < .001).

An examination of the correlation matrix revealed a high association between ownership and facility age (−0.86) for the hostel sample, and between ownership and staff professional development (−0.93) and between ownership and location (0.85) for the nursing home sample; see Appendix A. Consequently, it was decided not to include ownership in the full resident satisfaction models to avoid potential collinearity. Variables relevant to the conceptual framework were selected for further analysis. Separate regression analyses were conducted for nursing home and hostel residents. All resident satisfaction components were found to be associated with the various influencing variables of Figure 1, except staff work experience and resident sex. These two latter variables were not considered when the full satisfaction models were formulated.

The key variables finally included in the full structural model are listed in Tables 1 and 2. The seven dependent endogenous variables consist of six resident satisfaction composite variables (η_1–η_6) and one overall staff satisfaction variable (η_7). These are composite variables derived from fitting one-factor congeneric models. Goodness of fit for these variables and their composite reliability were satisfactory (see Table 1), indicating that all measurement models fitted were valid and reliable. The seven independent exogenous variables consist of resident factors (ξ_1–ξ_2), staff factors (ξ_3–ξ_4), and facility factors (ξ_5–ξ_7); see Table 2.

Structural Equation Analysis

When the full model was fitted, the regression coefficients and measurement error variances for each composite were estimated and then fixed in the measurement part of the structural equation models (Holmes-Smith & Rowe, 1994; Rowe & Rowe, 1999). The models with the hypothesized pathways were first assessed. If the hypothesized model did not

Table 3. Resident Characteristics by Facility Type

Variable	Nursing Home ($n = 356$)	Hostel ($n = 640$)
Female (%)	68.0	78.9
Age (years) $m \pm SD$	82.2 ± 9.4	83.5 ± 8.4
Ownership: nonprivate vs. private (%)	93.5	85.0
Location: metro vs. nonmetro (%)	88.2	77.3
Size: no. of beds/places (%)		
Small (≤30)	16.9	17.8
Medium (31–59)	52.5	53.1
Large (≥60)	30.6	29.1
Resident dependency (%)		
RCS1	10.1	0.0
RCS2	38.2	0.3
RCS3	38.2	2.0
RCS4	8.7	1.4
RCS5	3.7	8.9
RCS6	0.8	16.4
RCS7	0.3	58.4
RCS8	0.0	12.5

Note: The Resident Classification Scale (RCS) measures the degree of dependency among residents. RCS1–4 indicate high care (with RCS1 = most dependent) and RCS5–8 indicate low care (with RCS8 = least dependent).

fit adequately, a post hoc data analysis was then undertaken to explore the possible relationships. This post hoc model fitting process was conducted by using the steps described by Byrne (1998). Briefly, these are to first determine "whether the estimation of the targeted parameter is substantively meaningful" and then to examine "whether or not the respecified model would lead to an overfitted model" (p. 125).

Nursing Home Resident Satisfaction Model.— Initially, all hypothesized pathways were estimated. Three out of seven criteria were not met ($\chi^2/df > 3$, SRMR > 0.05, and RMSEA > 0.05), suggesting that the hypothesized model did not fit the data adequately and revealed some misspecification in the relationships (see Table 4, Row a).

The post hoc results indicated that no significant relationship exists between location and all components of resident satisfaction, indicating that hypothesis H_6 was not supported. This variable was

thus removed from the final model. In addition, the analysis also identified six nonsignificant paths, namely care hours → staff care; staff satisfaction → social interaction; staff satisfaction → involvement; resident dependency → social interaction; facility age → home; and facility size → social interaction. Four additional paths were also suggested, namely care hours → home; staff satisfaction → room; staff satisfaction → home; and staff satisfaction → meals service. The model was respecified with the appropriate modifications.

