Supporting caregivers of stroke patients
Heuvel, Elisabeth Theodora Petronella van den

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Publisher's PDF, also known as Version of record

Publication date:
2002

Link to publication in University of Groningen/UMCG research database

Citation for published version (APA):

Copyright
Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

Take-down policy
If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): http://www.rug.nl/research/portal. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.
CHAPTER 4

Short Term Effects of a Group Support Program and an Individual Support Program for Caregivers of Stroke Patients

Elisabeth TP van den Heuvel, Luc P de Witte, Ingrid Nooyen-Haazen, Robbert Sanderman and Betty Meyboom-de Jong

Based on Patient Education and Counseling, 40 (2000), 109-120

Abstract

Objective: Caregivers of stroke patients who live at home experience many problems. There is evidence from the literature that caregivers’ situations can be improved by teaching them active coping strategies and by offering them information about the disease. This study investigated the short-term effects of two different interventions both with the same contents, and both aimed at enhancing caregivers’ confidence in knowledge, active coping strategies, mental well-being, vitality, social support, assertiveness, and at reducing strain. In addition, we investigated which type of support, i.e. a group program or home visits, had the most positive effects.

Subjects: The intervention was aimed at caregivers of stroke patients. The majority of the caregivers who participated the intervention were female spouses. Their mean age was 64 years, and their socio-economic status middle class. Stroke had occurred about 3.5 years ago on average.

Methods: Caregivers of stroke patients from four regions of the Netherlands were assigned in blocks to a control group or one of the intervention programs. To the group program 130 caregivers were assigned, to the home visits 78 caregivers, and to the control group 49 caregivers. Caregivers were interviewed before entering the program and after completion of the program. Multiple stepwise regression analysis was used to determine the effects of the interventions.

Results: In the short term both interventions (group program and home visits together) contributed significantly to an increase in confidence in knowledge about patient care, and the use of the active coping strategies confronting and seeking social support. The group program achieved a small increase in seeking social support. When only taking into account those caregivers that followed a substantial part of the program (per protocol group) also a medium effect was found from both interventions on perceived self-efficacy. When comparing the group program and the home visits, no significant differences in effects were found.

Conclusion: The results of the program are considered encouraging. We recommend implementation of more intervention programs that focus on coping and providing information.
4.1 Introduction

Most caregivers of stroke patients find themselves in a stressful situation. Research has shown that taking care of a stroke patient creates burdens for caregivers and decreases their levels of well-being.\(^1, 2\) The consequences that caregivers experience as a result of their caregiver role are influenced by several factors. According to Lazarus and Folkman, persons who have a low level of neuroticism, use active coping strategies, are satisfied with the social support they receive, and have good social skills, experience less negative consequences from a stressor.\(^3\) Earlier research under caregivers of dementia patients has shown coping to be an important factor in reducing stress.\(^4\) Grundy and Fadden underline the importance of focusing on coping in improving services for caregivers of elderly and patients with functional psychiatric illness.\(^5, 6\)

Caregiver interventions should focus on teaching caregivers active coping strategies, since these strategies appear to achieve greater strain reduction than passive ones.\(^7, 9\) Active coping strategies result in a greater long-term effect in terms of stress reduction than passive strategies.\(^10, 12\) However, active coping strategies appear to be only effective in situations where change is possible.\(^10, 12\) Information is another factor that appears to reduce strain in caregivers. Tringali, who studied a group of caregivers of cancer patients, states that an increase in sense of control and a decrease in caregivers’ anxiety can be reached by increasing caregivers’ knowledge.\(^13\) In an intervention program, Murphy et al. showed that a group of family caregivers who used information, experienced less negative emotions and health problems than caregivers who did not do so.\(^14\)

On the basis of these results, we developed two different programs for caregivers of stroke patients that both focused on active coping and information. In the short term we expected the interventions to increase caregivers’ confidence in knowledge and their use of active coping strategies. We also evaluated the indirect impact that influencing caregivers’ confidence in knowledge and coping strategies had on strain, mental well-being, vitality, social support, and assertiveness. We did expect to find small to medium effects in the short term.

