A Home-Based Training Program Improves Caregivers' Skills and Dementia Patients' Aggressive Behaviors: A Randomized Controlled Trial

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Objective: To investigate the effects of an individualized, home-based caregiver-training program for caregivers of elderly patients with dementia and behavioral problems. Methods: Using a randomized clinical trial in the neurologic clinics of two hospitals and a community care management center in northern Taiwan, we tested an individualized home-based caregiver-training program for managing behavioral problems, with referrals to community services and telephone consultation. Participants were patients with dementia and their caregivers (N = 129): 63 in the intervention group and 66 in the control group. The control group received only written instructions and social telephone follow-ups. Behavioral problems of elderly dementia patients were assessed by the Chinese version of the Cohen-Manfield Agitation Inventory, community form. Family caregivers' outcomes were measured by the Agitation Management Self-efficacy Scale and the Preparedness and Competence Scales. These instruments were administered before the program and 2 weeks, 3 months, and 6 months afterward. Results: Family caregivers who received the individualized home-based training program had better preparedness (t = 2.72, df = 127, p < 0.01), competence (t = 4.77, df = 126, p < 0.001), and overall self-efficacy (t = 3.81, df = 127, p < 0.001) at 3 months than those in the control group. Moreover, the growth rate by treatment interaction effect was significant for caregiver competence (t = 2.25, df = 127, p < 0.05) and overall self-efficacy for managing behavioral problems (t = 2.16, df = 127, p < 0.05). The probability of physically aggressive behavior for patients in the intervention group decreased from 0.27 to 0.12. Conclusion: Our individualized home-based caregiver-training...
**program improved caregivers’ preparedness, competence, and self-efficacy for managing problematic behaviors and decreased physical aggressiveness of elderly patients with dementia.** (Am J Geriatr Psychiatry 2013; 21:1060–1070)

**Key Words:** Dementia, problem behaviors, caregiver self-efficacy, caregiver competence, caregiver preparedness

Dementia in elderly Taiwanese (≥65 years old) had a prevalence in 2008 of 1.7%–4.3%. The number of patients with dementia is expected to increase as the aging population increases. In Western countries, 30% of dementia patients exhibited agitation and aggressive behaviors² and 9% of dementia patients exhibited agitation.³ Among Taiwanese patients with Alzheimer disease, 31%–57% showed aggressive behavior.⁴ In 2011, 86.3% of Taiwanese dementia patients were cared for by family members.⁵ Thus, Taiwanese family caregivers occupy a pivotal role in caring for persons with dementia.

Dementia patients’ behavioral problems increase caregivers’ burden and adversely affect caregivers’ mental health and quality of life.⁶,⁷ However, caregivers who used community-based services to manage frequent behavioral problems earlier in the dementia caregiving experience reported less burden and depression over 3 years than caregivers who used services later.⁸ The patients cared for by the latter group were more likely to be institutionalized than those cared for by caregivers who used services earlier.⁸ Specifically, aggressive behavior predicted the family’s decision to discontinue home care.⁹

Community-based caregiver-training programs on handling dementia patients’ behavioral problems have effectively improved caregivers’ competence and decreased behavioral problems. For example, group education interventions improved U.S. caregivers’ competence or self-efficacy.¹⁰,¹¹ A dementia care management program providing education and support for caregivers significantly improved patients’ neuropsychiatric symptoms at the 6-month follow-up.¹² A case management program also improved the behavioral problems of patients with mild dementia at the 4-month follow-up.¹³ Home visits with behavioral management or telephone support led to inconsistent improvement in patients’ behavioral problems¹⁴,¹⁵ and caregivers’ self-efficacy.¹⁵,¹⁶ Tailored activities reduced the frequency of behavioral problems in dementia patients at the 4-month follow-up.¹⁷ However, few of these studies described longitudinal changes in intervention effects. Moreover, only three studies were conducted in Asian countries (Taiwan¹⁵ and Hong Kong¹²,¹³). Unlike most previous interventions,¹⁰–¹² our intervention was individualized according to each family’s specific needs and conditions and was delivered by registered nurses in the home setting and through telephone consultation.

