Quality of life in patients undergoing hemodialysis and renal transplantation: a meta-analytic review

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CRD summary
The review found that renal transplant improved general quality of life and physical functioning more than haemodialysis. Findings for psychosocial functioning were not statistically significant. The review had several limitations, which included lack of randomised evidence, differences between pooled studies and poor reporting, and the authors’ conclusions may not be reliable.

Authors' objectives
To compare the effects of haemodialysis and renal transplant on quality of life.

Searching
MEDLINE, PsycINFO, CINAHL and The Cochrane Library were searched to November 2007. Search terms were reported. Reference lists of previous reviews and research articles were checked and experts in the field were contacted.

Study selection
Studies that compared the effects of haemodialysis and renal transplant on one or more specific domains of quality of life (general quality of life, physical function or psychosocial function) and included both men and women were eligible for inclusion. Domains of interest were defined in the review. Studies were required to use a validated instrument for measuring quality of life. Studies without data appropriate for meta-analysis were excluded.

Participants varied in age, comorbidity and socio-economic situation. Mean age across study groups ranged from 34 to 60 years, where reported. Studies used a very wide variety of outcome measures and no two studies used the same instrument. The duration of study follow-up ranged from one day to 10 years post-transplant. Most of the studies were set in USA or Canada.

A single reviewer selected potentially relevant studies and the final selection was conducted by two reviewers.

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
Effect sizes were calculated in standard deviation units (SDs) for each study (based on the difference between mean scores in the two groups divided by the pooled SD) with 95% confidence intervals (CIs). The percentage of participants likely to benefit from the intervention was reported (based on the SD).

Two reviewers extracted data. Disagreements were resolved by discussion. Attempts were made to contact primary study authors for more information if required.

Methods of synthesis
Studies were combined to calculate a pooled mean effect size and 95% CI for each of the three dimensions of quality of life.

Results of the review
Sixteen studies were included in the review (n=3,597, range 40 to 1,051). Most were either cross-sectional or pre/post-test.

At zero to 24 months, renal transplant was significantly more effective in improving general quality of life than
haemodialysis (effect size 0.98, CI not reported; nine studies). Renal transplant was significantly more effective in improving physical functioning than haemodialysis (effect size -0.77, CI not reported; seven studies). Effects for psychosocial functioning (16 studies) were inconsistent.

**Cost information**
Studies were combined to calculate a pooled mean effect size and 95% CI for each psychosocial domain.

**Authors' conclusions**
Renal transplant improved general quality of life and physical functioning more than haemodialysis.

**CRD commentary**
The objectives and inclusion criteria of the review were clear. Relevant sources were searched for studies, apparently without restriction by language. The search was restricted to published studies and the authors noted that potential publication bias was a limitation of the review. Steps were taken to minimise risks of reviewer bias and error by having more than one reviewer extract data, but the initial selection of studies was conducted by a single reviewer. It did not appear that study validity was systematically assessed. No information was reported about the design of individual studies and few details were given of participant characteristics (such as gender and comorbidities). In half of the studies the haemodialysis group appeared substantially older (on average) than the renal transplant group, which suggested that the groups may not have been clinically comparable at baseline. The statistical model used to combine studies was not described. It did not appear that statistical heterogeneity was assessed. It was questionable whether it was appropriate to pool the studies statistically in view of between-study differences, such as the wide variety of outcome measures and follow-up times (noted by the authors). All these factors made it difficult to determine the reliability, applicability and clinical significance of the reported findings. The abstract of the review stated that renal transplant was more effective than haemodialysis in all measured domains, but the meta-analysis for psychosocial functioning did not appear to indicate a statistically significant effect (acknowledged elsewhere in the review). As the review had several limitations that included lack of randomised evidence, differences between pooled studies and poor reporting, the authors' conclusions may not be reliable.

**Implications of the review for practice and research**
The authors did not state any implications for practice.

**Research**
The authors stated that controlled trials that compared renal transplant with dialysis were needed urgently. Future studies that compared quality of life among patients who received different renal replacement therapies should statistically control for age, sex, race, education, diabetes mellitus, comorbidity, effects over time and pre-existing psychiatric morbidity.

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