The efficacy of tailored interventions for self-management outcomes of type 2 diabetes, hypertension or heart disease: a systematic review

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CRD summary
The author concluded that tailored interventions may not be more effective in improving patients' self-management behaviour for long-term conditions than standard interventions. Despite a risk of language, publication and reviewer biases the conclusions seem to reflect the uncertainty of the presented evidence. In their cautious wording the author's conclusions are likely to be reliable.

Authors' objectives
To assess the effectiveness of tailored interventions for self-management behaviours in individuals with heart disease, hypertension or type 2 diabetes.

Searching
Seven databases including PubMed, CINAHL and PsycINFO were searched for eligible studies published in English from 2001 to 2010. Search terms were reported. Reference lists from included studies were searched manually.

Study selection
Randomised controlled trials (RCTs) of adults with long-term diabetes mellitus, heart disease or hypertension were eligible for inclusion. Any interventions that were tailored to the individual based on initial assessment were eligible. Interventions had to be delivered by a health professional in the community with the goal of improving participants' management of their condition. Studies of patients with psychotic disorders or substance abuse were excluded. Eligible comparators were usual care or alternative interventions promoting self-management. Self-management behaviour was the outcome of interest, including screening behaviour, modifications of diet or physical activity and self-monitoring.

Most of the included studies contained participants with diabetes; two contained participants with hypertension and only one contained participants with heart disease. Studies were conducted various settings such as general practitioner clinics, community settings and specialist care centres. Most studies were conducted in USA and the others were in western or northern Europe. Purposes of the interventions included improvement of self-management behaviours, increase in screening behaviour, increase in physical activity and weight loss. Intervention delivery varied across studies and included phone calls or face-to-face visits with health care personnel as well as printed and computer-based materials. Control group interventions included usual care and alternative interventions. Reporting of participant details was inconsistent.

It was not reported how many reviewers were involved in study selection.

Assessment of study quality
The 25-item CONSORT guidelines were used to assess study quality. Possible scores ranged from zero to 25 (higher scores indicated better methodological quality). Quarter, half and three-quarter scores could be awarded.

One reviewer assessed study quality.

Data extraction
Data extracted from studies included details on the design, sample and setting as well as descriptions of the intervention and control treatments. Relevant outcomes were extracted as reported in the primary studies.

One reviewer extracted data.

Methods of synthesis
Studies were summarised by means of a narrative synthesis.
Results of the review

Ten RCTs (3,631 participants, range 53 to 903) were included in the review. Intervention duration ranged from one week to two years. Follow-up ranged from two weeks to two years. Quality assessment scores ranged from 14 to 23.5. Randomisation, allocation concealment, use of a power calculation and reporting of adverse events were identified as methodological weaknesses. The proportion of participants lost to follow-up ranged from 6% to 25%.

One study collected data on screening behaviour for diabetic retinopathy and reported a 74% increase in screening behaviour in the intervention group (relative risk 1.74, 95% CI 1.31 to 2.30). There was a statistically significant decrease in dietary fat intake in the intervention group compared with the control group (p<0.01, no further statistics reported, two studies) which was associated with significant weight loss (p=0.007, no further statistics provided, one study) and significant reduction in waist circumference by 2cm (p<0.01, no further statistics reported, one study). At one-year follow-up weight loss was maintained in the intervention group compared with an increase in weight in the control group (p<0.001, no further statistics reported, one study).

In general, treatment seemed to have a beneficial effect on physical activity. One study reported sustained higher activity levels at the end of one month in the tailored intervention group (odds ratio 5.6, 95% CI 1.7 to 18.3). Another study reported that the increase in physical activity was significantly higher in the intervention than in the control group (27% versus 7%). One study reported a statistically significant increase in blood pressure control for a treatment group that received a combination of phone calls and home monitoring (11%, 95% CI 1.9% to 19.8%).

There were no significant differences between intervention and control groups with regards to self-reported medication adherence (one study) or lifestyle changes (one study). The difference in increase in diabetes specific self-care was non-significant in two studies. Differences between groups on other outcomes such as body mass index and waist circumference were statistically non-significant.

Cost information

Two of the included studies assessed the cost of developing and implementing the tailored intervention. Both studies investigated interventions containing multiple telephone calls from trained lay or medical personnel to the participant. Expenses ranged from $200 to $800 per individual participant.

Authors' conclusions

Tailored interventions may not be more effective in improving self-management behaviour in patients with long-term conditions than standard interventions.

CRD commentary

The research question and inclusion criteria were clear. Some relevant sources were searched but as only studies published in English were eligible for inclusion, language bias may have been introduced and relevant studies may have been missed. No attempts to identify unpublished material were reported so there was a risk that further relevant studies were missed. Only one reviewer was involved in data extraction and quality assessment and it was not reported how many reviewers were involved in study selection so reviewer error and bias may have been introduced. Detailed results of the quality assessment were provided in supplementary material but use of a scoring system made it unclear how the awarding or withholding of points was determined. The authors did not use a recognised quality assessment tool.

The author recognised the variability between the included studies. Use of a narrative synthesis rather than a meta-analysis seemed justified. However, merely categorising studies into significant and non-significant results without taking study quality into consideration made it difficult to assess the size of any effects. It was unclear how specific outcomes, which seemed similar, differed from one another.

The author recognised a number of limitations to this review and conclusions were worded carefully. Despite a risk of language and publication biases and flaws in the review process that may have introduced further error and bias, the conclusions seem to reflect the uncertainty of the presented evidence. In their cautious wording the author's conclusions are likely to be reliable.

Implications of the review for practice and research

Practice: The author emphasised that nurses can play an important role in the implementation of tailored interventions.
Research: The author suggested that further research should investigate which self-management behaviours were most susceptible to change through nurse-led tailored interventions and recommended that high quality trials be conducted to explore the effects of robust and resource-optimised tailored interventions on self-management behaviours in long-term conditions.

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