The short-term effects of an individualized home-based training program for Taiwanese family caregivers of dementia patients were examined in a pilot study (intervention group, N = 24, and control group, N = 24) on subjects recruited from a single hospital.¹⁵ In that study, caregivers’ self-efficacy for managing problematic behaviors improved and patients’ problematic behaviors decreased during 3 months after the intervention, but patients’ physically aggressive behavior did not change.¹⁵ Because this pilot study was conducted about 10 years ago, community services have changed for families of dementia patients. In 2008, the Taiwanese government started a national Ten-Year Long-Term Care Plan. Currently, families of patients with dementia and physical disability can receive in-home help, home nursing services, Meals on Wheels, community-based rehabilitation, and respite care. In certain regions, dementia patients can receive day-care services. A few nursing homes also specifically provide care for dementia patients.

Thus, we modified our home-based caregiver-training program for families of dementia patients by having several research nurses deliver it and by adding a component of community-service referrals. We then tested the program on caregiver–patient dyads recruited from two hospitals and a community care management center. The intervention provided caregivers with individualized skills and strategies to lower environmental stresses for the dementia patient in their care. We hypothesized that after receiving this training program, family caregivers would have better preparedness, competence, and self-efficacy for managing behavioral problems and dementia patients would exhibit less problematic behavior.
METHODS

Design

A single-blinded, randomized clinical trial was used to explore the effects of the training program on caregivers of dementia patients. Participants were blinded to their group assignment. The intervention group received our individualized community-based caregiver-training program with telephone consultations; the control group received only written educational materials and social telephone follow-ups. Outcomes were evaluated at 2 weeks, 3 months, and 6 months after the training program ended. The sample size was estimated based on four data collection times, a two-tailed \( \alpha \) of 0.05, and power of 0.80. Based on our pilot study, we set the effect size at 0.50. According to power curves, we estimated the sample size as 60. Assuming an attrition rate of 20% at each time point after the first, we aimed to recruit 120 caregiver–patient dyads.

Participants

Patients were invited to participate if they met these criteria: 1) diagnosed with dementia by a psychiatrist or neurologist, 2) at least 65 years old, 3) living in a community of northern Taiwan, 4) living in a home setting, and 5) scored at least 50 on the Chinese version of the Cohen-Mansfield Agitation Inventory (CMAI). Caregivers had to meet these criteria: 1) living with the dementia patient, 2) spending most of their time on the patient’s care, and 3) at least 18 years old. From October 2008 to September 2010, 374 dementia patients were screened in the neurologic clinics of two hospitals and a community care management center in northern Taiwan. Of 251 caregiver–patient dyads who met the inclusion criteria, 129 (51.39%) agreed to participate and were randomly assigned to the intervention (N = 63) or control (N = 66) group. During the study, 21 participating patients (16.28%) were lost to follow-up due to later refusal to participate (N = 17), institutionalization (N = 1), change of family caregiver (N = 2), or death (N = 1). At the end of 6 months, 108 dementia patient–family caregiver dyads (55 and 53 dyads in the intervention and control groups, respectively) remained in the study (Fig. 1).

Caregiver-Training Program

This program was theoretically guided by the Progressively Lowered Stress Threshold (PLST) model, the concept of partnership with family caregivers, and Antecedent Event-Behavior-Consequence Analysis (ABC) theory. The PLST model proposes that dementia patients become anxious or agitated by the demands of environmental and internal stimuli, whereas increasing disabilities result from progressive cerebral pathology and associated cognitive decline. When stimuli continue or increase, dementia patients’ behavior becomes increasingly dysfunctional and often catastrophic. Thus, promoting dementia patients’ adaptive behavior requires modifying and reducing...
environmental demands and stress. In this study, the PLST model was tailored to community-based caregivers’ individual needs by helping caregivers identify the timing and frequency of specific behavioral problems of the patient under their care, explore the causative stressors, and plan modifications of the environment and daily schedule to decrease stress.

The concept of partnership with family caregivers emphasizes that caregivers have important knowledge about the patient and his or her care. Based on this notion, our training program focused on the nurse–caregiver collaboration, which combined caregivers’ and nurses’ knowledge to identify behavioral problems and their causes and to plan for the patient’s individual care. The caregiver and nurse also identified community services the family needed, and the nurse worked as a case manager to make referrals and to follow up on intervention progress.