Broadly speaking, there are two different types of support for caregivers: group programs and individual programs. Most group programs are targeted at caregivers only, although there are also groups in which both caregivers and patients participate. Individual support comprises individual counseling and home visits.

Various controlled studies have investigated the effectiveness of interventions for caregivers of cognitively impaired elderly patient categories. Some of these studies compared a group program to an individual program.\(^15, 17\) Results indicate that individual interventions demonstrate effects that are slightly more positive than those of group programs.\(^18\) To our knowledge up till now no controlled intervention-study under caregivers of stroke patients has been executed. Because of the aging of the population, the number of stroke patients is expected to rise, making effective support for caregivers of these patients increasingly important. This article describes a study to explore the short-term effects of the two most frequently utilized types of support for caregivers of stroke patients in the Netherlands. The programs were organized between 1995 and 1997 in four regions of the Netherlands. The contents of the two programs are similar. The following research questions are addressed:

1. Which short-term effects with respect to a) caregivers’ confidence in knowledge about stroke, resources, patient care, and self efficacy, b) the use of active coping strategies, c)
strains, d) mental well-being, e) vitality, f) social support, and g) assertiveness are achieved by the intervention program (group program and home visits) for caregivers of stroke patients?

2. Which of the two programs, i.e. the group program or the home visit program, has the greater impact on these outcome variables?

4.2 Methods

4.2.1 Subjects and procedures

The subjects of this study were caregivers of stroke patients. Caregivers were eligible for inclusion in the study if: 1) they were the main caregiver of a stroke patient living at home; 2) the patient’s first stroke had occurred between July 1992 and July 1996; 3) the patient was >45 years at the time of the first stroke. These criteria were chosen to obtain a homogeneous group of participants that resemble in caregiving responsibility.19 Since stroke mostly affects older patients, and great differences exist between younger and older patients, we decided only to recruit patients older than 45 years.20 To minimize the chance of caregivers having fully adapted to their caregiving role we choose a period half a year to three years from occurrence of stroke. Caregivers of patients who had recently suffered their first stroke had to wait until at least six months after the stroke before entering the study. The medical ethics committee of Groningen University Hospital approved the study.

We estimated that over a period of three years in four regions about 7000 patients would meet our criteria. However, not all of these patients have a caregiver. Of those patients that have a caregiver, a part will not experience problems. With a power of .80 and an alpha of .05, in each group 76 respondents were needed to be able to demonstrate medium effects, and 547 respondents to demonstrate small effects.21 Since in four years it was not possible to include 547 respondents in each group we took the numbers for medium effects as a starting point and decided to try to include 100 respondents in each group.

Caregivers were recruited through general practitioners, hospitals, home care services, rehabilitation clinics, and the media in four regions of the Netherlands between February 1995 and June 1996. During this period professionals were approached and asked to inform stroke patients’ caregivers who met the inclusion criteria about the intervention and the research project. If caregivers were interested, the professionals gave them a special leaflet describing the intervention and the research project. An enrollment form was enclosed with the leaflet. Caregivers willing to participate were asked to mail the completed enrollment form to the researchers. The caregivers did not know in which group they were placed on enrollment in the study. When their enrollment form was received, the caregivers were assigned in blocks of 8-13 caregivers to the group support program, the home visits, or the control group.

In all four regions the first two blocks of caregivers were assigned to the group program (since two group programs successively were organized in each region) the third and fourth blocks of caregivers were assigned to the home visits, the fifth and sixth block were again assigned to the group program. Finally in each region the last block of caregivers was assigned to the control condition.
We planned to assign about 100 participants to each condition. For the group program we succeeded in doing so, but after the assignment of the fifth and sixth block the number of participants who signed up for the study decreased and the recruitment-period at that time was too short to also accomplish assignment of 100 caregivers to the home visits and control condition. This resulted in different sizes of groups with 130 caregivers being assigned to the group program, 78 to the home visits, and 49 to the control group. After being assigned, caregivers and patients were interviewed separately by two interviewers in their home situation (T1). Before the first interview, informed consent was obtained from caregivers and patients.