The final nursing home resident satisfaction model ("modified model") fitted the data well; see Table 4, Row b. This model, graphically presented in Figure 2, shows the relationships among the exogenous and endogenous variables. The estimated standardized weights indicate the strength of the relationships. All paths were statistically significant at the 5% level, indicating that hypotheses H_1, H_5, H_7, and H_8 were partially supported, and hypothesis H_2 was confirmed by the data. That hypothesis H_3 was not supported suggests that professional development had a negative effect on staff satisfaction. Hypothesis H_4 was also not supported. Summaries of the significant direct, indirect, and total effect sizes ($p < .05$) for the nursing home model are presented in Table 5. Indirect effects, "[involving] one or more intervening variables that 'transmit' some of the causal effects of prior variables onto a subsequent variable" (p. 52), were computed as the products of the direct effects that comprise them (Kline, 1998). For example, in the hostel model, the standardized indirect effect of overall staff satisfaction on satisfaction with involvement is the product of 0.168 (staff satisfaction → satisfacton with social interaction) and 0.475 (satisfaction with social interaction → satisfaction with involvement), (0.168) (0.475) = 0.080. In this example, satisfaction with social interaction serves as an intervening variable.

In examining Table 5 and Figure 2, one sees that all identified pathways, although statistically significant, are generally not strong. Although the effect size is not large, staff satisfaction consistently had a positive effect on all components of resident satisfaction (total effect sizes, 0.117–0.428), suggesting that staff satisfaction is particularly important to residents. In comparison, adjusted care hours have a relatively low contribution to resident satisfaction.

Table 4. Tests of Model Fit for Resident Satisfaction Models

Model	χ^2	df	p	χ^2/df	RMSEA (95% CI)	SRMR	CFI	NNFI	GFI	AGFI
a Hypothesized nursing home model	286.298	56	0.000	5.11	0.108 (0.095; 0.120)	0.117	0.976	0.948	0.999	0.997
b Final nursing home model	63.468	42	0.018	1.51	0.037 (0.016; 0.056)	0.048	0.989	0.978	0.990	0.979
c Hypothesized hostel model	193.116	55	0.000	3.51	0.063 (0.053; 0.072)	0.077	0.986	0.969	0.997	0.994
d Final hostel model	67.837	43	0.009	1.51	0.030 (0.015; 0.043)	0.042	0.994	0.989	0.995	0.989