Skinner’s ABC theory, which focuses on the reasons (antecedents) and consequences of specific behaviors, emphasizes that changing what happens directly before or after a problem behavior can be used to alter its frequency. This theory was used to teach caregivers to analyze dementia patients’ behaviors, to explore possibilities of changing behavioral problems, and to decrease environmental stresses.

The PLST model provided guidance on decreasing negative environmental stimuli to minimize patients’ negative behavior problems. For example, interventions were made to simplify the environment, thus avoiding patients’ sensory overload and decreasing their irritable behaviors. Furthermore, the ABC theory was tailored to explore the antecedents for specific positive behaviors and to provide positive reinforcement strategies to enhance those behaviors (consequences). For example, if a pleasant conversation with the caregiver led to patient’s willingness to bathe, then the patient’s willingness was enhanced by verbal or physical encouragement and/or taking a walk with the family before bathing.

The PLST model and ABC theory focused on enhancing family caregivers’ competence to manage patients’ behavior and decreasing patients’ behavioral problems. The partnership with family caregivers emphasized enhancing caregivers’ self-appraisal and confidence in their ability to provide care (self-efficacy and preparedness). Therefore, caregivers’ competence, preparedness, and self-efficacy and patients’ behavioral problems were selected as outcome variables.

The family was also assessed for strengths and weaknesses in administering the care plan. For example, if family members displayed high cohesiveness and ability to deal with problems as a team, these qualities were viewed as strengths. However, if family members were overly anxious about the patient’s safety, which might negatively influence the patient’s emotions, this was considered a weakness.

This training program had two sessions separated by 1 week (Fig. 2). The program was delivered by research nurses according to a theory-based manual developed by the research team. This manual, which was reviewed by experts in dementia care, included specific assessments and interventions to be delivered in each visit and phone follow-up. A care guide was also developed for family caregivers. This guide included common behavioral

FIGURE 2. Flow chart of the training program.
problems and their antecedents, principles for managing behavioral problems, community resources, and how to analyze and change behavioral problems.

In terms of intervention dosage, all caregivers in the intervention group completed two sessions. After these two sessions, the nurse provided telephone consultations about caregiving at 1 week and monthly thereafter during the follow-up period. The nurse also monitored and recorded family caregivers’ management of behavioral problems. Caregivers in the control group received printed sheets with general information on dementia (e.g., its causes, course, and symptoms) but no specific information on handling behavioral problems. After one visit, the research nurse telephoned family caregivers (see Fig. 2) but only maintained social contact.

The intervention program was administered by two registered nurses with specialties in community and geriatric nursing and trained before the study by three gerontology experts. When the two nurses were consistent in delivering the intervention as evaluated by at least one expert in providing the intervention, the experts deemed them qualified to deliver the program; meanwhile, the research nurses and three experts met monthly for case conferences to improve consistency of the intervention.

**Measures**

**Preparedness.** Preparedness was measured by the 10-item Caregiver Preparedness Scale, which asks caregivers to rate how well prepared they believe they are for seven domains of caregiving. A final question asks for an overall rating of how well prepared caregivers believe they are to care for the care receiver. Items are scored on a five-point Likert scale from 1 (not prepared) to 5 (well prepared). Scores range from 10 to 50, with higher scores representing greater preparedness for caregiving tasks. Validity and reliability of the original Preparedness Scale have been supported. The content validity index for the Preparedness Scale Taiwanese version was 1.0 and Cronbach alpha for this scale among Taiwanese caregivers was 0.87. Cronbach alpha in this study was 0.92.

**Competence.** Caregivers’ competence was measured by the 17-item Competence Scale, which assesses caregivers’ knowledge and skills for managing dementia patients’ behavioral problems. Items are scored on a five-point Likert scale from 1 (never) to 5 (always). Total scores range from 17 to 85, with higher scores representing better competence. The content validity index in a Taiwanese sample was 0.89, and Cronbach alpha was 0.75. In this study, Cronbach alpha was 0.90.