The intervention started within four weeks after the first interview (T1). Caregivers participated in an 8-week group program providing 16 hours of education, or in an 8-10 week home visit program providing 8 hours of education. The second interview (T2) took place within one month after completion of the program. The procedure for the control group was similar. Their second interview (T2) took place within 14 weeks after the first interview. We intended to offer the control group the program that would demonstrate the largest effects. If the two programs should show equal effects, the participants in the control group could choose the program they preferred.

Both interventions were based on Lazarus and Folkman’s stress-coping model. The interventions were developed in collaboration with professionals who were experienced in working with caregivers of stroke patients. Before the development of the intervention an expert meeting was organized that was attended by 40 professionals. The purpose of the collaboration was twofold: to use the knowledge that exists in the field, and to stimulate implementation of the interventions in the field.

The contents of both interventions were as follows. First, participants were asked to discuss the occurrence of the stroke and the period immediately following the event: the feelings they experienced at that time, how becoming a caregiver had affected their lives etc. The program continued with information about the causes of stroke, disabilities, recovery, and prognosis. The consequences to patient and caregiver, their relationship and their relationships with others were also discussed. Caring for the patient was another topic. Participants were educated about lifting techniques, resources (including seeking support), and facilities. Subsequently, the participants learned how to recognize and handle stress and received information about how to organize support from friends, family and professionals, how to contact other caregivers, how to organize holidays for themselves, and they received information about time management and how to achieve a healthy life style.

The objective of increasing active problem solving was integrated into the described themes. Active coping was stimulated by asking participants to describe their problems in relation to the themes of a particular session, and by letting them inventarise different solutions to those problems during the session. The problem solving strategies were discussed and participants were stimulated to resolve the mentioned problems during the next week by using those problem-solving strategies that seemed most successful. To evaluate whether participants had succeeded in resolving a specific problem, during subsequent sessions experiences of participants were discussed and if necessary advise was given on how to act in similar situations in the future.

Two types of support were organized: a group program and home visits. The group program comprised eight weekly two-hour sessions spread over a period of two months. The maximum
number of participants was 13 caregivers and the minimum was eight. Participants were stimulated to share their knowledge with the patient, and to develop a telephone network with the other caregivers. Home care services provided the venues for all group programs. The home visit program entailed four two-hour visits spread over a period of eight to ten weeks. Both the caregiver and the patient participated, but the program was focused on the caregiver. The patient was not present at the session that dealt with the caregiver’s experienced problems in caring for the patient and the patient’s behavior. The group program and the home visit program were similar with respect to contents and goals, the only difference being that fewer topics were dealt with during one group session than during one home visit.

Professionals supervised both interventions. Health education nurses from the home care services supervised the group programs. Specialized district nurses supervised the home visits. All nurses attended a one-day training session before the start of the program. Some of the nurses already had experience in supervising interventions for caregivers. Before the start of the intervention all caregivers received information material compiled by the stroke patients association. The caregivers were requested to read several chapters from this material prior to each session. Other techniques that were used were audio-visual materials, and writing. Nurses received information about the participants’ situation in advance of the group program and home visits. During the program all nurses kept a logbook.

4.2.2 Assessments

Two primary effects of the interventions were measured: confidence in knowledge about relevant themes related to being a caregiver of a stroke patient, and the use of active coping strategies. Six secondary effects were measured: caregiver strain, mental well-being, vitality, the amount of social support, satisfaction with social support, and assertiveness.