Notes: χ^2/df = normed Chi-square; RMSEA (95% CI) = root mean square error of approximation (95% confidence interval); SRMR = standardized root mean squared residual; CFI = comparative fit index; NNFI = nonnormative fit index; GFI = goodness of fit index; AGFI = adjusted GFI. Nursing home sample has 356 residents; hostel sample has 640 residents.
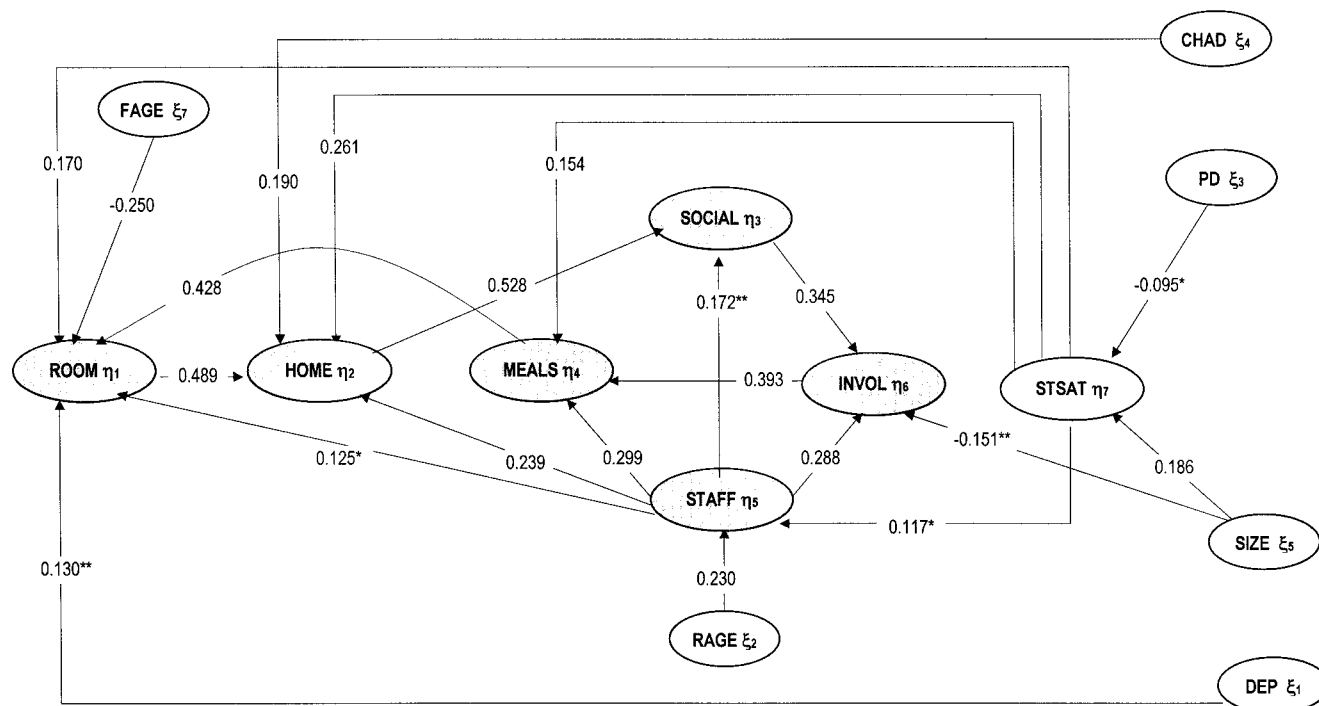
Figure 2. Fitted nursing home resident satisfaction model ($n = 356$). η represents latent dependent variables; ξ represents latent independent variables. All standardized regression coefficients are significant at $p < .001$ unless indicated $*p < .05$; $**p < .01$. η_1 = satisfaction with room; η_2 = satisfaction with home; η_3 = satisfaction with social interaction; η_4 = satisfaction with meals; η_5 = satisfaction with staff care; η_6 = satisfaction with involvement; η_7 = staff satisfaction; ξ_1 = resident dependency; ξ_2 = resident age; ξ_3 = professional development; ξ_4 = care hours after adjusting for resident dependency; ξ_5 = facility size; ξ_6 = location; ξ_7 = facility age. Relationships among shaded variables are discussed in Chou, Boldy, and Lee (2002a).

Hostel Resident Satisfaction Model.—For the hypothesized hostel model, three goodness of fit criteria ($\chi^2/df > 3$, SRMR > 0.05, and RMSEA > 0.05) were not met; see Table 4, Row c. No significant association was found between resident dependency and all aspects of resident satisfaction components, indicating that hypothesis H_1 was not supported. This variable was thus removed. In addition, the post hoc analysis also identified six nonsignificant paths, namely care hours → staff care; staff satisfaction → staff care; staff satisfaction → resident involvement; location → social interaction; facility age → home; and facility size → staff satisfaction. Moreover, the analysis also suggested three additional structural paths, namely, care hours → room; location → staff satisfaction; and staff satisfaction → meals. The revised model, satisfying all six goodness of fit criteria (see Table 4, Row d), is shown in Figure 3. All paths are statistically significant at the 5% level. The results indicate that hypotheses H_4 and H_6 are not supported, H_2 and H_3 are confirmed, and H_5, H_7, and H_8 are partially supported.

Table 6 presents a summary of the structural parameters of interest, that is, direct, indirect, and total effect sizes for the final hostel satisfaction model. In general, the effect sizes of staff satisfaction are much smaller than those in the nursing home model. Nevertheless, staff satisfaction remains the most important factor influencing hostel resident satisfaction (total effect size, 0.08–0.168), especially social interaction.

Discussion

Both nursing home and hostel models identify the unique influences of different groups of factors that affect various resident satisfaction components in residential aged care settings and contribute to a more coherent understanding of the interrelationships among them.

