ORIGINAL PAPER
ΕΡΕΥΝΗΤΙΚΗ ΕΡΓΑΣΙΑ

Socio-economic evaluation of kidney transplantation in Germany

OBJECTIVE **Kidney transplantation technology has reached a very high standard in the last decades. In the industrialised countries it belongs to the services which are offered by high-level hospitals besides university clinics. The number of transplantations is limited almost exclusively by the scarce graft supply. As health care budgets are increasingly limited, advanced and costly technologies have to prove their cost-effectiveness. This article presents a study about cost, quality of life and cost-effectiveness of kidney transplantation in a major hospital in Germany.** METHOD **From the waiting list of Hannover Medical School (MHH) 1,149 patients with end-stage renal disease (ESRD) were enrolled in the study and asked to answer the EuroQol (EQ-5D) and the Nottingham Health Profile (NHP) questionnaires. Of the waiting list group, 199 patients underwent transplantation during the 16-month study period. The cost incurred by 77 patients was fully documented for their hospitalization period. A comparison of direct and indirect cost for dialysis and kidney transplantation and cost utility analysis (QALY approach) was conducted.** RESULTS **The average direct cost of kidney transplantation was 59,980 DM (indirect cost: 5,150 DM) in the first year. The cost of immunosuppressive drugs and subsequent care was 15,006 DM per year. Kidney transplantation is cost saving two years after operation (in comparison to dialysis). In addition, quality of life scores were higher for the transplanted patients.** CONCLUSIONS **Kidney transplantation has advantages both for patients with regard to quality of life and for health insurances with regard to lower cost of care for ESRD patients.**

ARCHIVES OF HELLENIC MEDICINE 2001, 18(2):147–155
ΑΡΧΕΙΑ ΕΛΛΗΝΙΚΗΣ ΙΑΤΡΙΚΗΣ 2001, 18(2):147–155

W. Greiner,
K. Obermann,
J.-M. Graf v.d. Schulenburg

Centre for Health Economics and Health System Research, University of Hannover, Germany

Κοινωνικοοικονομική αξιολόγηση της μεταμόσχευσης νεφρών στη Γερμανία

Περίληψη στο τέλος του άρθρου

Key words

Cost utility
Dialysis
Germany
Kidney transplant
QALYs

Kidney transplantation has become a standard therapy for patients with end-stage renal disease (ESRD) in the last two decades. In comparison to the transplantation of other organs it carries the highest success rate, is the most frequently performed one and is generally an accepted procedure.[1] In Germany in 1996, a total of 2,016 kidneys were transplanted. After experimental attempts with animals,[2] the first successful kidney transplant was carried out from one living twin to the other in the year 1954 by Murray and Merril.[3] Later, progress in human leucocyte antigen, HLA identification, and the comparison of the antigens between the donor organ and the recipient organism (matching) made possible the use of kidneys from non-related donors.

In the early days of immunosuppression, the organ survival rate after one year was only about 45% and treatment was associated with side effects. With the introduction of the drug cyclosporin A, function rates of approximately 80% after one year were achieved. However, even after a successful transplant, a variety of restrictions in their normal life have to be accepted by patients, e.g. dependence on immunosuppressive drugs, regular outpatient physician visits and the constant fear of late complications and loss of the organ.

Acute rejections occur up to a few months after the transplant and probably influence the risk of chronic rejection,[4] which cannot be treated with immunosuppressive drugs. After the transplant the patients are obliged

to take immunosuppressive drugs usually for the rest of their life. These drugs come at a high cost, which, in Germany (apart from insignificant co-payments) is born completely by the sickness insurance funds. "Many, if not most, transplant recipients would be unable to pay for their drugs without assistance from a third-party source".[5]

The number of kidney transplants (as represented in figure 1) has declined in the last years (1997: 2,249). In Germany, 42 hospitals at present perform kidney transplants, and the scarce supply of organs is the main factor preventing an expansion of this medical technology.

Until now, no detailed prospective study concerning the costs of dialysis and kidney transplantation had been carried out in Germany. The German Ministry of Health board of experts has estimated the costs of dialysis treatment at approximately 60,000 DM per year, and patient. According to their estimate total expenditures for health services for a kidney transplant, including a subsequent three-year ambulatory treatment, do not even reach 50,000 DM, on average.[6] Based on this rough estimation of the total expenditure from the sickness funds, special lump sums for each dialysis treatment and the appropriate fee-for-service payments to the dialysis physician were calculated. However, the subsequent costs of outpatient hospital visits, hospitalisation and drug therapy remained unconsidered, factors which, in the event of complications and multi-morbidity, are of importance for dialysis patients. Thus, in contrast to the transplant costs which normally consist mainly of the operation and post-operative care, the calculation of the discounted dialysis costs for the lifetime of an individual patient is less certain than the cost of the transplant.[7]