A new instrument (30 items) was developed for assessing participants’ confidence in knowledge. The questionnaire asked the participants to indicate how they perceived their own knowledge by rating on a five-point scale how much they thought they knew about a specific theme (fully agree to fully disagree). Exploratory factor analysis showed that the instrument consisted of two factors, one factor representing perceptions of the disease, resources, and patient care (alpha= .94) (e.g. I know what changes can occur in a patient’s behavior and character after a stroke, I know how to help the patient with washing and taking a shower etc.), and one factor representing perceptions of self efficacy (alpha= .86) (e.g. I know how to handle stress, I know how to organize support from family and friends, I know how to organize time for my own hobbies etc.). The two factors together explained 49.5% of the total variance. From this point the first factor will be called confidence in knowledge about patient care, the second factor will be called confidence in knowledge about self-efficacy.

Coping strategies were measured with a short version of the Utrecht Coping list.22 Two subscales were used, i.e. confronting (five items, alpha=.81) and seeking social support (five items, alpha=.73).

The Short Form-36 was used to measure physical well-being (10 items, alpha=.92), mental well-being (five items, alpha=.88), and vitality (four items, alpha=.78).23, 24 Strain was measured with the Caregiver Strain Index (13 items alpha=.80).25 Adapted versions of the Social Support List-Interaction (five items, alpha=.66) and the Social Support List-Discrepancy (five items, alpha=.73) were used to evaluate the amount of social support and satisfaction with social support.26 These questionnaires measure five different
types of support (emotional support in case of problems, appreciation support, instrumental support, social companionship, informative support) and evaluate the amount of support caregivers receive (four-point scale), and their satisfaction with this amount of support (four-point scale).

Assertiveness was measured with an 11 item questionnaire (alpha=.81) specifically developed for this study. The items referred to caregivers’ situations (e.g.: If I do not understand a professional caregiver, I ask him/her for clarification; When I can use a friend’s help, I ask this friend for help etc.) Respondents were asked to rate their agreement with each statement on a four-point scale.

In addition to other independent variables, such as the caregiver’s gender and age, the patient’s gender, income, and time of stroke, the variables socioeconomic status, consequences of stroke, and the caregiver’s health status were taken into account. Socioeconomic status was measured by the Occupational Prestige Scale. To assess the consequences of the stroke, the patient was interviewed using the Sickness Impact Profile-68 (68 items, alpha=.92). The caregiver was asked about the psychological consequences of stroke using an instrument that focuses on the cognitive (six items, alpha=.84), emotional (six items, alpha=.82), and behavioral consequences (five items, alpha=.69) of stroke.

4.2.3 Analyses

First, paired t-tests for each group were executed to determine which on which outcome measures caregivers improved over time. Paired t-tests were executed for the group which included all respondents (intention to treat group), also those that missed a substantial part of the program, the so-called non-completers. Second, paired t-.tests were executed for the group that only included those respondents that followed a substantial part of the program, the so called completers or per protocol group.

Before assessing the intervention’s contribution to the primary and secondary effect measures, we identified potentially confounding variables by calculating correlations between initial caregiver characteristics and effect measures. A significance level of alpha=.10 was used to ensure that no potential confounders were missed. Initial caregiver characteristics that differed significantly between groups at baseline (Chi square test for nominal and dichotomous variables, ANOVA for continuous variables) and were significantly associated with the effect measures were regarded as potential confounders.

Subsequently, two analyses were performed: one to assess the general effects of the interventions (both intervention groups versus the control group), and one to assess the differential effects of the group program and the home visits. For the latter analysis two dummy variables were computed, with the control group as reference (group program versus control, and home visit versus control). To control for a possible interaction effect that might influence the effect measures, the variable age * intervention was added in the analysis. This variable was removed if the interaction was not significant (alpha>.05).