**Self-efficacy.** Caregivers’ self-efficacy for managing dementia patients’ agitation was measured by the Agitation Management Self-efficacy Scale. For each behavioral problem identified by the Chinese version CMAI, caregivers were asked how confident they were about handling the problem. For behaviors that did not occur, caregivers were asked if they believed they could manage the problem. Item scores range from 1 (not at all able to handle) to 5 (totally able to handle). Total scores range from 42 to 210, with higher scores representing greater caregiver self-efficacy for handling agitation. Subscale scores are determined by summing subscale item scores, with the following ranges: 7–35 for caregiver self-efficacy of handling physically nonaggressive behavior (PNAB), 7–35 for physically aggressive behavior (PAB), 7–35 for verbally nonaggressive behavior (VNAB), and 4–20 for verbally aggressive behavior (VAB). Cronbach alphas for the original Self-efficacy Scale ranged from 0.59 to 0.90 for Taiwanese family caregivers of frail elders. In this study, Cronbach alphas for the overall scale, PNAB, PAB, VNAB, and VAB were 0.99, 0.96, 0.98, 0.96, and 0.89, respectively.

**Physically aggressive behavior.** Physically aggressive behaviors of dementia patients were measured by the PAB subscale of the Chinese version CMAI, community form, which was shown to be valid and reliable for a Taiwanese sample. Each item (behavioral problem) is scored according to its frequency from 1 (never happens) to 7 (several times per hour). PAB subscale scores range from 7 to 49, with higher scores indicating more physically aggressive behaviors. In this study, the PAB subscale had a Cronbach alpha of 0.55.

**Procedure**

After the study was approved by the study sites’ Human Subjects Protection Committees, the research nurse approached caregivers at the outpatient clinics of two hospitals and cases referred by the local care management center. The nurse contacted eligible caregivers of dementia patients to explain the study goals and methods, their right to withdraw from the
study at any time, and to obtain written consent. Those who agreed to participate were randomly assigned to the intervention or control group.

Both groups were assessed at baseline for dementia patients’ behavioral problems and caregivers’ preparedness, competence, and self-efficacy in managing behavioral problems. The intervention group received the caregiver-training program, and the control group received general information on dementia but no specific information on handling behavioral problems. Two weeks, 3 months, and 6 months after the program, both groups were assessed again for patients’ behavioral problems and caregivers’ preparedness, competence, and self-efficacy in managing behavioral problems. Between the 2-week and 6-month assessments, nurses made monthly follow-up phone calls to both groups to prevent sample attrition.

Data Analysis

Data were analyzed under an intention-to-treat principle, which revealed similar results as analyzing for on-protocol subjects. Changes in outcome variables were analyzed by hierarchical linear models (mixed model),28 with the control group specified as the reference category.

Patients’ behavioral problems were treated as a binary variable; no PAB (PAB score = 7) was categorized as 0 and having PAB (PAB score ≥8) was categorized as 1. The odds of patients having behavioral problems were estimated over time for the intervention group relative to the control group using a hierarchical generalized linear model, which uses a binomial sampling model and a logit link.

Because the choice of centering affects interpretation of the intercept, we centered the time variable at 3 months after the program for all analyses so the intercept would be 3-month status. At the same time, attrition was accounted for with a dummy variable, identifying subjects who died during the follow-up period and those who dropped out for other reasons. Because the attrition variable was not significant for all models, we removed it.

 Hierarchical Linear Growth Model for Caregivers’ Preparedness, Competence, and Self-Efficacy

The mean values of caregivers’ preparedness, competence, and self-efficacy for managing dementia patients’ behavioral problems and patients’ behavioral problems over time are shown in Appendix 1. To examine the intervention effects, we ran intercepts and slopes as outcome models (Table 1). Hierarchical linear modeling allows individuals to deviate from the mean solution, either in the intercept or slope(s). Both the intercept and slope are estimated for fixed and random effects. The fixed effects are the values for the overall intercepts and slopes. The random effects are intercept and slope variances, which represent each individual’s deviation from the overall intercepts and slopes.29

Because the intervention and control groups differed significantly for baseline competence, this variable was controlled to examine intervention effects at the intercept. Caregivers in the intervention group had better preparedness (t = 2.72, df = 127, p <0.01) and competence (t = 4.77, df = 126, p <0.001) at 3 months than those in the control group. That is, 3 months after the training program, the intervention group had 3.34 more points in preparedness and 4.91 more points in competence than the control group.

