Does transplantation produce quality of life benefits: a quantitative analysis of the literature


Authors' objectives
To assess the benefits of transplantation on the quality of life (QOL) for transplant patients.

Searching
The authors searched MEDLINE, Current Contents, and Psychological Abstracts for English language publications for the years 1965 through 1996. The bibliographies of identified studies were also checked for additional studies. The authors also examined individual journals related to transplantation (1970 through 1996) including Bone Marrow Transplantation, Clinical Transplantation, Journal of Heart and Lung Transplantation, and Transplantation.

Study selection
Study designs of evaluations included in the review
Empirical studies of defined samples rather than case reports (58.7% were cross-sectional). Some studies used comparison or control groups; others referenced normative samples or other cohorts for comparison purposes. More recent studies used a prospective design (33.5%). Follow-up (188 studies reported this information) in 55.9% of the studies was less than 1 year after surgery, in 35.6% of the studies was from 1 to 3 years after transplant, and in the remaining 8.5% was at least 3 years after transplant.

Specific interventions included in the review
Surgical transplantations of kidney, pancreas/combined kidney- pancreas, heart, lung/combined heart-lung, liver, or bone marrow.

Participants included in the review
Patients who have undergone kidney, pancreas/combined kidney- pancreas, heart, lung/combined heart-lung, liver, or bone marrow transplantation.

Outcomes assessed in the review
Quality of life (QOL) measured in four domains:

1. Recipients’ physical functional status (using multi-variable assessment measures of ambulation, mobility, fatigue, pain, sleep, activities of daily living and perceived physical status).

2. Mental health/cognitive status (using measures of overall distress, depressive symptoms, anxiety symptoms, episodes of psychiatric disorder, self-image, attention/concentration, and memory).

3. Social functioning (using measures of social interactions, relations with family/friends, employment, sexual activity/satisfaction, and leisure activities).

4. Overall quality of life (using measures of overall life satisfaction and global perceived QOL ratings).

How were decisions on the relevance of primary studies made?
The authors do not state how the papers were selected for the review, or how many of the authors performed the selection.

Assessment of study quality
No formal assessment of quality was undertaken.
Data extraction
The authors do not state who, or how many of the reviewers, extracted the data.

The authors classified the results of each study's assessment of a given QOL domain in terms of whether the study found 1) QOL benefits in the domain, versus 2) mixed evidence, versus 3) no evidence of benefits in the domain. These assessments were then used in the analyses.

Methods of synthesis
How were the studies combined?

For each of the four QOL domains, the proportion of studies providing evidence of QOL benefits of transplantation was determined. These proportions were calculated separately for each domain of QOL, and, within these four domains, separately for each of the six areas of transplantation. The authors then calculated:

1. The average effect size, or average proportion of studies finding benefits in a given QOL domain across the six areas of transplantation.

2. Whether this average effect was greater than zero.

3. Whether the majority of studies found evidence of benefit.

4. Whether the effect sizes differed across the six areas of transplantation.

How were differences between studies investigated?
The authors have tested for homogeneity using the chi-square test.

Results of the review
Two hundred and eighteen (218) studies were included in the review with approximately 14,750 participants. Of the 218 studies, 30.3% were of kidney, 22.5% were of heart, 18.3% were of liver, 15.6% were of bone marrow, 8.7% were of pancreas/kidney-pancreas, and 4.6% were of lung/lung-heart transplantations. Of the 14,750 participants, 45.6% were kidney, 19.2% were heart, 16.4% were liver, 13.0% were bone marrow, 3.1% were of pancreas/kidney-pancreas, and 2.7% were of lung/lung-heart transplant patients.

In the first question: does QOL improve from pre- to post- transplant?, the majority of 76 prospective studies reported statistically significant (p < 0.05) pre- to post-transplant improvements in physical functional QOL, mental health/cognitive status, social functioning, and overall QOL perceptions. The mean proportion of studies reporting QOL improvement in the physical, mental, social and overall domains were 86%, 61.8%, 67.4% and 100% respectively. There was no statistically significant heterogeneity across transplant areas.

In the second question: is QOL in transplant recipients better than QOL in similarly ill comparison samples?, the majority of 84 studies reported physical functional and global QOL advantages for transplant recipients relative to similarly-ill comparison groups. The mean proportion of studies reporting QOL improvement in the physical, mental, social and overall domains were 57.7%, 36.2%, 44.6% and 58.7% respectively. There was no statistically significant heterogeneity across transplant areas. In the third question: is QOL in transplant recipients similar to or better than QOL in healthy samples?, the analysis of 67 studies did not indicate that recipient QOL in specific functional areas equalled that of healthy, non-patient cohorts. The mean proportion of studies reporting QOL improvement in the physical, mental, social and overall domains were 20.8%, 49.6%, 39.1% and 47.0% respectively. Statistically significant heterogeneity was found for overall QOL studies, but in the remaining three domains there was no statistically significant heterogeneity across transplant areas.

Authors' conclusions
Although transplantation may not restore to the patient the 'normal' life he/she may once have had, convergent evidence from six areas of transplantation, a variety of study designs, and demographically diverse study cohorts suggests that there are distinct QOL benefits of transplantation. Future work is required to identify background and personal factors.
that influence the degree of QOL benefits that any individual patient realises from transplantation.

CRD commentary
The authors have stated their research question and their inclusion and exclusion criteria. The authors have made a good search of the literature and have included handsearching of relevant journals, however it is not stated whether unpublished work or non-English publications were included and this may have missed additional studies. The authors state that there were several null results reported in the published literature so it is possible that a balanced perspective exists for this topic.

The included studies are listed in a table along with some categories of data extraction which list the QOL areas assessed by each of the studies. The authors have not reported on how the articles were selected, or how many of the reviewers were involved in the data extraction. There is no formal assessment of the quality of the included studies but the authors have tested for homogeneity and have acknowledged and discussed shortcomings and differences found in the included studies. Only the statistical averages are reported, not the calculated effect sizes, and the results of the statistical analyses are discussed in a narrative review of the QOL findings for each domain. The authors conclusions appear to follow from the results although the quality and design of the included studies and the conduct of the systematic review should be viewed with caution.

Implications of the review for practice and research
The authors state two implications for further research.

1. That improved surgical techniques, immunosuppressive drugs and regimens, the development of mechanical devices to assist and/or replace failing organs, and the possibilities of xenografting will all require continued appraisal of patients' QOL.

2. There is a need to specify more clearly the full range of other personal and environmental factors that retard or enhance QOL outcomes, so as to maximise QOL in the context of transplantation.

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.