To control for possible confounders in both analyses (general and differential), the pre-intervention value and all initial caregiver characteristics that correlated significantly with the effect measure and differed significantly between the groups at baseline were added. Both analyses were repeated after removing the so-called non-completers (per protocol analysis), i.e. all respondents that had participated in fewer than five group sessions or fewer than three home visits. Non-completers and completers characteristics at baseline were compared.
To control for selection bias, the initial caregiver characteristics of the final study group were compared with those of drop-outs. Finally, effect sizes were calculated by calculating the difference between the mean at t2 and t1. This score was than divided by the standard deviation of this difference.29

4.3 Results

4.3.1 Subjects

Recruitment took place over a 17-month period. The entry criteria were met by 257 caregivers. Of these, 130 caregivers were (after recruitment) assigned to the group program, 78 to the home visits, and 49 to the control group. Participants were assigned to the groups in blocks. After randomization and before the first interview (T1) 12, 7, and 4 respondents dropped out that had been assigned to the group program, the home visit group, and the control group, respectively. The main reasons for drop-out before T1 were poor health of the caregiver (N=5) and having no need of an intervention (N=4). Drop-out after T1 and before T2 involved 8 participants in the group program, 11 participants in the home visit group, and 3 respondents in the control group. The main reasons were death of the patient (N=4), having other obligations or problems (N=3), and not needing an intervention (N=3).

Table 1 shows that the majority of the caregivers included in the study population were women (N=155), mostly partners (N=201) of the patient. The mean age of the caregivers was 64 years (SD=10.14), and their socio-economic status was middle class. Caregivers’ physical functioning and mental well-being were moderate. The stroke had occurred approximately 3.5 (SD=3.81) years before the study. The ranges of the scores on the questionnaire psychological consequences indicate that the patients experienced moderate to severe stroke-induced emotional, cognitive, and behavioral changes. Compared with a reference population of stroke caregivers, consequences from stroke were moderate to severe (percentile score 80-90).28

Comparison of the groups at baseline demonstrated significant differences in caregivers’ age, physical functioning, perception of disease, resources, patient care (p<.05), and income (p<.10) (table 1). Two of these caregiver characteristics were significantly correlated with effect measures. Age of the caregiver correlated with the coping strategy seeking social support (r=-.22, p=.001), strain (r=-.16, p=.05), and satisfaction with social support (r=.18, p=.05). Physical functioning of the caregiver correlated with confidence in knowledge about the disease, resources, and patient care (r=.17, p=.05), confidence in knowledge about self efficacy (r=.26, p=.001), strain (r=.17, p=.05), mental well-being (r=.31, p=.001), and vitality (r=.46, p=.001). These two caregiver characteristics were included in the regression model.

When comparing non-completers (N=33) with completers (N=179), we found that non-completers were older (p=.05), took care of patients with less severe cognitive changes (p=.05), and experienced less strain (p=.01).
Data on drop-out were only available for respondents that dropped out after T1 (N=22). These drop-outs were older than the study population (p=<.05), had less confidence in knowledge about self-efficacy (p=<.05), and received less social support (p=<.05).
4.3.2 Effect measures

Table 2 describes the changes of effect measures (T1-T2) in the group of non-completers (intention to treat). Confidence in knowledge and the coping strategy seeking social support changed significantly in the interventions group (group program and home visits together), the group program and the home visit group. In all groups participants’ confidence in knowledge about patient care (interventions p<.001, group program p<.001, home visits p<.001) and confidence in knowledge about self-efficacy (interventions p<.001, group program p<.001, home visits p<.001) increased. Furthermore, participants sought more social support at T2 (interventions group p<.05, group program p<.05, home visits p<.05). No changes were found in the control group. In the group of completers (per protocol group) these results were similar, only in the home visits group the effect on the coping strategy seeking social support disappeared.

