A meta-analysis of interventions for informal stroke caregivers

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CRD summary
This review concluded that interventions for informal stroke caregivers improved their mental health, but a lack of evidence limited the generalisability of the findings. Concerns about some aspects of the review methodology and the inclusion of only a limited number of small and variable studies mean that the authors’ conclusions should be viewed with caution.

Authors’ objectives
To evaluate the effectiveness of interventions for improving the mental health of informal stroke caregivers.

Searching
MEDLINE, CINAHL, Social Sciences Citation Index, Science Citation Index and The Cochrane Library were searched up to 2005 for studies published in English. Search terms were reported.

Study selection
Controlled trials evaluating the effectiveness of any type of intervention aimed at improving the mental health of informal stroke caregivers were eligible for inclusion. Included studies needed to assess the difference in psychological state between the experimental and control groups using the Short Form Health Survey (SF-36).

Reported interventions were conducted in community settings and included different educational or support programmes for caregivers (details were reported). The mean age of the participants was 61.1 years. The proportion of women was 71.7 per cent. Follow-up ranged from 13 weeks to seven months.

One reviewer selected studies for inclusion in the review.

Assessment of study quality
Validity was assessed using published criteria and included the study aim, randomisation, blinding attrition, statistical testing and validity of the discussion section (maximum score 16 points). Studies scoring 0 to 9 were considered low quality, while those scoring 10 to 16 were considered high quality. Two reviewers independently assessed validity. Disagreements were resolved by discussion.

Data extraction
Data on differences between experimental and control groups for each individual study were extracted and effect sizes (d) and 95% confidence intervals were calculated. Raw effect sizes were weighted for study sample size. Two reviewers independently extracted data using a standardised form. Disagreements were resolved by discussion.

Methods of synthesis
Individual studies were combined in a meta-analysis and an overall mean weighted effect size and 95% confidence intervals were calculated. A sensitivity analysis was conducted by calculating mean weighted effect sizes using the study quality rating. Subgroup analyses were conducted to determine differences between types of intervention, presence of a theoretical background for creation of the intervention and study setting. Heterogeneity was assessed using the Q statistic. The potential for publication bias was assessed using the fail-safe N.

Results of the review
Four randomised controlled trials were included (n=718): three rated high quality and one rated low methodological quality (due to lack of blinding).

The results indicated that the interventions were effective in improving the mental health of informal stroke caregivers in comparison with control. The overall mean weighted effect size was 0.277 (95% confidence interval: 0.118, 0.435,
p<0.001, four randomised controlled trials, n=718), for educational programmes only an mean weighted effect size 0.354 (95% CI: 0.087, 0.621, p<0.01, two randomised controlled trials, n=239), and for support programmes only an mean weighted effect size of 0.234 (95% confidence interval: 0.037, 0.432, p=0.02, two randomised controlled trials, n=479). There was evidence of statistical heterogeneity between studies (p=0.05).

Sensitivity analysis based on study validity rating indicated that interventions in high quality studies were significant in improving mental health of stroke caregivers (mean weighted effect size 0.354, 95% confidence interval: 0.175, 0.534, p<0.001, three randomised controlled trials. There were no statistically significant differences between intervention and control groups in the one low-quality study. There was evidence of publication bias (Fail-safe N=13).

**Authors’ conclusions**

Overall interventions improved the mental health of informal stroke caregivers. Due to limitations of the available evidence and the presence of publication bias, the generalisability of the findings should be treated with caution. Further research was needed.

**CRD commentary**

The inclusion criteria were clearly defined in terms of interventions, participants, outcomes and study design. Several relevant sources were searched for studies. Only published studies written in English were included in the review, which may have resulted in relevant studies being missed. Further analysis suggested there was evidence of publication bias. Only one author selected studies, which may have led to errors and bias, however, methods were used to minimise reviewer errors and bias in the assessment of validity and extraction of data. Validity was assessed using an established checklist, although only the composite score was presented, making it difficult for readers to judge the study validity for themselves. There were differences between studies in terms of duration and components of interventions, and few details were reported on participants and controls. There also appeared to be evidence of statistical heterogeneity, so combining the studies in a meta-analysis may not have been appropriate. The authors appropriately considered the limitations and differences across studies. In view of concerns about some aspects of the review methodology and the inclusion of only a limited number of small and variable studies, the authors’ conclusions should be viewed with caution.

**Implications of the review for practice and research**

Practice: The authors stated that more educational programmes were needed to address the mental health of stroke caregivers.

Research: The authors stated that future research should include double-blind randomised controlled trials. Further research was needed to evaluate the long-term effects of interventions to improve mental health of caregivers. Studies should include clear descriptions of intervention dosage, period and content guided by theory and with outcome variables such as depression or burden.

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