Educational interventions in kidney disease care: a systematic review of randomized trials

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CRD summary
This review found that multicomponent educational interventions were effective in patients who needed pre-dialysis and dialysis care, but that the quality of many of the trials was suboptimal. The review was generally well conducted and the conclusions are likely to be reliable.

Authors' objectives
To review the effectiveness of educational interventions in people with kidney disease

Searching
MEDLINE, EMBASE, CINAHL, PsycINFO and Cochrane Central Register of Controlled Trials (CENTRAL) were searched from 1980 to March 2007 with no language restrictions. The search strategy was outlined in the paper. Reference lists of retrieved articles were searched.

Study selection
Eligible studies had to be randomised controlled trials (RCTs) that included adult patients (over 18) with kidney disease (chronic kidney disease, pre-dialysis or receiving dialysis care). Kidney transplant recipients were excluded from the review. Interventions needed to be structured and include both informational and psychological components. Control groups needed to receive usual or routine care. Trials needed to include one or more clinical, knowledge, behavioural or psychological outcomes.

All trials included both men and women. Mean age of participants was 55 (range 19 to 82). Most trials aimed to improve diet and/or fluid concordance and used an individual rather than group format for the interventions. All interventions took place in hospitals. Trained or experienced professionals were used in all except one trial. Trials had one to 12 sessions that ranged from 15 minutes to four hours. Theoretical frameworks were reported in most trials. Follow-up varied across the trials.

Two reviewers were involved in the selection of studies for the review.

Assessment of study quality
Study validity was assessed using the five-point Jadad scale of randomisation, blinding and intention-to-treat analysis.

Two reviewers assessed study validity. Discrepancies were resolved through discussion.

Data extraction
Data on study design, methods, participants, interventions and outcomes were extracted onto a structured data collection form by two researchers. Discrepancies were resolved through discussion.

Methods of synthesis
A narrative synthesis was conducted. Trials were grouped into whether they addressed pre-dialysis or dialysis care; no studies of educational interventions in-patients with early chronic kidney disease were identified. Within these categories, studies were subdivided according to length of follow-up: short term (shorter than three months), medium term (three to six months) and long term (longer than six 6 months). Trials with more than one period were included more than once in the groupings.

Results of the review
Twenty-two RCTs were included in the review (n=1,967 participants). Study quality was low: scores ranged from 1 to 3 out of 5 on the Jadad scale. Six trials reported methods of randomisation and adequate concealment of allocation. Seven trials blinded outcome assessors. Four trials reported intention-to-treat analysis. Sample size ranged from 10 to 335.
participants. Six trials reported a power calculation.

Eighteen of the 22 trials reported significant results for one or more of the outcome types of clinical, behavioural, psychological and knowledge. There were no trials of patients with early chronic kidney disease (stages 1 to 3).

**Pre-dialysis care (five trials, 702 participants):**

One short-term trial (n=70) provided patients with written material and a single-session patient-centred group intervention based on problem solving. It found significant improvements in self-care dialysis knowledge, self-efficacy and number of patients who selected self-care dialysis. Four long-term trials, all conducted by the same research group, used a single session intervention based on a collaborative role learning mode. Initial follow-up showed significant improvements in long-term knowledge retention and delayed onset of dialysis therapy. One trial found significant increases in survival rates at 20 years for those who received the intervention.

**Dialysis care (17 trials, 1,265 participants):**

Four short-term trials of diet and/or fluid interventions were identified. They involved more than one session and mainly used cognitive-behavioural therapy and social learning therapy. Two of four trials reported significant improvements in fluid restriction. Two interventions that used motivational goal setting were aimed at coping with dialysis therapy. One trial based on consulting sessions improved factors related to empowerment; another based on audiotape did not result in any improvements.

Thirteen medium-term trials were indentified. Eight were related to diet and/or fluid interventions, two related to exercise interventions and three related to adaptation and coping skills. Trials related to diet and/or fluid interventions had inconsistent results. Exercise and adaptation and coping skills interventions tended to have positive outcomes.

One methodologically poor long-term trial was identified. This trial involved teaching and motivational support for self-image and showed improvements in psychosocial skills and activities of daily living at one year.

**Authors' conclusions**

Multicomponent structured educational interventions were effective in pre-dialysis and in dialysis care. The quality of many of the trials was suboptimal.

**CRD commentary**

This review was based on broadly defined criteria for participants, interventions, outcomes and study designs. Searching encompassed a range of databases and other sources. There were no language restrictions. Quality was assessed and results were interpreted in the light of methodological flaws in the studies. It appeared that two reviewers were involved in most review processes to minimise bias and error. A narrative synthesis appeared appropriate given the diversity of participants, interventions and outcomes identified.

Overall the review was well conducted and the conclusions are likely to be reliable. However, as noted by the author, results were based on trials of suboptimal quality.

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

**Practice:** The authors stated that general public awareness about kidney disease needed to be increased and preventative education needed to be offered.

**Research:** The authors stated that future studies should investigate group pre-dialysis education. Stronger theoretical frameworks were required to evaluate educational interventions. Improved study designs were required.

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