Table 2: Change of effect measures in non-completers (T1-T2)

<table>
<thead>
<tr>
<th>Effect measures</th>
<th>Controls (N=38)</th>
<th>Group program (N=102)</th>
<th>Home visits (N=49)</th>
<th>Both interventions (N=151)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T1</td>
<td>T2</td>
<td>T1</td>
<td>T2</td>
</tr>
<tr>
<td><strong>Primary effect measures</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confidence knowledge patient care</td>
<td>68.2</td>
<td>+0.4</td>
<td>62.3</td>
<td>+8.7**</td>
</tr>
<tr>
<td></td>
<td>67.2</td>
<td>+5.9**</td>
<td>63.8</td>
<td>+7.8**</td>
</tr>
<tr>
<td>Confidence knowledge self efficacy</td>
<td>19.4</td>
<td>+0.8</td>
<td>18.1</td>
<td>+2.2**</td>
</tr>
<tr>
<td></td>
<td>18.6</td>
<td>+2.1**</td>
<td>18.2</td>
<td>+2.2**</td>
</tr>
<tr>
<td>Short version UCL: confronting</td>
<td>13.5</td>
<td>-0.5</td>
<td>13.6</td>
<td>+0.1</td>
</tr>
<tr>
<td></td>
<td>13.2</td>
<td>+0.6</td>
<td>13.5</td>
<td>+0.2</td>
</tr>
<tr>
<td>Short version UCL: seek support</td>
<td>9.2</td>
<td>9.7</td>
<td>9.1</td>
<td>+0.7*</td>
</tr>
<tr>
<td></td>
<td>9.5</td>
<td>+0.6*</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Secondary effect measures</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caregiver Strain Index</td>
<td>26.4</td>
<td>+0.3</td>
<td>26.2</td>
<td>-0.4</td>
</tr>
<tr>
<td></td>
<td>25.5</td>
<td>-0.3</td>
<td>26.0</td>
<td>-0.4</td>
</tr>
<tr>
<td>SF-36: mental well-being</td>
<td>61.0</td>
<td>+3.8</td>
<td>59.6</td>
<td>+0.6</td>
</tr>
<tr>
<td></td>
<td>63.8</td>
<td>+3.6</td>
<td>59.6</td>
<td>+0.6</td>
</tr>
<tr>
<td>SF-36: vitality</td>
<td>57.0</td>
<td>-0.9</td>
<td>51.7</td>
<td>+0.1</td>
</tr>
<tr>
<td></td>
<td>58.0</td>
<td>+2.3</td>
<td>51.7</td>
<td>+0.1</td>
</tr>
<tr>
<td>Adjusted version SSL-I</td>
<td>10.6</td>
<td>-0.5</td>
<td>10.3</td>
<td>-0.3</td>
</tr>
<tr>
<td></td>
<td>10.1</td>
<td>+0.2</td>
<td>10.2</td>
<td>-0.2</td>
</tr>
<tr>
<td>Adjusted version SSL-D</td>
<td>8.8</td>
<td>+0.1</td>
<td>8.3</td>
<td>+0.2</td>
</tr>
<tr>
<td></td>
<td>8.6</td>
<td>+0.2</td>
<td>8.4</td>
<td>+0.2*</td>
</tr>
<tr>
<td>Caregiver Assertiveness Index</td>
<td>34.6</td>
<td>-0.5</td>
<td>34.1</td>
<td>-0.2</td>
</tr>
<tr>
<td></td>
<td>34.3</td>
<td>-0.2</td>
<td>34.1</td>
<td>-0.2</td>
</tr>
</tbody>
</table>

*p<.05, **p<.001, tested with paired t-test
Tables 3 and 4 display the results of the multiple stepwise regression analysis for the group of non-completers. Table 3 presents the results for the primary effect measures. The general analysis showed that the interventions together (group program and home visits vs control group) contributed to a higher level of confidence in knowledge about patient care (p<.001). The differential analysis showed that the group program and the home visits contributed to an increase in confidence in knowledge about patient care (group program p<.001, home visits p<.01). There were no significant differences between the two programs. The interventions had no significant effect on the increase of confidence in knowledge about self-efficacy. The interventions in the general analysis contributed to an increase of the coping strategy confronting (p<.05). The differential analysis showed that this increase was only significant for participants in the home visit group compared with the control group (p<.05). However, comparison between the effect of the home visits with that of the group program yielded no significant differences between the two programs. Because the increase in use of the coping strategy confronting was not significant taking according to the paired t-test, this result was not considered relevant.