In 1983, Renner and Renner presented the first retrospective cost-analysis of dialysis and kidney transplant for the German health system, including diagnostic and therapeutic services. This study was conducted over a period of three years and was differentiated according to the type of the dialysis and the post-transplant condition of the patients. Total average costs for home dialysis reached about 50,000 DM per year and for limited care dialysis 63,000 DM respectively. In contrast, the total treatment costs for patients who received a kidney transplant added to approximately 18,000 DM per year. As expected, the costs diminished with the increasing time period spent with the functioning transplant.[8] However, the calculated values were not based on a representative group of patients, as only ten patients per group were included in the calculation.

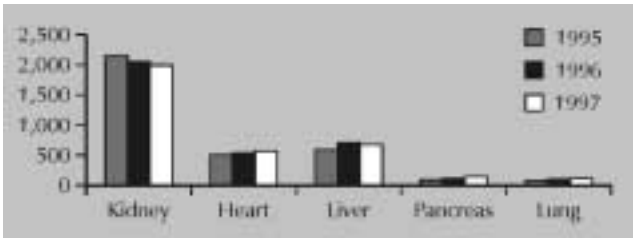

Figure 1. Number of transplants in Germany from 1995 to 1997 for different organs.

Sickness insurance fund expenditures for a kidney transplant in 1989 were estimated by Renner and Cohen at approximately 40,500 DM.[9] However, this calculation was not based on the actual resources consumption but on the amount paid by the health insurance companies to the hospitals. Therefore, a lump sum (similar to a Diagnosis Related Group) for the transplant (27,000 DM) as well as the per diem allowances for the duration of the stay in hospital were taken as sources for the cost calculation.

In 1991, the cost of 100 kidney and 101 liver transplant patients who were treated at the Medical School Hannover (MHH) was estimated in a retrospective analysis using data from patient files.[10] The various medical services were calculated according to a hospital services standard tariff (DKG-NT). For medically uncomplicated kidney transplants a cost of approximately 29,000 DM was determined, while for patients with complicated post-transplant treatments, costs of approximately 62,000 DM were incurred. However, the so-called "hotel costs" of the hospital (e.g. administration costs, energy, kitchen, cleaning and laundry) were not accounted for.

As done in Germany, other countries have also conducted economic evaluations for transplants, in some cases comparing them with other treatment alternatives. The majority of these studies has been performed in the USA where the rising percentage of the gross domestic product (GDP) for health services has pushed for a more efficient allocation of available resources.[7] In recent years the evaluation of the quality of life of dialysis patients and transplant recipients has gained increased importance.[11]

For economic evaluation a detailed assessment of the costs and benefits of transplantations is necessary. In this paper the findings of a prospective socio-economic evaluation study of kidney transplantation conducted at MHH are presented. Both the costs and quality of life effects were assessed and different cost-effectiveness relations were calculated.

MATERIAL AND METHOD

Between June 1993 and September 1994, 1,149 patients were enrolled on the waiting list for kidney transplants, 199 of which received a transplant at some point during this time. The study criteria (majority and no multiple organ transplant) were

fulfilled by 169 patients, and the resources consumption for the inpatient treatment was completely assessed for 77 of these. The selection of patients for complete assessment was made randomly. One patient died during the hospitalization. A continuous documentation of all patients was not possible for cost reasons.

All patients on the waiting list for kidney transplants were asked by post questionnaires about the change in their quality of life, using the EuroQol (pages 2 and 3)[12] and the Nottingham Health Profile (NHP) instruments.[13] The last questionnaire in each case was used for the later pre-post comparison. Patients who had undergone a transplant were asked again 14 days, one month, three months, six months and one year after the transplant about their quality of life. Of the 1,149 patients who were on the Hannover waiting list for kidney transplants during the observation period, a total of 1,023 persons (89%) filled out the quality of life questionnaire at least once. Since the patients are adequately cared for medically by dialysis, their status is comparatively stable. For this reason multiple questioning of the waiting list patients was withdrawn. The average duration between questioning and transplant was 6.5 months. Of questionnaires that were completed by the 150 transplant patients, 105 were completed one month after the operation. The numbers of questionnaires completed at the other questioning points in time are shown in table 1.

Table 2 lists various socio-demographical characteristics of the patients, showing that, with respect to education and income, the patient group which received transplants did not substantially differ from the patient group which did not receive a transplant during the observation period.