Facility Factors

Facility size has a positive and direct impact on social interaction in the hostel model but not in the nursing home model. Larger facilities provide more care and social resources and tend to have more opportunities for residents to socialize (Moos & Lemke, 1996; Sainfort, Ramsay, & Monato, 1995). Weihl (1981) also found that smaller facilities may not be conducive to the development of rewarding social relationships, because of the scarcity of choice of friends and because of limited social space. The absence of such relationships in the nursing home model probably exists because a high proportion of residents in nursing homes are physically disabled or cognitively impaired, making it difficult to establish interpersonal relationships.

Table 5. Decomposition of Standardized Effects for Nursing Home Resident Satisfaction Model ($n = 356$)

Scale	STSAT	DEP	CHAD	SIZE	RAGE	PD	FAGE
Room							
Direct effect	0.170	0.130	—	—	—	—	−0.250
Indirect effect	0.115	0.002	0.006	—	0.074	—	−0.004
Total effect	0.285	0.132	0.006	—	0.074	—	−0.254
Home							
Direct effect	0.261	—	0.190	—	—	—	—
Indirect effect	0.167	0.065	0.003	0.067	0.091	−0.041	−0.124
Total effect	0.428	0.065	0.193	0.067	0.091	−0.041	−0.124
Social							
Direct effect	—	—	—	—	—	—	—
Indirect effect	0.246	0.034	0.102	0.039	0.088	−0.023	−0.065
Total effect	0.246	0.034	0.102	0.039	0.088	−0.023	−0.065
Meals							
Direct effect	0.154	—	—	—	—	—	—
Indirect effect	0.082	0.005	0.014	—	0.107	−0.022	−0.009
Total effect	0.236	0.005	0.014	—	0.107	−0.022	−0.009
Staff							
Direct effect	0.117	—	—	—	0.230	—	—
Indirect effect	—	—	—	0.022	—	—	—
Total effect	0.117	—	—	0.022	0.230	—	—
Invol							
Direct effect	—	—	—	−0.151	—	—	—
Indirect effect	0.119	0.012	0.035	0.020	0.096	−0.011	−0.023
Total effect	0.119	0.012	0.035	−0.131	0.096	−0.011	−0.023
STSAT							
Direct effect	—	—	—	0.186	—	−0.095	—
Indirect effect	—	—	—	—	—	—	—
Total effect	—	—	—	0.186	—	−0.095	—

Notes: All regression coefficients are standardized; absolute values <0.10 indicate a "small" effect, ~0.3 a "medium" effect, and >0.50 a "large" effect (Kline, 1998). All direct effects, indirect effects, and total effects are significant at $p < .05$. Room = satisfaction with room; Home = satisfaction with home; Social = satisfaction with social interaction; Meals = satisfaction with meals; Staff = satisfaction with staff care; Invol = satisfaction with involvement; STSAT = staff satisfaction; RAGE = resident age; PD = professional development; CHAD = care hours after adjusting for resident dependency; SIZE = facility size; FAGE = facility age; DEP = resident dependency.

Larger facilities have lower levels of resident satisfaction with involvement, for both nursing homes and hostels. This might be because smaller facilities provide a more "homely" and less bureaucratic environment and thus are less likely to have isolated residents (Curry & Ratliff, 1973). Despite facility size having a direct negative impact, its total effect is reduced through its positive influence on staff satisfaction for nursing home residents and on residents' social interaction for hostel residents. This suggests that resident's satisfaction with involvement can be enhanced by improving staff satisfaction in nursing homes and residents' social interaction in hostels.

A metro location has an indirect and weak, but negative, effect on three components of hostel residents' satisfaction (i.e., social interaction, meals, and involvement), through its direct effect on staff satisfaction. This result is inconsistent with that of Sainfort, Ramsay, and Monato (1995), who found that urban facilities had a higher score on structure-related quality. Such relationships were not found for the nursing home group, as in the studies of Nyman (1988) and Levey, Ruchlin, and Stotsky (1973).

