

Dementia Care Redesigned: Effects of Small-Scale Living Facilities on Residents, Their Family Caregivers, and Staff

Hilde Verbeek, MSc, Sandra M. G. Zwakhalen, PhD, Erik van Rossum, PhD, Ton Ambergen, PhD, Gertrudis I. J. M. Kempen, PhD, and Jan PH. Hamers, PhD

Objective: The purpose of this study was to evaluate the effects of small-scale living facilities in dementia care on residents, family caregivers, and staff.

Design: This was a quasi-experimental study including 2 types of institutional nursing care: small-scale living facilities (experimental group), and regular psychogeriatric nursing home wards (control group). Three measures were conducted: at baseline and follow-ups after 6 and 12 months.

Setting: Twenty-eight houses in small-scale living facilities and 21 regular psychogeriatric nursing home wards.

Participants: In total, 259 residents were included in the study: 124 in small-scale living facilities and 135 controls, matched on cognitive and functional status. Furthermore, 229 family caregivers were included and 305 staff members.

Measurements: For residents, main outcome measures were quality of life, neuropsychiatric symptoms, and agitation. Main outcome measures for family caregivers included perceived burden, satisfaction, and involvement with care. Main outcome measures for staff were job satisfaction and motivation.

Results: No effects were found for residents' total quality of life, neuropsychiatric symptoms, and agitation. Family caregivers in small-scale living reported significantly less burden (adjusted mean difference 0.8, 95% CI 0.1–1.5) and were more satisfied with nursing staff (0.3, 0.2–0.5) than family caregivers in regular wards. No differences were found in their involvement with care. Overall, no significant differences were found for staff's job satisfaction and motivation, although subgroup analyses using contrast groups (regarding typical small-scale living and regular wards) revealed more job satisfaction (2.0, 0.5–3.5) and motivation (0.6, 0.0–1.3) in small-scale living compared with regular wards.

Conclusion: This study was unable to demonstrate convincing overall effects of small-scale living facilities. Because governmental policies and, in some countries, financial support, are increasingly aimed at providing small-scale, homelike care, it is suggested that this may not be a final solution to accomplish high-quality dementia care and that other options should be considered. (*J Am Med Dir Assoc* 2010; ■: ■–■)

Keywords: *Dementia; long-term care; small-scale housing; quality of life*

Dementia care is currently being redesigned and deinstitutionalization has become common policy. A recent study conducted by the Organization for Economic Cooperation and Development (OECD), for example, stated that policies should be aimed at enabling people with dementia to remain at home for as long as possible. Furthermore, when required,

institutional dementia care should be as homelike as possible.¹ Dementia is still an incurable syndrome and causes progressive deterioration in cognition, functional abilities, and behavior. As the disease progresses, institutional nursing care is often inevitable. The World Health Organization regards dementia as the number 4 cause for disability adjusted

CAPHRI School for Public Health and Primary Care, Faculty of Health, Medicine and Life Sciences, Department of Health Care and Nursing Science, Maastricht University, the Netherlands (H.V., S.Z., E.v.R., G.K., J.H.); Centre of Research on Autonomy and Participation, Zuyd University of Applied Sciences, Heerlen, the Netherlands (E.v.R.); CAPHRI School for Public Health and Primary Care, Faculty of Health, Medicine and Life Sciences, Department of Methodology and Statistics, Maastricht University, the Netherlands (T.A.).

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Address correspondence to Hilde Verbeek, MSc, CAPHRI School for Public Health and Primary Care, Faculty of Health, Medicine, and Life Sciences, Department of Health Care and Nursing Science, PO Box 616, 6200 MD Maastricht, the Netherlands. E-mail: h.verbeek@zw.unimaas.nl

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life years in people aged 60 or older.² Worldwide, the number of people with dementia is rapidly increasing to an estimated 81 million by 2040.³ This burden challenges all people involved: those suffering from dementia, their families, and professional caregivers. Because current treatments cannot cure or even stop the progression of dementia and the development of new drugs takes years to be tested and developed, provision of high-quality care and good practice must be a priority.^{4,5}

Promoting overall well-being of residents is currently leading in institutional dementia care. Values such as preserving autonomy, enabling residents to continue their own lifestyle, and focusing on quality of life (QoL) are of vital importance. Integrated dementia care programs, like person-centered care, tailored to individual needs of residents, are designed to support these values.^{5,6} Moreover, outcomes relating to family caregivers and staff (eg, caregiver burden and satisfaction) are also essential processes suggested to contribute to residents' QoL.⁷ The focus on deinstitutionalization and well-being has resulted in the development of new dementia care settings by combining changes in both physical environment and care programs, directed toward small-scale and homelike care environments.^{8,9} Various countries have implemented this, for instance group living in Sweden,¹⁰ group homes in Japan,¹¹ the Green House project in the United States,¹² and small-scale living in the Netherlands,^{13,14} all aimed at providing nursing care in small groups (6–10 residents per house) emphasizing normalization of daily life and encouraging residents to participate in meaningful activities. In some countries, such as the Netherlands, governmental policies and financial support have encouraged its development, which brought small-scale living to form a significant part (eg, approximately 25% in the Netherlands) of institutional care.⁸

Despite its increase, research into the effects of small-scale living on residents, family, and staff is hardly available and suffers from methodological limitations such as small sample sizes, lack of comparison groups, no or short periods of follow-up, and large variation in cognitive and functional abilities of residents.⁸ Evidence from controlled studies on best-care practices is therefore urgently needed. Therefore, this study investigated the effects of small-scale living compared with regular care in nursing homes in the Netherlands, focusing especially on residents' QoL and behavior, family caregivers' experience burden, involvement with care, and satisfaction and nursing staff's job satisfaction and motivation. Unique to this study is the combination of a large sample size, baseline resident matching, a long follow-up period of 12 months, and simultaneous assessment of residents, family caregivers, and nursing staff outcomes.