All patients on both waiting lists were asked to fill out several quality of life questionnaires, including EuroQol and the NHP. In addition, the physicians regularly estimated the quality of life of the patients with the help of the Karnofsky index. Following the transplant the questionnaire was again administered at intervals with the following control checks: 14th post-operational day, 1st, 3rd, 6th, 12th and sometimes 14th post-operational month.

The course of the patient was observed separately during the hospital stay in the five following time periods as presented in figure 2:

a. Direct pre-operative evaluation
b. Operation
c. Post-operational intensive care

Table 1. Number of ESRD patients by questioning points in time.

Questioning points in time	Number of patients
Waiting list	
Patients who did not receive a transplant during study period	873
Patients who received a transplant during study period	150
Total number of patients on waiting list	1,023
Operated patients	
14 days after transplant	99
One month after transplant	105
Three months after transplant	98
Six months after transplant	96
One year after transplant	58
More than one year after transplant	26

Table 2. Socio-demographical characteristics of ESRD patients on the waiting list.

	Number of patients on the waiting list		Number of patients on the waiting list without transplant		Number of patients on the waiting list who had a transplant	
Sex						
Female	394	(38.5%)	327	(37.5%)	67	(44.7%)
Male	629	(61.5%)	546	(62.5%)	83	(55.3%)
	1,023	(100%)	873	(100%)	150	(100%)
Level of education						
Low (without training)	256	(26.0%)	211	(25.2%)	42	(28.6%)
Average (professional education)	574	(58.2%)	492	(58.9%)	82	(55.8%)
High (abitur, final school examinations, degree)	156	(15.8%)	133	(15.9%)	23	(15.6%)
Missing	37		37		3	
	1,023	(100%)	873	(100%)	150	(100%)
Monthly net income						
<1,500 DM	134	(14.6%)	113	(14.6%)	21	(14.9%)
1,500–2,500 DM	267	(29.1%)	233	(30.1%)	34	(24.1%)
2,500–3,500 DM	234	(25.6%)	190	(24.5%)	44	(31.2%)
>3,500 DM	281	(30.7%)	239	(30.8%)	42	(29.8%)
Missing	107	(11.2%)	98		9	
	1,023	(100%)	873	(100%)	150	(100%)

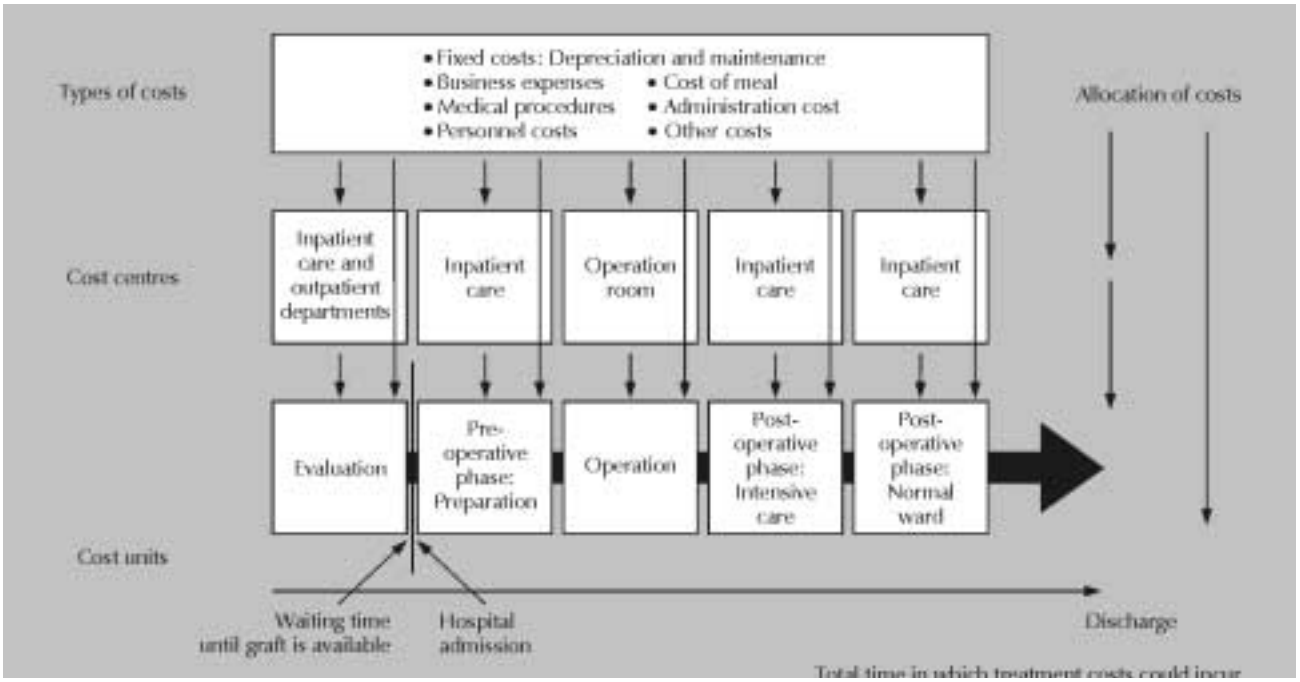

Figure 2. Cost considerations for abdominal transplant over time.

d. Post-operational treatment on the normal ward
e. Further operational interventions (not re-transplant).