In terms of facility age, residents in older facilities had, not surprisingly, a lower level of satisfaction with their room for both hostels and nursing homes. Although one would expect that newer facilities would provide more up-to-date amenities, leading to a higher level of satisfaction, this relationship was not found in previous studies (Greene & Monahan, 1981; Levey et al., 1973).

Resident Factors

Consistent with many studies, older residents were found to be more satisfied with staff care in both nursing homes and hostels (Linn & Greenfield, 1982; Ware, Davies-Avery, & Stewart, 1978). This could be because "they become generally mellow and accepting, or because they feel more reluctant than younger patients to pass negative judgment on their care" (Hall & Dornan, 1990, p. 817).
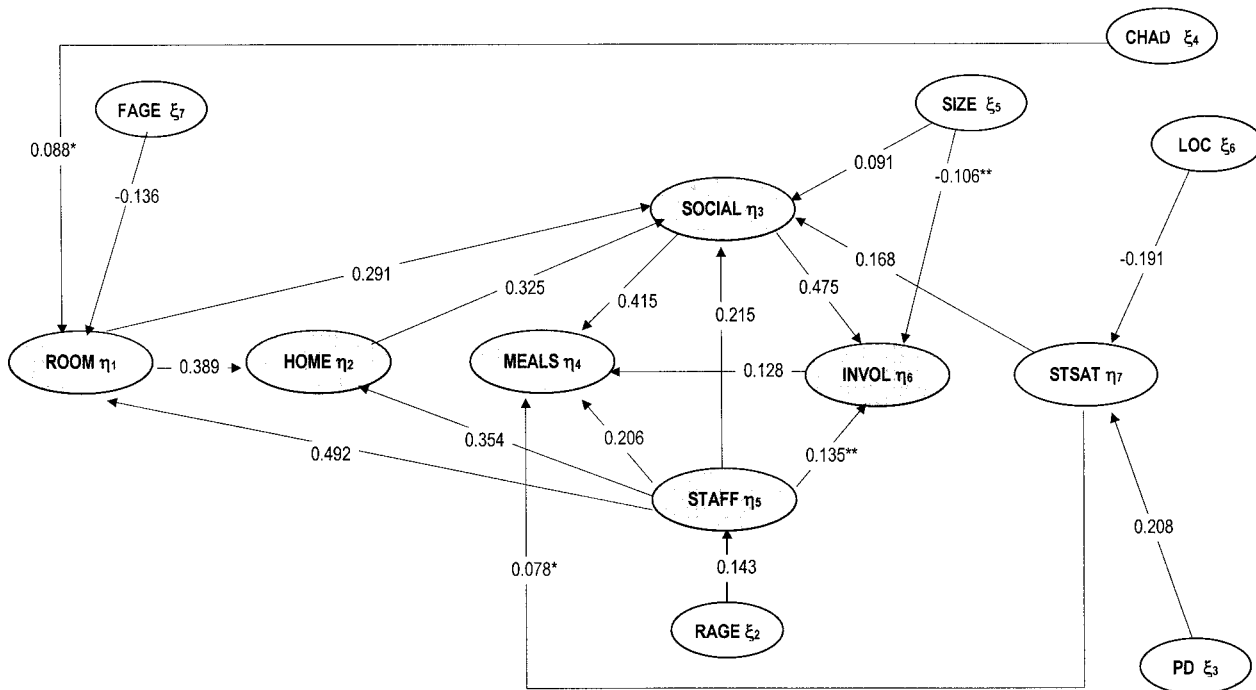
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Figure 3. Fitted hostel resident satisfaction model ($n = 640$). η represents latent dependent variables; ξ represents latent independent variables. All standardized regression coefficients are significant at $p < .001$ unless indicated $*p < .05$; $**p < .01$. $\eta_1 =$ satisfaction with room; $\eta_2 =$ satisfaction with home; $\eta_3 =$ satisfaction with social interaction; $\eta_4 =$ satisfaction with meals; $\eta_5 =$ satisfaction with staff care; $\eta_6 =$ satisfaction with involvement; $\eta_7 =$ staff satisfaction; $\xi_1 =$ resident dependency; $\xi_2 =$ resident age; $\xi_3 =$ professional development; $\xi_4 =$ care hours after adjusting for resident dependency; $\xi_5 =$ facility size; $\xi_6 =$ location; $\xi_7 =$ facility age. Relationships among shaded variables are discussed in Chou, Boldy and Lee (2002a).