METHODS

Design and Sample

A quasi-experimental study was conducted from April 2008 to January 2010 (recruitment period April 2008–December 2008), including 3 measurements: at baseline

and follow-ups after 6 and 12 months. A detailed report of the rationale and study design was published elsewhere.¹⁴

Two types of long-term institutional nursing care settings were included: small-scale living facilities and regular psychogeriatric wards in nursing homes. The experimental condition consisted of 28 houses in small-scale living, which were selected on the following: (1) at most 8 residents per house; (2) a joint household, with activities centered around daily life and all meals prepared by staff together with residents and/or family caregivers; (3) staff performing multiple tasks (eg, medical and personal care, organizing activities, and domestic chores); (4) a small, fixed team of staff caring for residents; (5) organization of daily life mainly by residents, family, and staff; and (6) facilities' resemblance of an archetypal home. The control condition consisted of 21 regular wards selected on: (1) at least 20 residents per ward; (2) staff having differentiated tasks, focusing on residents' medical and personal care; and (3) organization of residents' daily life largely by routines of the nursing home.

Residents were eligible if they had a primary diagnosis of dementia, based on the criteria established by the *Diagnostic and Statistical Manual of Mental Diseases*, fourth edition,¹⁵ resided for at least 1 month in the facility, and their legal guardian had provided written informed consent. Residents in regular wards had to match the cognitive and functional status profile of residents in small-scale living, as assessed by 2 subscales from the Resident Assessment Instrument Minimum Data Set (RAI-MDS), ie, Cognitive Performance Scale (CPS) and Activities of Daily Living-Hierarchy scale (ADL-H).^{14,16–18} This matching procedure increased the comparability of groups at baseline. A family caregiver in this study was defined as someone who voluntarily had responsibility for a resident. All nursing staff involved in direct care and working on a permanent basis were eligible to participate.

The Medical Ethics Committee of the University Hospital Maastricht/Maastricht University and all local ethical committees of participating facilities approved the study.

Measures

The primary outcome measures for residents were QoL, neuropsychiatric symptoms, and agitation. QoL was assessed with QUALIDEM, a validated dementia-specific QoL instrument designed for use in institutional care and rated by proxies.^{19,20} QUALIDEM focuses on observable behaviors, contains 37 items rated on a 4-point scale (never–seldom–sometimes–often; range 0–3) and comprises 9 subscales: care relationship (7 items), positive affect (6 items), negative affect (3 items), restless tense behavior (3 items), positive self-image (3 items), social relations (6 items), social isolation (3 items), feeling at home (4 items), and having something to do (2 items). Higher scores indicate a higher QoL. A mean total score (range 0–27) was calculated by adding the mean score of each subscale (range 0–3; ie, total subscale score divided by the number of its items). Neuropsychiatric symptoms were assessed with the neuropsychiatric inventory, nursing home version (NPI-NH),²¹ which measures frequency and severity of 12 domains (range 0–144):

delusions, hallucinations, aggression/agitation, depression, anxiety, euphoria, apathy, disinhibition, irritability, aberrant motor behavior, sleep, and eating disturbances. Higher scores indicate more symptoms. Agitation was measured with the Cohen-Mansfield Agitation Inventory (CMAI),²² containing 29 items that assess frequency (from never, 1, to several times an hour, 7) of agitated behaviors during the past 2 weeks (range 29–203), with a higher score indicating more agitation. Furthermore we recorded sociodemographic (age, gender, living condition before admission, and length of stay) and clinical information (dementia severity, type of dementia, psychotropic drug use, comorbid diseases, cognition, functional status). Dementia severity was measured with the global deterioration scale (range 1–7),²³ with higher scores indicating more severe dementia. Type of dementia, psychotropic drug use (according to the anatomical therapeutic chemical classification system),²⁴ and number of comorbid diseases (International Classification of Diseases, version 10) were derived from medical records. Cognition was assessed with the Mini-Mental State Examination (MMSE; range 0–30)²⁵; higher scores indicate better cognitive performance) and CPS.¹⁶ Functional status was measured with the ADL-H.¹⁷

The primary outcome measures for family caregivers were perceived burden, involvement, and satisfaction with care. Perceived burden was assessed with the Self Perceived Pressure From Informal Caregiving (SPPIC), a 9-item scale (range: 0–9).²⁶ A higher score indicates more burden. Involvement with care was defined as frequency (number of visits) and length of visits (minutes) in the past 2 weeks and number of activities during a visit. Satisfaction with resident contact and nursing staff contact were measured on a 4-point scale, with higher scores indicating more satisfaction. Furthermore, age, gender, and relationship with resident were assessed.

The primary outcome measures for nursing staff were job satisfaction and motivation, assessed by 6 items,²⁷ scored on a 5-point scale ranging from totally disagree to totally agree. Total scores ranged from 4 to 20 (job satisfaction) and 2 to 10 (motivation), with higher scores indicating more satisfaction and motivation respectively. Finally, sociodemographic variables (age, gender, education level, months of employment in facility type, and years working in elderly care and contract hours per week) were measured.