While the personnel expenditure for the hospital service, the medical-technical service and the function service could be distributed over the individual cost centers (departments and wards), it was more difficult to calculate the costs of the medical service. In the field of surgery physicians and nurses are often placed not on one ward only but usually work at different places in the hospital. Therefore, an allocation of work time was necessary according to forms of clinical care (ward, operating room, other hospital departments). The proportional distribution of the work time was assessed with a questionnaire filled out by the members of the transplant medical team at the MHH.

The general administrative expenses and the costs of the hospital technical service were taken into consideration via a process cost estimate (surcharge calculation). Drugs, catheters and other medical goods were recorded on the computer-assisted logging system on the ward of the individual patient. The costs for the remaining medical needs came out of the total costs of each individual ward, from which the directly entered costs were subtracted. These costs were distributed among the patients on the ward according to the intensity of their care.

The personnel expenditure was calculated on the basis of costs per work-minute. The work-minute costs result from the quotient of the entire annual personnel expenditure and the annual actual work time which was determined with the accounted overtime. The evaluation of the application statistics was determined according to the personnel expenditure, after average expenditures of the MHH for the individual personnel groups (e.g. senior and junior doctors, nursing personnel etc.). The non-personnel costs were evaluated according to the average prices of 1993.

Capital (mainly for buildings and equipment) is usually paid by the Länder (states) and/or federal government and not by the hospitals. In order not to leave these important cost components unconsidered, they were estimated despite the selected study perspective thus deviating from real account practice.

RESULTS

In table 3 the direct average costs of the individual treatment phases with transplant recipients are presented.

One third of the total costs of a kidney transplant are taken up in the care of the patients on a normal ward. The transplant of the organ only covers up to 8% of the total costs. The drug costs are less than 15% both on the normal ward and in the intensive care unit. No substantial cost differences are observed between male and female patients. This points towards internal consistency of the cost registration, since differences from a medical point of view were not to be expected. Indirect costs result from the operative risk of a kidney transplant. On a long term basis the mortality rate on dialysis does not differ from that of kidney transplant, so that in the long run, compared with dialysis patients no productivity losses occur after kidney transplant. The survival status and transplant function data of the 169 patients of the study population, for 138 of whom pre-operative quality of life data were available for at least the first year. It was estimated that the risk of dying increases by 5% for the first year as a result of the transplant. The gross domestic product from dependent work in the year of reference 1993 amounted

Table 3. Cost of kidney transplant at the Hannover Medical School (n=77; in DM).

Treatment phase	Average value	Minimum	Maximum
Phase-independent costs	6,860.78	3,396.30	14,670.54
Evaluation costs	552.00	552.00	552.00
Costs of organ acquisition	12,000.00	12,000.00	12,000.00
Costs of pre-operative phase	478.00	478.00	478.00
Costs of operation	4,573.52	2,391.00	7,110.67
Costs of treatment in intensive care	11,749.82	946.15	163,111.85
Costs of treatment on normal ward	21,218.13	4,306.87	53,513.95
Costs of subsequent operations	2,547.77	0.00	28,988.53
Total costs	59,980.00	33,052.55	221,853.15

to a total of 1,535.9 billion DM. This corresponds to an amount of approximately 46,000 DM for each employed person.[14] The ratio of the employed persons to all persons on the waiting list for kidney transplants was 58.7%. This results in an average, mortality-related indirect cost of kidney transplant of 1,350 DM (gross domestic product from dependent work per employed person×activity rate of dialysis patient×mortality risk in the first year after transplant=46,000 DM×58.7%×0.05=1,350 DM).

In addition, at least 30 work days are lost due to the hospital stay and the subsequent recovery period. If this is evaluated in the same way as the average gross domestic product from dependent work, an additional 3,800 DM result, thus giving a total of 5,150 DM in indirect costs.