No relationship was found between resident dependency and satisfaction components for both hostel and nursing home residents, except for satisfaction with room for the nursing home group (higher score for lower dependency). This result is consistent with the results of several researchers, who reported that satisfied residents are also more functionally independent (Kruzich, Clinton, & Kelber, 1992; Sikorska, 1999; Weihl, 1981).

Staff Factors

Unlike the facility and resident factors, staff factors that influence residents' satisfaction are more likely to be within the realm of control of facility managers.

Within professional development, continuing education is viewed as a vehicle for increased staff knowledge and skill and improved resident care (Ross, Carswell, Dalziel, & Aminzadeh, 2001). Although the importance of organizational responsibility for continuing education has been recognized, finding time for staff to attend in-service sessions and the need for replacements were problematic (Ross et al., 2001). Allowing staff to attend ongoing education during work time requires strong commitment from the organization. In our study, hostel staff received a greater variety of professional development activities, and more at-

tended ongoing education during work time, than staff in nursing homes (76% vs. 65%).

Staff professional development was found to have an insignificant and indirect small impact (effect size < 0.10) on resident satisfaction components via staff satisfaction. Interestingly, nursing home staff who attended more professional development activities were less satisfied with their job. It has been stressed that the capacity to use special skills and expertise is consistently and highly related to overall job satisfaction (Marriott, Sexton, & Staley, 1994). Nursing home residents, however, are more likely to be disabled, cognitively impaired, and emotionally depressed, and staff may find it more difficult (or are unable) to implement what they have learned. Alternatively, it might be that staff professional development activities organized in nursing homes are often not appropriate.

Care hours adjusted for resident dependency is one way of reflecting a facility's staffing level, staff workload, and time available to spend with residents. This study has found that care hours per se had only limited impact on resident satisfaction. However, they did have a direct positive impact on residents' satisfaction with their home in the nursing home model and a direct but weaker positive impact on satisfaction with their room in the hostel model.

Similarly, several other researchers have found that more nursing hours or higher staffing levels were

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Table 6. Decomposition of Standardized Effects for Hostel Satisfaction Model ($n = 640$)

Scale	STSAT	LOC	CHAD	SIZE	RAGE	PD	FAGE
Room							
Direct effect	—	—	0.088	—	—	—	−0.136
Indirect effect	—	—	—	—	0.070	—	—
Total effect	—	—	0.088	—	0.070	—	−0.136
Home							
Direct effect	—	—	—	—	—	—	—
Indirect effect	—	—	0.034	—	0.078	—	−0.053
Total effect	—	—	0.034	—	0.078	—	−0.053
Social							
Direct effect	0.168	—	—	0.091	—	—	—
Indirect effect	—	−0.032	0.037	—	0.076	0.035	−0.057
Total effect	0.168	−0.032	0.037	0.091	0.076	0.035	−0.057
Meals							
Direct effect	0.078	—	—	—	—	—	—
Indirect effect	0.080	−0.030	0.017	0.030	0.068	0.033	−0.027
Total effect	0.158	−0.030	0.017	0.030	0.068	0.033	−0.027
Staff							
Direct effect	—	—	—	—	0.143	—	—
Indirect effect	—	—	—	—	—	—	—
Total effect	—	—	—	—	0.143	—	—
Invol							
Direct effect	—	—	—	−0.106	—	—	—
Indirect effect	0.080	−0.015	0.017	0.043	0.056	0.017	−0.027
Total effect	0.080	−0.015	0.017	−0.063	0.056	0.017	−0.027
STSAT							
Direct effect	—	−0.191	—	—	—	0.208	—
Indirect effect	—	—	—	—	—	—	—
Total effect	—	−0.191	—	—	—	0.208	—