The QUALIDEM was rated both by family caregivers and 2 nursing staff members, ie, registered nurses (RNs) or certified nursing assistants (CNAs), who were in charge of the residents and were most involved in their care. These RNs/CNAs also rated the NPI-NH and CMAI. Data concerning family caregivers and nursing staff were collected using self-report questionnaires. To measure contrast between experimental and control groups, an 18-item questionnaire was developed that measured the extent to which a nursing home facility fulfilled the criteria for small-scale living.¹⁴ Items relate to a unit's organizational, social, and physical environment and were measured on a 5-point scale, ranging from 1, "not at all," to 5, "completely" (range 18–90) and rated by 2 observers independently. An example item is:

Table 1. Participants' Baseline Characteristics

| | Small-Scale Living | Regular Wards |
|--|--------------------|---------------|
| Residents | n = 124 | n = 135 |
| Age, y | 82.4 (7.9) | 83.1 (6.5) |
| Women | 99 (80) | 95 (70) |
| Living condition before admission* | | |
| At home | 37 (30) | 80 (59) |
| Other institution/unknown | 87 (70) | 55 (41) |
| Length of stay, mo† | 15.7 (11.3) | 24.4 (22.0) |
| Dementia type | | |
| Alzheimer's disease | 33 (27) | 44 (32) |
| Vascular dementia | 19 (15) | 24 (18) |
| Other | 20 (16) | 27 (20) |
| Not otherwise specified/unknown | 52 (42) | 40 (30) |
| Global Deterioration Scale | 5.3 (1.1) | 5.1 (1.0) |
| Mini Mental State Examination | 11.1 (7) | 10.5 (6.6) |
| Cognitive Performance Scale | 3.5 (1.4) | 3.4 (1.4) |
| Activities of Daily Life–Hierarchy Scale | 3.1 (1.7) | 3.3 (1.4) |
| Comorbid diseases | 4.3 (2.3) | 3.8 (1.9) |
| Use of psychotropic drugs‡ | | |
| Yes (1 or more) | 72 (58) | 100 (74) |
| No | 37 (30) | 28 (21) |
| Unknown | 15 (12) | 7 (5) |
| Family caregivers | n = 106 | n = 100 |
| Age, y | 58.1 (9.7) | 57.9 (11.2) |
| Women | 77 (75%) | 66 (66%) |
| Relationship with resident | | |
| Spouse | 11 (10%) | 14 (14%) |
| Child | 66 (63%) | 65 (65%) |
| Other/unknown | 29 (27%) | 21 (21%) |
| Nursing staff | n = 114 | n = 191 |
| Age, y | 40.7 (11.5) | 42.8 (10.1) |
| Women§ | 110 (97) | 170 (89) |
| Level of education | | |
| Level 1 | 6 (5) | 3 (2) |
| Level 2 | 18 (16) | 29 (15) |
| Level 3 | 64 (57) | 128 (67) |
| Level 4 | 21 (19) | 26 (14) |
| Level 5 | 3 (3) | 3 (2) |
| Employment in nursing home type, mo | 23.1 (18.4) | 85.2 (72.8) |
| Years working in elderly care | 14.7 (10.25) | 16.7 (10.65) |
| Contract hours per week | 26.4 (7.0) | 26.9 (6.6) |

Data are mean (SD) or number (%).

* $P = .001$.

† $P = .047$.

‡ $P = .038$.

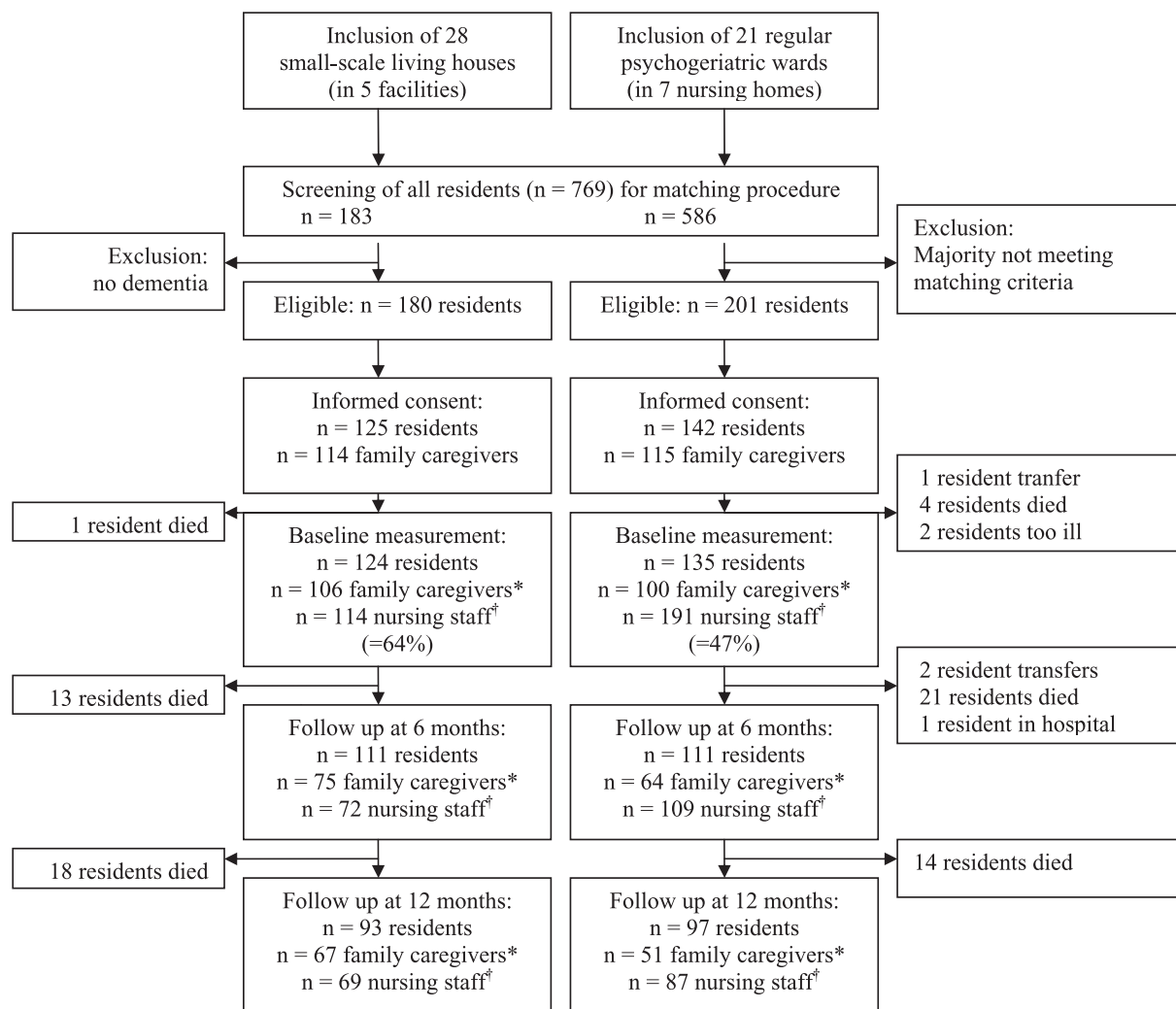
§ $P = .021$.