RESULTS

Participant Characteristics

Of the 129 dementia patients in the final sample, most were women (54%) with an average age of 80 years (standard deviation [SD]: 7). Most were diagnosed with Alzheimer disease (53%), and others were diagnosed with vascular dementia (36%). For dementia severity, 36% had mild dementia, 34% had moderate dementia, and 30% had severe dementia as determined by the clinical dementia rating scale. All patients had an average Mini-Mental State Examination score of 11 (SD: 7) and had dementia for an average of 46 months (SD: 37). These characteristics did not differ significantly between patients in the two groups.

Among family caregivers, most were women (75%) and married (82%), with an average age of 55 years (SD: 14). Most had at least a high school education (36%). Most caregivers were nearly evenly divided among spouses (29%), daughters (28%), and daughters-in-law (27%), with 16% sons. They had been caregivers for an average of 43 months (SD: 36). The majority did not hire a helper (65%). These characteristics did not differ significantly between the two groups.
In addition, the intervention group had better overall self-efficacy (t = 3.81, df = 127, p < 0.001), self-efficacy for PNAB (t = 3.67, df = 127, p < 0.001), self-efficacy for PAB (t = 3.59, df = 127, p < 0.01), self-efficacy for VNAB (t = 3.46, df = 127, p < 0.01), and self-efficacy for VAB (t = 3.30, df = 127, p < 0.01) than the control group. In other words, caregivers who received the individualized home-based training program had higher growth rates in competence (t = 2.25, df = 127, p < 0.05), overall self-efficacy (t = 2.16, df = 127, p < 0.05), and self-efficacy for PNAB (t = 2.43, df = 127, p < 0.05) (Fig. 3). The null and unconditional linear models are shown in Table 1.

### Hierarchical Generalized Linear Model for Patients’ Physically Aggressive Behaviors

For PAB as the outcome variable, the unconditional linear growth model shows the random effects of the intercept were significant but not the random effect of growth rate. Therefore, we only entered treatment to predict the intercept. The results for a Bernoulli sampling model and a logit link function indicated that treatment was associated with a negative log-odds of PAB (t = −2.36, df = 127, p < 0.05). Converting the expected log-odds to probabilities shows that the probability of PAB decreased from 0.27 to 0.12.

### DISCUSSION

This study found that an individualized home-based caregiver-training program developed from the PLST model and ABC theory significantly decreased dementia patients’ physically aggressive behaviors and increased their family caregivers’ preparedness, competence, and self-efficacy for managing problem behaviors. These results expand our prior findings with a more comprehensive...
intervention of theory-based guidelines for behavior change, referrals to community services recently offered in Taiwan, and a longer follow-up period for participants recruited from various community settings.

The effectiveness of our caregiver-training program in improving caregivers’ caregiving skills and dementia patients’ physically aggressive behaviors echoes that of other caregiver-education programs based on the PLST model. For example, PLST-based caregiver education was shown to decrease depression among caregivers of dementia patients, decrease caregiving impact, improve caregivers’ immune function and self-efficacy, and decrease dementia patients’ decline in performance of instrumental activities of daily living. We previously found that PLST-based caregiver education decreased dementia patients’ problematic behaviors and improved caregivers’ self-efficacy but did not affect PAB. Nonetheless, an ABC model-based anger management program improved outcomes for 12 adults. However, little is known regarding the effectiveness of the ABC model in managing dementia patients’ problem behaviors.

Our theory-based caregiver-training program not only improved caregivers’ preparedness, competence, and self-efficacy but also decreased the chance of their dementia care recipients having physically aggressive behaviors. To determine the clinical significance of these outcomes, we calculated their effect sizes. The effect sizes of caregivers’ competence, preparedness, and overall self-efficacy were 4.91, 3.34, and 22.23, respectively, which were clinically significant differences between the two groups. The effect size for patients’ physically aggressive behaviors was 0.99, a clinically significant difference between the two groups.