Notes: All regression coefficients are standardized; absolute values <0.10 indicate a "small" effect; ~0.3, a "medium" effect; and >0.50, a "large" effect (Kline, 1998). All direct effects, indirect effects, and total effects are significant at $p < .05$. Room = satisfaction with room; Home = satisfaction with home; Social = satisfaction with social interaction; Meals = satisfaction with meals; Staff = satisfaction with staff care; Invol = satisfaction with involvement; STSAT = staff satisfaction; RAGE = resident age; PD = professional development; CHAD = care hours after adjusting for resident dependency; SIZE = facility size; LOC = location; FAGE = facility age.

positively related to residents' perceptions of different aspects of nursing home life, such as comfort, freedom, staff treatment, food, activities, building maintenance, and room furnishings (Nyman, 1988) and a combination of facility atmosphere, design, facility protection, facility cleanliness, and facility maintenance (Sainfort et al., 1995).

An important, indeed crucial, finding of this study is the *statistically significant positive relationship between staff satisfaction and resident satisfaction.* Higher levels of staff satisfaction either directly or indirectly appear to lead to higher levels of all aspects of resident satisfaction for nursing home residents and higher levels of satisfaction with social aspects, meals, and involvement for hostel residents.

The fact that staff satisfaction appears to have more impact on resident satisfaction in nursing home settings may be explained by the fact that residents are more dependent and physically constrained within the boundary of the facility, which therefore forms their social world. They are hence more reliant on, and

influenced by, staff. In contrast, Duffy and Ketchand (1998) asserted that holding service staff accountable for resident satisfaction is inappropriate because their satisfaction is influenced by factors beyond the control of staff (e.g., residents' mood). The results derived from the present study, however, challenge their view and demonstrate that staff are, at the very least, partially responsible for residents' satisfaction.

Jimmieson and Griffin (1998) found that "clients who received services from those departments whose employees reported higher levels of role conflict were less likely to report high levels of client satisfaction with the health care services received" (p. 92). A possible explanation is that, if an individual is perceiving negative outcomes from work, one way to maintain equity is to reduce inputs through withdrawal behavior such as absenteeism and poor customer service. It is, therefore, even more important to ensure high levels of staff satisfaction in nursing home settings, where the majority of residents are cognitively impaired and cannot voice

their opinion. In such a facility, increased staff satisfaction may be used as a means, together with other measures, of ensuring that minimal standards of care are delivered to residents.

Limitations of the present study were associated with the methodological implication of cross-sectional survey design and its limited geographical base. In addition, residents' mental status was not formally assessed. Hence, resident selection purely based on a resident's medical record, the advice of staff, and the researcher's personal judgment may be biased because it excludes some cognitively able residents. In addition, given the size of the sample, cross validation of the final resident satisfaction models cannot be performed by randomly splitting the sample into two groups.

Key Implications

As evident in this research, variation in care hours per se does not have much impact on resident satisfaction. This implies that policies directed at ensuring an adequacy of care hours might help in maintaining a minimal standard of care but are insufficient or ineffective on their own in providing resident-focused care and increasing resident satisfaction. In contrast, the significant link between staff satisfaction and resident satisfaction components suggests that the greatest potential for ensuring a high level of resident satisfaction is by enhancing staff satisfaction, especially in nursing homes.

As recruiting and keeping good staff is one of the biggest challenges in nursing homes (Deutschman, 2001), policies are required that result in improvement by the aged care industry of staff pay, rewards, and work conditions in order to attract high-quality and appropriate staff, rather than purely an increase of staff hours. Staff also must be valued as an important resource, to be trained, encouraged, and empowered to deliver excellent care and to be praised and rewarded for such excellence.

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[Appendix A begins on next page.]