|| $P = .001$.

"To what extent is the staff part of the household?" Higher scores indicate more adherence to small-scale living.

Statistical Analyses

Differences in characteristics between the 2 groups at baseline were tested with χ^2 -tests for categorical variables, individual sample t tests for normally distributed continuous variables, and Kruskal-Wallis tests for continuous variables



* Main reasons for non-response of family caregivers was drop-out due to death of residents, not returning questionnaires and moving.

† Main reasons for non-response for nursing staff were not returning questionnaires, transfer to another ward or nursing home and maternity/sickness leave.

Fig. 1. Flow chart study design and participants.

with skewed distributions Study hypotheses were tested with mixed-model multilevel analyses, according to the intention-to-treat principle. Multilevel analyses are robust against missing data on outcome variables. Therefore, all participants having a baseline measurement were included, regardless of availability of data at follow-up. All sociodemographic characteristics of participants (see Table 1 for specification per participant group) were included as covariates in the model. Missing data for only these covariates were imputed using multiple imputation. First, fixed effects for group by time interaction were tested for significance. If this interaction was not significant, it was removed from the model and only fixed effects for group and time were tested. Based on a priori sample size calculation, the power for these analyses was sufficient, as a number of 84 participants per group was required.¹⁴

Subgroup analyses were conducted. Based on their median score on the contrast questionnaire, 2 groups were created:

highest scoring small-scale living (contrast group 1) versus lowest scoring regular wards (contrast group 2). Contrast group 1 consisted of 14 houses with total scores above the median (>66); contrast group 2 consisted of 10 regular wards with total scores below the median (<40). The power for these analyses is limited, owing to an insufficient number of participants in the contrast groups (less than 84 participants per group), resulting in an increased chance of type-II errors. All tests used a 2-sided significance level of .05. All statistical analyses were conducted using Predictive Analytics SoftWare (PASW) version 17 from SPSS (SPSS Inc., Chicago, IL).

RESULTS

Figure 1 describes the number of participants at each stage of the study, including reasons for nonparticipation. In total, 259 residents were included, 124 in small-scale living and 135 in regular wards. Family caregivers were available for 253

Table 2. Primary Outcomes for Residents

| | Baseline | Follow-up, 6 mo | Follow-up, 12 mo |
|--|-------------|-----------------|------------------|
| Residents* | | | |
| Total score QUALIDEM subscale Care relationships (range 0–21) | | | |
| Small-scale | 15.0 (4.5) | 14.6 (4.4) | 14.5 (4.4) |
| Regular ward | 15.5 (4.6) | 15.8 (4.8) | 15.8 (4.6) |
| Total score QUALIDEM subscale Positive affect (range 0–18) | | | |
| Small-scale | 14.5 (3.7) | 13.8 (3.9) | 13.7 (3.7) |
| Regular ward | 14.0 (4.0) | 13.8 (3.7) | 13.7 (4.1) |
| Total score QUALIDEM subscale Negative affect (range 0–9) | | | |
| Small-scale | 6.6 (1.9) | 6.6 (2.3) | 6.6 (2.4) |
| Regular ward | 5.8 (2.2) | 5.7 (2.4) | 5.7 (2.3) |
| Total score QUALIDEM subscale Restless behavior (range 0–9) | | | |
| Small-scale | 5.4 (2.8) | 5.3 (2.8) | 4.8 (2.8) |
| Regular ward | 5.7 (2.7) | 5.5 (3.0) | 5.8 (2.8) |
| Total score QUALIDEM subscale Social isolation (range 0–9) | | | |
| Small-scale | 6.6 (2.0) | 6.4 (2.3) | 6.1 (1.9) |
| Regular ward | 6.8 (2.3) | 6.8 (2.3) | 6.9 (2.2) |
| Total score QUALIDEM subscale Positive self-image (range 0–9) | | | |
| Small-scale | 7.1 (2.1) | 7.2 (2.3) | 7.1 (2.2) |
| Regular ward | 7.4 (2.1) | 7.6 (2.1) | 7.7 (2.0) |
| Total score QUALIDEM subscale Having something to do (range 0–6) | | | |
| Small-scale | 2.7 (2.1) | 2.3 (2.0) | 2.2 (2.0) |
| Regular ward | 1.9 (2.0) | 1.6 (1.7) | 1.4 (1.6) |
| Total score QUALIDEM subscale Feeling at home (range 0–12) | | | |
| Small-scale | 9.7 (2.7) | 9.8 (2.5) | 9.5 (2.9) |
| Regular ward | 9.8 (2.6) | 10.1 (2.4) | 10.4 (2.0) |
| Total score QUALIDEM subscale Social relations (range 0–18) | | | |
| Small-scale | 12.4 (3.8) | 10.7 (3.9) | 11.0 (3.9) |
| Regular ward | 11.3 (4.1) | 11.6 (3.8) | 10.3 (3.7) |
| Mean total QUALIDEM score (range 0–27) | | | |
| Small-scale | 18.8 (3.5) | 18.3 (3.7) | 17.5 (3.8) |
| Regular ward | 18.8 (3.8) | 18.6 (3.9) | 18.4 (3.6) |
| Total score NPI-NH (range 0–144) | | | |
| Small-scale | 16.2 (14.0) | 13.5 (12.0) | 16.6 (14.9) |
| Regular ward | 15.7 (13.7) | 14.3 (12.7) | 14.8 (12.1) |
| Total score CMAI (range 29–203) | | | |
| Small-scale | 40.3 (14.2) | 37.3 (11.5) | 39.6 (13.5) |
| Regular ward | 40.6 (14.0) | 38.5 (11.7) | 35.3 (8.0) |

Data are unadjusted scores (SD).