Our findings are consistent with previous reports that community-based caregiver-training programs improved dementia patients’ overall behavioral problems. However, community-based programs seldom reported any significant effects on patients’ aggressive behaviors. Positive effects in managing PAB were found in studies conducted in institutions where environmental manipulation was more effective than training the staff to deal with dementia patients’ PAB. Although institutions can manipulate the environment better than generally possible in home settings, our results show that a PLST- and ABC-based training program can decrease physical aggressiveness in the home setting.

Our study had some limitations. First, the design was single-blinded (i.e., only dementia patients and...
their caregivers were blinded to the intervention. However, the impact of this limitation may have been lessened by outcome variables being self-reported by family caregivers. Second, the intervention group had better baseline competence. However, this issue was accounted for by controlling for baseline competence in hierarchical linear model analysis. Third, the same nurses who administered the intervention assessed outcomes for the intervention group, which may have exaggerated the treatment effects because family members may have wanted to please assessors. Finally, the research nurse and family caregivers in the intervention group had more contact time than those in the control group, which might have influenced the intervention effects.

Nevertheless, this theory-based training program in its current form decreased dementia patients’ PAB and enhanced caregivers’ preparedness, competence, and self-efficacy for managing behavioral problems in a Taiwanese sample. Similar programs may be applicable to other countries with Chinese populations. Thus, the results of this study can provide a reference for health care providers who deal with Chinese/Taiwanese immigrants.

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Drs. Huei-Ling Huang and Li-Min Kuo contributed equally to this article.

References

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## APPENDIX 1. Comparison of Dementia Patients’ Behavioral Problems and Caregivers’ Caregiving Skills by Group