The interventions in the general analysis contributed to an increased use of the coping strategy seeking social support (p<.05). The differential analysis shows that this effect was only significant for the group program compared with the control group (p<.05). No significant differences were found between the group program and the home visits.

**Table 3: Results of the multiple stepwise regression analysis for primary effect measures**

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Confidence knowledge patient care T2 (N=183)</th>
<th>Confidence knowledge self efficacy T2 (N=181)</th>
<th>Coping strategy confronting T2 (N=184)</th>
<th>Coping strategy seeking social support T2 (N=181)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Confidence knowledge patient care T2 (N=183)</td>
<td>Confidence knowledge self efficacy T2 (N=181)</td>
<td>Coping strategy confronting T2 (N=184)</td>
<td>Coping strategy seeking social support T2 (N=181)</td>
</tr>
<tr>
<td>Value effect measure T1</td>
<td>.55***</td>
<td>.50***</td>
<td>.51***</td>
<td>.60**</td>
</tr>
<tr>
<td>Age caregiver</td>
<td>-.03</td>
<td>-.07</td>
<td>.03</td>
<td>.08</td>
</tr>
<tr>
<td>Physical functioning cg</td>
<td>.06</td>
<td>.09</td>
<td>.05</td>
<td>.04</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>.31</td>
<td>.28</td>
<td>.25</td>
<td>.46</td>
</tr>
</tbody>
</table>

**General effect analysis**

| Interventions-controls | .22*** | .11 | .14* | .13* |
| Adjusted R² | .35 | .29 | .27 | .47 |

**Differential effect analysis**

| Group program-controls | .29*** | .14 | .16 | .18* |
| Home visits-controls | .21** | .11 | .18* | .12 |
| Group program-home visits | .03 | .03 | -.04 | .04 |
| Adjusted R² | .35 | .28 | .26 | .47 |

*p<.05, **p<.01, ***p<.001
Table 4 shows that no effects of the interventions were found on the six secondary effect measures.

When the analyses were repeated for participants who completed the intervention (per protocol analysis), the effect of the intervention became stronger. In contrast to the earlier results the multiple stepwise regression analyses showed that the interventions in the general analysis contributed to an increase in confidence in knowledge about self efficacy (intervention p<.001, group program p<.001, home visits p<.05). The differential analysis showed that the group program had a significant effect on this outcome variable (p<.05). Again the differences between the group program and the home visits were not significant. From table 5 it can be concluded that the effects achieved in this study were small to medium.
4.4 Conclusions and discussion

The two primary goals of the interventions, i.e. increased confidence in knowledge and increased use of active coping strategies, are largely achieved in the interventions and shown in this study. The analyses indicate that in the short term the interventions together (group program and home visits) achieved a medium increase in confidence in knowledge about patient care, as well as a medium increase in the use of the active coping strategies confronting and seeking social support. The interventions and the group program achieved a small increase in use of the coping strategy seeking social support.

In the group of completers also a medium effect was found from the interventions, the group program, and the home visits on the outcome variable confidence in knowledge about self-efficacy.

Participating in a group program or home visits does not yield any short-term positive effects on mental well-being and vitality, nor does it result in decreased strain. The other secondary effect measures demonstrated no significant effects either. Participating in a group program or home visits does not result in an increase in the amount of social support, satisfaction with social support, and assertiveness in caregivers of stroke patients. When comparing the group program and the home visits, no differences in effects were found.