CMAI, Cohen-Mansfield Agitation Inventory; NPI-NH, Neuropsychiatric Inventory–Nursing Home; QUALIDEM, a validated dementia-specific QoL instrument designed for use in institutional care and rated by proxies.

* $n_{\text{small-scale}} = 124$, $n_{\text{regular wards}} = 135$; Follow-up after 6 months $n_{\text{small-scale}} = 111$, $n_{\text{regular wards}} = 111$; Follow-up after 12 months $n_{\text{small-scale}} = 93$, $n_{\text{regular wards}} = 97$.

residents, of whom 229 were willing to participate: 114 in small-scale living and 115 in regular wards. Finally, 305 nursing staff members participated in the study, 114 from small-scale living and 191 from regular wards.

Participants' baseline sociodemographic characteristics are presented in Table 1. Groups were comparable on baseline characteristics, except for living condition before admission, length of stay, and use of psychotropic drugs (residents' level), gender, and years of employment in nursing home type (staff's level).

Unadjusted means for all outcome measures are shown in Table 2 (residents) and Table 3 (family caregivers and nursing staff). Figure 2 (residents), Figure 3 (family caregivers), and Figure 4 (nursing staff) present adjusted scores for both groups (small-scale living versus regular wards) at 3 measurements.

Subgroup analyses (data not shown) based on the contrast questionnaire confirmed overall outcomes, except for nursing staff's job satisfaction and motivation. For these outcome

measures, results for both overall and contrast analyses are presented.

Residents

No significant group by time interaction effects were found for all subscales and the total score of QUALIDEM. No differences were found in total QoL, as scored by nursing staff (Figure 2). Group effects were found on 2 subscales scored by nursing staff: negative affect and having something to do. Residents in small-scale living had a higher QoL with respect to having something to do (adjusted mean difference 0.9, 95% confidence interval [CI] 0.5–1.2; $P < .001$) and a lower QoL regarding negative affect than residents in regular wards (0.7, 0.2–1.2; $P = .01$). Total QoL scored by family caregivers was slightly higher for residents in small-scale living than in regular wards, but this difference did not reach significance (adjusted mean difference 1.0, 95% CI –0.1–2.1; $P = .076$). Group effects were found on 3 subscales: feeling

Table 3. Primary Outcomes for Family Caregivers and Nursing Staff

| | Baseline | Follow-up, 6 months | Follow-up, 12 months |
|---|--------------|---------------------|----------------------|
| Family caregivers* | | | |
| Perceived burden (range 0–9) | | | |
| Small-scale | 2.8 (2.9) | 2.6 (2.8) | 2.7 (2.6) |
| Regular ward | 3.5 (2.8) | 4.0 (3.2) | 3.5 (3.2) |
| Number of visits (range 0–14) | | | |
| Small-scale | 5.3 (4.0) | 4.8 (3.4) | 4.4 (3.5) |
| Regular ward | 5.6 (4.1) | 5.6 (4.2) | 5.0 (3.2) |
| Duration of visits (in minutes) | | | |
| Small-scale | 99.9 (52.7) | 104.9 (71.2) | 97.5 (43.5) |
| Regular ward | 100.8 (46.3) | 90.6 (45.0) | 92.4 (47.4) |
| Number of activities during visit (range 0–14) | | | |
| Small-scale | 3.0 (1.6) | 3.1 (1.8) | 3.2 (2.0) |
| Regular ward | 2.7 (1.4) | 2.8 (1.5) | 2.6 (1.3) |
| Satisfaction with contact resident (range 0–4) | | | |
| Small-scale | 3.2 (.7) | 3.1 (.8) | 3.1 (.8) |
| Regular ward | 3.1 (.8) | 2.9 (.8) | 3.0 (.8) |
| Satisfaction with contact nursing staff (range 0–4) | | | |
| Small-scale | 3.7 (.5) | 3.6 (.7) | 3.5 (.9) |
| Regular ward | 3.3 (.6) | 3.3 (.5) | 3.4 (.7) |
| Nursing staff† | | | |
| Job satisfaction (range 4–20) | | | |
| Small-scale | 16.5 (2.8) | 16.5 (2.9) | 16.2 (2.8) |
| Regular ward | 15.8 (2.7) | 16.3 (2.4) | 16.2 (2.8) |
| Job motivation (range 2–10) | | | |
| Small-scale | 8.3 (1.5) | 8.4 (1.4) | 8.3 (1.3) |
| Regular ward | 8.1 (1.3) | 8.4 (1.2) | 8.4 (1.3) |

Data are unadjusted total scores (SD).

* Family caregivers: $n_{\text{small-scale}} = 106$, $n_{\text{regular wards}} = 100$; Follow-up after 6 months $n_{\text{small-scale}} = 75$, $n_{\text{regular wards}} = 64$; Follow-up after 12 months $n_{\text{small-scale}} = 67$, $n_{\text{regular wards}} = 51$.