<table>
<thead>
<tr>
<th>Outcome Variable</th>
<th>All Participants (N = 129)</th>
<th>Intervention Group (N = 63)</th>
<th>Control Group (N = 66)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dementia patients’ physically aggressive behaviors, n (%)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>40 (31.0)</td>
<td>16 (25.4)</td>
<td>24 (36.4)</td>
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<td>2-week follow-up</td>
<td>34 (29.3)</td>
<td>12 (21.1)</td>
<td>22 (37.3)</td>
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</tr>
<tr>
<td>3-month follow-up</td>
<td>24 (21.1)</td>
<td>6 (11.0)</td>
<td>18 (30.5)</td>
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<td>6-month follow-up</td>
<td>23 (21.3)</td>
<td>9 (16.4)</td>
<td>14 (26.4)</td>
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<td><strong>Family caregivers’ caregiving skills</strong></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Preparedness</td>
<td></td>
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</tr>
<tr>
<td>Baseline</td>
<td>28.73 ± 8.32</td>
<td>29.29 ± 8.37</td>
<td>28.20 ± 8.30</td>
<td>0.46b</td>
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<tr>
<td>2-week follow-up</td>
<td>31.41 ± 7.91</td>
<td>33.67 ± 7.01</td>
<td>30.76 ± 7.84</td>
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<tr>
<td>3-month follow-up</td>
<td>35.30 ± 7.42</td>
<td>36.00 ± 6.06</td>
<td>30.76 ± 7.84</td>
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<tr>
<td>6-month follow-up</td>
<td>34.11 ± 7.25</td>
<td>36.02 ± 5.31</td>
<td>32.13 ± 8.43</td>
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<td>Competence</td>
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<tr>
<td>Baseline</td>
<td>54.80 ± 11.56</td>
<td>57.60 ± 10.22</td>
<td>52.12 ± 11.81</td>
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<tr>
<td>2-week follow-up</td>
<td>55.85 ± 11.63</td>
<td>61.25 ± 8.76</td>
<td>50.64 ± 11.74</td>
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<tr>
<td>3-month follow-up</td>
<td>57.63 ± 12.32</td>
<td>64.11 ± 8.53</td>
<td>51.59 ± 12.30</td>
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<tr>
<td>6-month follow-up</td>
<td>58.18 ± 12.57</td>
<td>63.73 ± 7.35</td>
<td>52.42 ± 14.24</td>
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<td>Overall self-efficacy of managing aggressive behaviors (CMAI)</td>
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<tr>
<td>Baseline</td>
<td>154.92 ± 39.05</td>
<td>161.76 ± 36.37</td>
<td>148.39 ± 40.64</td>
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<td>2-week follow-up</td>
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<td>3-month follow-up</td>
<td>158.80 ± 39.44</td>
<td>171.96 ± 31.11</td>
<td>146.53 ± 45.24</td>
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<td>6-month follow-up</td>
<td>164.81 ± 36.41</td>
<td>177.53 ± 30.85</td>
<td>151.85 ± 37.43</td>
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<td><strong>Self-efficacy of managing PNAB</strong></td>
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<tr>
<td>Baseline</td>
<td>26.70 ± 7.06</td>
<td>27.71 ± 6.82</td>
<td>25.73 ± 7.20</td>
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<td>2-week follow-up</td>
<td>26.85 ± 7.01</td>
<td>28.60 ± 6.57</td>
<td>25.17 ± 7.07</td>
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<td>3-month follow-up</td>
<td>26.53 ± 6.89</td>
<td>28.58 ± 5.76</td>
<td>24.65 ± 7.35</td>
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<tr>
<td>6-month follow-up</td>
<td>28.28 ± 8.27</td>
<td>30.85 ± 9.07</td>
<td>25.60 ± 6.41</td>
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<td><strong>Self-efficacy of managing PAB</strong></td>
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<tr>
<td>Baseline</td>
<td>24.47 ± 7.95</td>
<td>25.83 ± 8.00</td>
<td>23.17 ± 7.75</td>
<td>0.06b</td>
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<tr>
<td>2-week follow-up</td>
<td>25.13 ± 7.91</td>
<td>27.21 ± 7.40</td>
<td>23.12 ± 7.94</td>
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<td>3-month follow-up</td>
<td>25.93 ± 7.67</td>
<td>28.73 ± 5.94</td>
<td>23.52 ± 8.21</td>
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<tr>
<td>6-month follow-up</td>
<td>26.80 ± 6.98</td>
<td>29.05 ± 5.97</td>
<td>24.45 ± 7.23</td>
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<td><strong>Self-efficacy of managing VNAB</strong></td>
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<tr>
<td>Baseline</td>
<td>27.29 ± 6.68</td>
<td>28.33 ± 6.27</td>
<td>26.29 ± 6.95</td>
<td>0.08b</td>
</tr>
<tr>
<td>2-week follow-up</td>
<td>27.67 ± 6.03</td>
<td>29.47 ± 4.72</td>
<td>25.93 ± 6.66</td>
<td>0.00b</td>
</tr>
<tr>
<td>3-month follow-up</td>
<td>27.04 ± 6.44</td>
<td>28.98 ± 4.81</td>
<td>25.22 ± 7.24</td>
<td>0.00b</td>
</tr>
<tr>
<td>6-month follow-up</td>
<td>27.98 ± 5.62</td>
<td>29.38 ± 4.93</td>
<td>25.53 ± 5.96</td>
<td>0.01b</td>
</tr>
<tr>
<td><strong>Self-efficacy of managing VAB</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>15.10 ± 3.86</td>
<td>15.60 ± 3.74</td>
<td>14.62 ± 3.93</td>
<td>0.15b</td>
</tr>
<tr>
<td>2-week follow-up</td>
<td>15.39 ± 3.74</td>
<td>16.25 ± 3.45</td>
<td>14.56 ± 3.85</td>
<td>0.01b</td>
</tr>
<tr>
<td>3-month follow-up</td>
<td>15.21 ± 3.72</td>
<td>16.13 ± 3.02</td>
<td>14.56 ± 4.11</td>
<td>0.01b</td>
</tr>
<tr>
<td>6-month follow-up</td>
<td>15.54 ± 3.52</td>
<td>16.62 ± 3.05</td>
<td>14.42 ± 3.64</td>
<td>0.00b</td>
</tr>
</tbody>
</table>

**Notes:** Values are means ± SD unless otherwise noted.
*χ²*, with df = 128 for 129 participants.
Unpaired t test, with df = 128 for 129 participants.