Appendix A

Correlations, Means, and Standard Deviations

Variable	Room	Home	Social	Meals	Staff	Invol	DEP	STSAT	CHAD	Size	RAGE	PD	FAGE	LOC	Owner	Hostel M	SD
1. Room (η_1)	—	0.518	0.490	0.363	0.453	0.267	0.016	0.070	0.136	-0.083	0.052	0.007	-0.150	0.107	-0.001	3.263	0.553
2. Home (η_2)	0.569	—	0.511	0.419	0.489	0.278	-0.012	0.090	0.012	-0.047	0.012	0.053	-0.006	-0.038	0.037	3.312	0.526
3. Social (η_3)	0.367	0.489	—	0.492	0.429	0.458	-0.065	0.227	-0.102	0.083	0.022	0.039	0.080	-0.014	-0.081	3.042	0.591
4. Meals (η_4)	0.410	0.403	0.378	—	0.423	0.342	-0.086	0.193	0.009	-0.041	-0.045	0.074	0.069	0.008	0.043	3.034	0.613
5. Staff (η_5)	0.313	0.381	0.378	0.395	—	0.293	0.037	0.070	0.015	0.022	0.088	0.067	0.003	0.015	0.001	3.535	0.497
6. STSAT (η_6)	0.296	0.350	0.390	0.425	0.350	—	-0.033	0.070	0.001	-0.087	0.019	-0.071	0.005	0.021	0.081	2.631	0.493
7. DEP (ξ_1)	0.110	0.018	0.100	0.052	0.033	0.026	—	-0.074	-0.029	-0.011	0.038	-0.003	-0.054	-0.034	0.116	4.336	0.766
8. STSAT (η_7)	0.141	0.294	0.137	0.122	0.078	0.033	-0.076	—	-0.093	0.096	-0.019	0.268	0.104	-0.250	-0.128	3.854	0.258
9. CHAD (ξ_4)	0.134	0.173	0.063	0.079	-0.048	-0.002	0.072	-0.087	—	-0.411	-0.038	-0.250	-0.365	-0.132	0.303	2.677	1.079
10. Size (ξ_5)	-0.083	-0.040	-0.012	-0.060	0.023	-0.148	-0.082	0.111	-0.147	—	0.097	0.365	0.391	0.145	-0.599	46.395	23.364
11. Rage (ξ_2)	0.014	0.027	0.030	0.087	0.184	0.143	0.059	-0.023	0.107	-0.055	—	0.020	-0.019	0.007	-0.045	83.491	8.426
12. PD (ξ_3)	-0.128	-0.126	-0.023	0.125	0.033	0.049	-0.006	-0.097	-0.277	0.101	0.012	—	0.188	-0.121	-0.184	2.761	0.578
13. FAGE (ξ_7)	-0.124	-0.079	-0.039	-0.022	0.028	-0.007	0.090	0.186	-0.229	0.224	0.072	-0.014	—	-0.367	-0.862	20.042	10.638
14. LOC (ξ_6)	-0.087	-0.132	-0.085	-0.012	0.043	0.112	-0.115	-0.212	0.009	0.320	-0.021	-0.129	0.604	—	0.552	—	—
15. Owner	-0.198	-0.044	-0.033	-0.066	-0.222	0.049	0.120	-0.053	0.689	-0.467	0.177	-0.926	-0.185	0.850	—	—	—
Nursing home																	
M	2.815	2.964	2.756	2.911	3.304	2.440	1.943	3.584	2.022	64.404	82.178	2.542	25.722	—	—		
SD	0.679	0.639	0.575	0.538	0.555	0.590	0.669	0.159	0.263	44.573	9.389	0.292	16.793	—	—		

Notes: Room = satisfaction with room; Home = satisfaction with home; Social = satisfaction with social interaction; Meals = satisfaction with staff care; Invol = satisfaction with involvement; DEP = resident dependency; STSAT = staff satisfaction; CHAD = care hours after adjusting for resident dependency; Size = facility size; RAGE = residents' age; PD = staff professional development; FAGE = facility age; LOC = location; Owner = ownership.

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