† Nursing staff: $n_{\text{small-scale}} = 114$, $n_{\text{regular wards}} = 191$; Follow-up after 6 months $n_{\text{small-scale}} = 72$, $n_{\text{regular wards}} = 109$; Follow-up after 12 months $n_{\text{small-scale}} = 69$, $n_{\text{regular wards}} = 87$.

at home (1.0, 0.1–2.0; $P = .023$), having something to do (0.5, 0.1–0.9; $P = .018$), and social relations (1.1, 0.2–2.0; $P = .02$), with residents in small-scale living having a higher QoL on these aspects.

No significant differences were found in neuropsychiatric symptoms (NPI-NH). Both groups scored rather low. A group by time interaction effect was found for agitation ($P = .04$). Total agitation scores (CMAI) for residents in small-scale living remained stable over time, whereas these scores for residents in regular wards decreased. Only at measurement 3 (follow-up after 12 months) did this result in a significant difference between groups (adjusted mean difference 4.6, 95% CI 0.3–8.9; $P = .035$) (Figure 2).

Family Caregivers

No group by time interaction effect was found for experienced burden; both groups remained stable over time. A significant group effect was found (Figure 3): family caregivers in small-scale living facilities experienced less burden than family caregivers in regular wards (adjusted mean difference 0.8, 95% CI 0.1–1.5; $P = .034$). Furthermore, a significant group effect was found in satisfaction with nursing staff (adjusted mean difference 0.3, 95% CI 0.2–0.5; $P < .001$). Family caregivers in small-scale living were more often very satisfied than family caregivers in regular wards, who were more often fairly satisfied. No effects were found for involvement with care. No significant differences were found for frequency and

length of visits and amount of activities during a visit between groups in the last 2 weeks (Figure 3). No differences were found for satisfaction with resident contact (Figure 3).

Nursing Staff

No significant differences were found for job satisfaction and motivation. Both groups scored relatively high on these scales. However, subgroup analyses using contrast groups revealed significant differences. Nursing staff in contrast group one, typical small-scale living, were significantly more satisfied with their job (adjusted mean difference 2.0, 95% CI 0.5–3.5; $P = .009$) and showed a significantly higher motivation (0.6, 95% CI 0.0–1.3; $P = .05$) than nursing staff working in contrast group 2, typical regular wards (Figure 4).

DISCUSSION

We were unable to demonstrate convincing overall effects of small-scale living facilities for our primary outcome measures. No difference in residents' total QoL was found and only few dimensions significantly differed. No effects were found for neuropsychiatric symptoms and agitation. Family caregivers in small-scale living were less burdened and were more satisfied with nursing staff contact than family caregivers in regular wards. No effect was found for nursing staff's job satisfaction and motivation in the total group, although contrast analyses with respect to small-scale living versus regular wards showed higher satisfaction and motivation for