Effects that were found in earlier controlled studies evaluating interventions for caregivers of cognitively impaired elderly persons are comparable with our results. Other studies found changes in coping strategies, and an increase in knowledge in caregivers who participated in a group program.\textsuperscript{30, 31} Solomon found that adaptive coping is also associated with participation in a support group.\textsuperscript{32}

This last result indicates that caregivers who use ineffective coping strategies and are most in need of support do not participate in a support group. If interventions are only attended by

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Confidence knowledge patient care</th>
<th>Confidence Knowledge self efficacy</th>
<th>Coping strategy confronting</th>
<th>Coping strategy seeking support</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intention to treat group</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention (group + home visits)</td>
<td>0.72</td>
<td>0.58</td>
<td>0.09</td>
<td>0.26</td>
</tr>
<tr>
<td>Group program</td>
<td>0.78</td>
<td>0.54</td>
<td>0.03</td>
<td>0.23</td>
</tr>
<tr>
<td>Home visits</td>
<td>0.59</td>
<td>0.72</td>
<td>0.21</td>
<td>0.30</td>
</tr>
<tr>
<td><strong>Per protocol group</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention (group + home visits)</td>
<td>0.85</td>
<td>0.68</td>
<td>0.11</td>
<td>0.24</td>
</tr>
<tr>
<td>Group program</td>
<td>0.95</td>
<td>0.68</td>
<td>0.08</td>
<td>0.25</td>
</tr>
<tr>
<td>Home visits</td>
<td>0.66</td>
<td>0.70</td>
<td>0.17</td>
<td>0.22</td>
</tr>
<tr>
<td>Control group</td>
<td>-0.19</td>
<td>-0.03</td>
<td>0.05</td>
<td>0.32</td>
</tr>
</tbody>
</table>

Small effect |.0-.49, medium effect |.50-.79, large effect >.80 (29)
Short term effects of a group program and an individual program
caregivers who already use active coping strategies, the effects of programs that promote the
use of these strategies will obviously be limited.
Zarit and Knight both compared a group program with individual counseling and found that
improvement in caregivers of dementia patients was more likely in the individual counseling
condition.15, 33 This conclusion is not supported by the results of our study.
A large problem in this study was recruitment of caregivers. It seems reasonable to assume
that the study population is not representative for the total group of caregivers of stroke
patients. The question remains why caregivers were so difficult to recruit. Did we
overestimate caregivers’ problems and are they not in need of support, or, conversely, are
caregivers’ burdens so heavy that they are unable to participate in a support program? We
intend to address these questions in future research.
The unbalanced assignment of caregivers to the three groups is another problem. To control
for possible selection bias we checked whether the variables that differed between the groups
at baseline were possible confounders. If they were, we included these variables in the
regression model. Nevertheless, the unbalanced assignment affects the reliability of the results
with respect to the differential effects of the group program and the home visits.
In the present study a considerable number of participants dropped out. Drop-outs were older,
had less confidence in knowledge, and received less social support compared to the study
group. This suggests that drop-outs belong to a group that is somewhat ‘weaker’ than the
study group. The results of Brodaty’s study demonstrate that non-completers tend to
experience higher levels of strain.34 By contrast, Goodman’s findings show that continuing
attenders experience greater burden and receive less family support than brief attenders.19 It is
important that ‘weaker’ groups complete an intervention because they would probably benefit
the most from support. In planning an intervention one should carefully consider how to keep
caregivers with a higher burden in the program.
To our knowledge, this study is the first controlled study to evaluate the effects of an
intervention for caregivers of stroke patients. We consider the programs’ effects quite
encouraging, even though there are some limitations. It would be unrealistic to expect
dramatic effects from a two-month program. It is possible that effects of the support program
on well-being, vitality, and strain will manifest themselves in the long term. We are planning
to investigate the long-term effects of the intervention described in this article in a future
study.

References
1. Anderson CS, Linto J, Stewart-Wynne EG. A population-based assessment of the impact and burden
2. Schure LM. Partners van CVA-patiënten. Een onderzoek naar de gevolgen van een cerebrovasculair
3. Lazarus RS, Folkman S. Stress, appraisal, and coping. New York: Springer Publishing Company,
   1984.
4. Morris LW, Morris RG, Britton PG. Factors affecting the emotional well-being of the care givers of