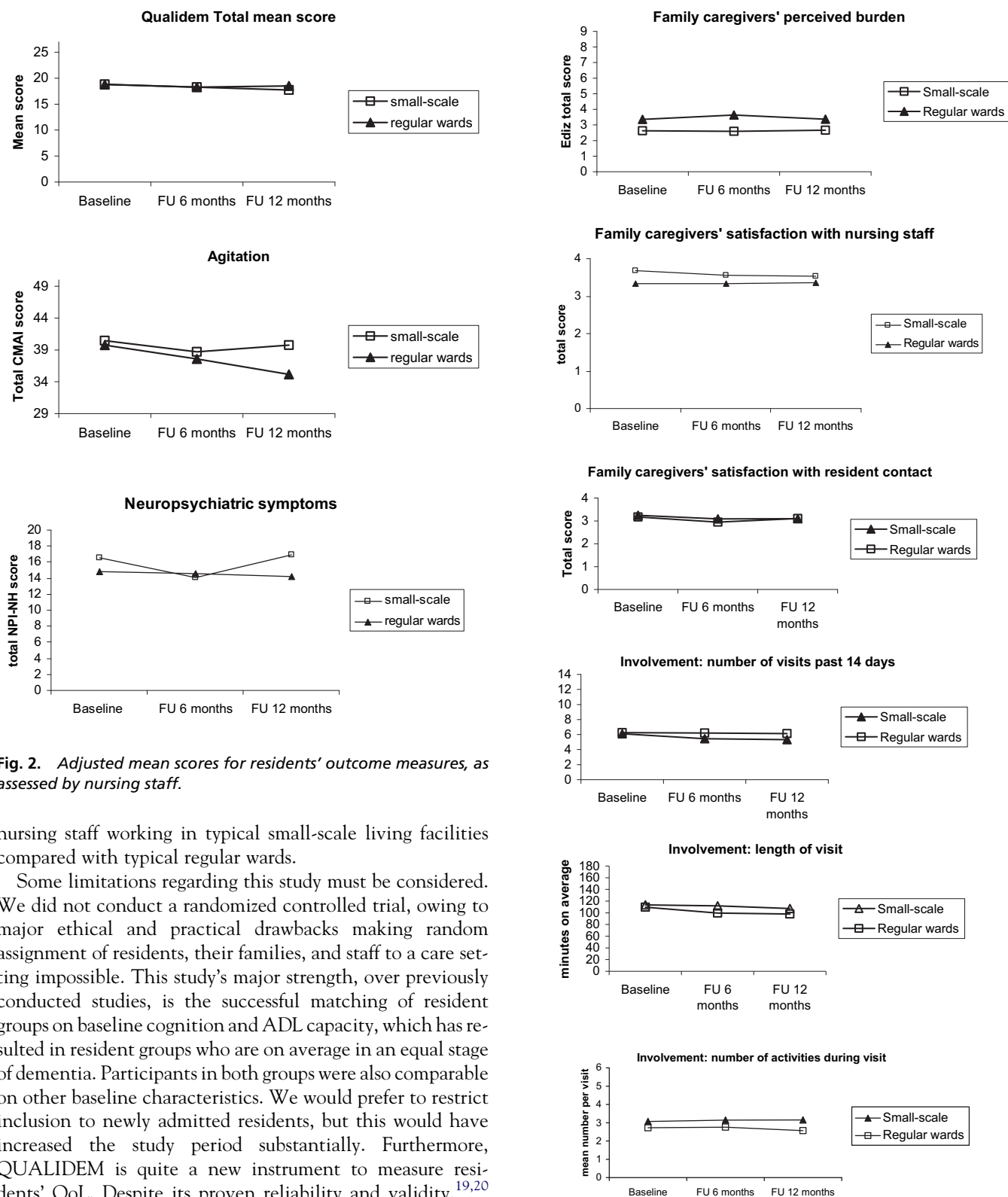


Fig. 2. Adjusted mean scores for residents' outcome measures, as assessed by nursing staff.

nursing staff working in typical small-scale living facilities compared with typical regular wards.

Some limitations regarding this study must be considered. We did not conduct a randomized controlled trial, owing to major ethical and practical drawbacks making random assignment of residents, their families, and staff to a care setting impossible. This study's major strength, over previously conducted studies, is the successful matching of resident groups on baseline cognition and ADL capacity, which has resulted in resident groups who are on average in an equal stage of dementia. Participants in both groups were also comparable on other baseline characteristics. We would prefer to restrict inclusion to newly admitted residents, but this would have increased the study period substantially. Furthermore, QUALIDEM is quite a new instrument to measure residents' QoL. Despite its proven reliability and validity,^{19,20} responsiveness to change over time has not been studied yet.

For nursing staff, a natural selection process could have biased our results. Nursing staff are free to choose a facility at which to work and probably choose the type in which they thrive best. This may result in an underestimation of effects, especially because results from the contrast analyses suggest higher job satisfaction and motivation for nursing staff in typical small-scale living. Nursing staff in small-scale living are

Fig. 3. Adjusted mean scores for outcomes on family caregivers.

suggested to have more job control, fewer demands, and more social support from their coworkers,²⁸ which may account for these results. Future research should examine this in more detail.

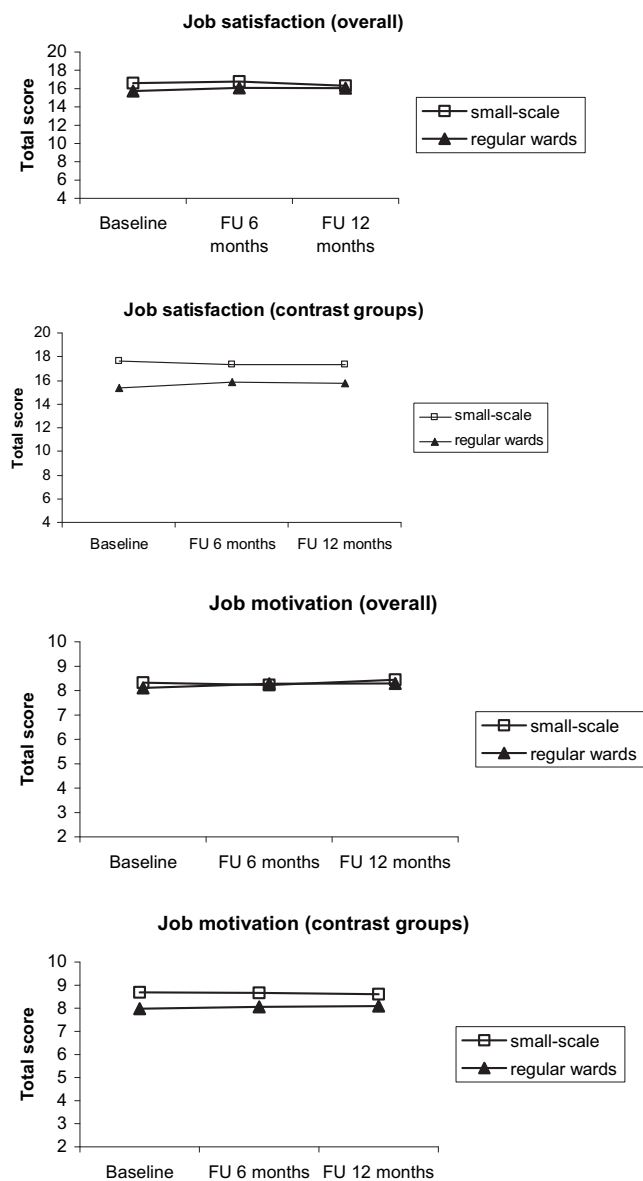


Fig. 4. Adjusted mean scores for outcomes on staff.

Contrary to other studies,^{12,29,30} we did not find convincing effects for small-scale living when compared with regular wards. Dutch policy and organization of nursing home care may partly account for this, because the government encourages small-scale living, both financially and conceptually. As a result, regular institutional care is in a transition toward small-scale, homelike environments. Therefore, it may be more difficult to detect differences between both care settings, as all outcome measures are rather positive in both groups. For example, in our study neuropsychiatric symptoms and agitation were rather low for both groups and in fact comparable to a successful intervention implementing person-centered care in an Australian study on institutional care.⁶ We believe that generalization of our results is appropriate to countries with a similar level of health care and organizational system to the Netherlands.

Our results have important implications for dementia care policy and practice and show that small-scale living facilities

are not necessarily a better care setting for all residents with dementia. Because governmental policies and, in some countries, financial support are increasingly aimed at providing small-scale, homelike care, we suggest that small-scale living facilities are not a final solution and other options should be considered. Policy makers and health care professionals should contemplate carefully what they regard as good care and QoL for people with dementia and not blindly focus on small groups or a homelike environment. Both a care program focusing on family and staff's attitudes toward residents in combination with environment and appropriate medical care are needed to improve dementia care. More research is required to disentangle this challenge.

REFERENCES

- Moise P, Schwarzing M, Um M. Dementia Care in 9 OECD Countries: A Comparative Analysis. Paris: OECD; 2004.
- WHO. World Health Report 2003—Shaping the Future. Geneva: World Health Organization (WHO); 2003.
- Ferri CP, Prince M, Brayne C, et al. Global prevalence of dementia: a Delphi consensus study. *Lancet* 2005;366:2112–2117.
- Neurology TL. Confronting the crisis in dementia care. *Lancet Neurol* 2009;8:431.
- Morley JE. Managing persons with dementia in the nursing home: High touch trumps high tech. *J Am Med Dir Assoc* 2008;9:139–146.
- Chenoweth L, King MT, Jeon YH, et al. Caring for Aged Dementia Care Resident Study (CADRES) of person-centred care, dementia-care mapping, and usual care in dementia: A cluster-randomised trial. *Lancet Neurol* 2009;8:317–325.
- Woods R. Institutional care. In: Woods R, editor. *Handbook of the Clinical Psychology of Ageing*. Chichester: John Wiley & Sons; 1996, pp. 369–387.
- Verbeek H, van Rossum E, Zwakhalen SM, et al. Small, homelike care environments for older people with dementia: A literature review. *Int Psychogeriatr* 2009;21:252–264.
- Morley JE, Flaherty JH. Putting the “home” back in nursing home. *J Gerontol A Biol Sci Med Sci* 2002;57:M419–M421.
- Annerstedt L. Development and consequences of group living in Sweden. A new mode of care for the demented elderly. *Soc Sci Med* 1993; 37:1529–1538.
- Yokota O, Fujisawa Y, Takahashi J, et al. Effects of group-home care on behavioral symptoms, quality of life, and psychotropic drug use in patients with frontotemporal dementia. *J Am Med Dir Assoc* 2006;7:335–337.
- Kane RA, Lum TY, Cutler LJ, et al. Resident outcomes in small-house nursing homes: A longitudinal evaluation of the initial green house program. *J Am Geriatr Soc* 2007;55:832–839.
- te Boekhorst S, Depla MF, de Lange J, et al. The effects of group living homes on older people with dementia: A comparison with traditional nursing home care. *Int J Geriatr Psychiatry* 2009;24:970–978.
- Verbeek H, van Rossum E, Zwakhalen SM, et al. The effects of small-scale, homelike facilities for older people with dementia on residents, family caregivers and staff: Design of a longitudinal, quasi-experimental study. *BMC Geriatr* 2009;9:3.
- American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 4th edition. Washington, DC: American Psychiatric Association; 1994.
- Morris JN, Fries BE, Mehr DR, et al. MDS Cognitive Performance Scale. *J Gerontol A Biol Sci Med Sci* 1994;49:M174–M182.
- Morris JN, Fries BE, Morris SA. Scaling ADLs within the MDS. *J Gerontol A Biol Sci Med Sci* 1999;54:M546–M553.
- interRAI. RAI for Nursing Home Care (RAI 2.1). Utrecht: InterRAI Corporation, 2002.
- Ettema TP, Droes RM, de Lange J, et al. QUALIDEM: Development and evaluation of a dementia specific quality of life instrument—validation. *Int J Geriatr Psychiatry* 2007;22:424–430.

20. Ettema TP, Droes RM, de Lange J, et al. QUALIDEM: Development and evaluation of a dementia specific quality of life instrument. Scalability, reliability and internal structure. *Int J Geriatr Psychiatry* 2007;22: 549–556.
21. Kat MG, de Jonghe JFM, Aalten P, et al. Neuropsychiatric symptoms of dementia: Psychometric aspects of the Neuropsychiatric Inventory (NPI) Dutch version. *Tijdschr Gerontol Geriatr* 2002;33:150–155.
22. de Jonghe JFM. Factor structure and validity of the Dutch version of the Cohen-Mansfield Agitation Inventory (CMAI-D). *J Am Geriatr Soc* 1996;44:888–889.
23. Reisberg B, Ferris SH, de Leon MJ, et al. The Global Deterioration Scale for assessment of primary degenerative dementia. *Am J Psychiatry* 1982; 139:1136–1139.
24. Organisation WH. Anatomical Therapeutic Chemical (ATC) Classification Index Including Defined Daily Doses (DDDs) for Plain Substances. Oslo: World Health Organization Collaborating Centre for Drug Statistics Methodology; 1997.
25. Folstein MF, Folstein SE, McHugh PR. A practical method for grading the cognitive status of patients for the clinician. *J Psychiatr Res* 1975;12: 189–198.
26. Pot AM, Deeg DJ, van Dyck R, et al. Psychological distress of caregivers: The mediator effect of caregiving appraisal. *Patient Educ Couns* 1998;34: 43–51.
27. de Jonge J. *Job Autonomy, Well-Being and Health*. Maastricht: Rijksuniversiteit Limburg, 1995.
28. te Boekhorst S, Willemse B, Depla MF, et al. Working in group living homes for older people with dementia: The effects on job satisfaction and burnout and the role of job characteristics. *Int Psychogeriatr* 2008;20:927–940.
29. Ritchie K, Colvez A, Ankri J, et al. The evaluation of long-term care for the dementing elderly: A comparative study of hospital and collective non-medical care in France. *Int J Geriatr Psychiatry* 1992;7:549–557.
30. Reimer M-A, Slaughter S, Donaldson C, et al. Special care facility compared with traditional environments for dementia care: A longitudinal study of quality of life. *J Am Geriatr Soc* 2004;52:1085–1092.