Since in Germany the majority of ESRD patients are cared for by means of hemodialysis, the calculations for this alternative form of treatment were limited in the cost-comparison analysis. For the medical treatment, about 50 DM per treatment are accounted for; in addition there is a non-personnel lump sum cost (essentially for depreciation of the dialysis equipment, rinsing solution, filter, hose system, needles and dressings) of approximately 340 DM in each case. With an average of 120 treatments a year, a total cost of 46,800 DM results. Apart from the actual costs of the dialysis treatment additional costs for routine studies, such as ECG, laboratory tests and in some cases additional drug costs (such as antiallergic drugs, lipid-lowering drugs or erythropoietin) accrue at regular intervals. On average, these amount to about 8,400 DM per year leading to total cost of 55,200 DM.

By definition, the indirect costs of dialysis result only from people who are employed or run their own businesses. An analysis of the patients on the waiting list in Hannover showed that of all the adults, the proportion of employed patients (not including housewives/husbands, pensioners and the unemployed) is 58.7%. This proportion is only 4% below the value for the total population. The difference between the two percentages was assumed as an approximate value for the economic productivity loss due to ESRD. Evaluated from an average gross income from dependent work this results in an average value of the indirect costs of ESRD of 1,840 DM caused annually by early retirement.

According to statistics from the compulsory health insurance scheme an average of 18 days are added for dialysis patients who miss work.[15] These are again evaluated from the average gross income from dependent work per persons employed and per day (1993: 126 DM) (23), so that the indirect costs of dialysis reach a total of 4,100 DM. This methodology for the evaluation of the illness-conditioned productivity losses at the place of work is also recommended in the currently valid German guidelines for health-economic evaluation.

Apart from the resources consumption for the hospital stay immediately after the operation, the costs of the subsequent immunosuppression and regular medical care are important for the long-term cost-comparison. The costs of immunosuppressive drugs amount to about 13,500 DM per year, the costs of laboratory tests and ambulatory care add another 500 DM per year.

The average survival rates of the patients and the organs are another important aspect in the cost-comparison. Chronic rejection leads to non-functioning of transplants and patients must be put on dialysis again. The average duration of survival of the organs could be extended by improved immunosuppression. The loss of function of the transplant in the course of the time can, however, not be excluded. From the data of Eurotransplant, which is responsible for the organ distribution in Germany, it can be derived that of the German patients who survived the first year after transplant, around 71% survive 10 years, in 48% of whom the transplant is still working. For the following calculations it was assumed that dialysis costs result for the survivors whose new kidney no longer functions.

For the long-term comparison of the costs of transplant and the respective alternative treatment a discounting interest rate of 5% was selected which was varied in analyses of sensitivity on 0 and 10%. Costs of 15,000 DM per year were assumed for the immunosuppression and the

subsequent care, and for dialysis 55,200 DM per year. Taking these parameters as a basis, it can be shown that already in the second year after transplant the dialysis costs exceed the costs of the operation. This result is independent of the interest rate used.

Cost-effectiveness analysis

As a measure for the success of a transplant, apart from the mortality rate or years of life gained, clinical parameters are also applicable, such as the result variables for the determination of the transplant function (e.g. creatinine and hemoglobin values), the number of rejection reactions as well as other variables (e.g. leucocyte count, blood sugar values or hepatitis serology). For economic studies however, those parameters which increase the benefit of the treatment for the patient directly are crucial. The cost-effectiveness of a transplant regarding clinical-chemical parameters will therefore not be further examined here. According to various epidemiological studies, kidney transplant (in comparison to dialysis) carries no additional mortality despite the operation risk. With kidney transplant, therefore, the denominator of the cost-effectiveness quotient is not influenced by the transplant. As practically no years of life are gained as a result of the transplant, a calculation of cost-effectiveness of kidney transplants versus dialysis is pointless.

In table 4 the values for the NHP are indicated, where lower values indicate a higher level of quality of life. Only 6.5% of all NHP questions were not answered by the subjects, indicating an acceptable response rate.

The average process of the quality of life with profile instruments can be best obtained graphically. In figure 3, some results of the NHP assessment are represented as profiles over the six dimensions.

The quality of life of ESRD patients is most effectively improved by a transplant with respect to the dimensions energy and sleep. Even after about three months the approximate values of the normal population are achieved and even partly exceeded in the process of the aftercare. For an economic evaluation of the quality of life effect on the patients a single-dimensional instrument is preferred to a profile instrument. For this reason the EuroQol was used in the study.

On the whole, the results of the quality of life measurement before and after kidney transplant show that the patients achieve, on average, a higher quality of life level as a result of the operation compared with waiting list patients. This was supported by the EuroQol index value, the visual analogue scale (VAS) and the NHP dimensions value and was independent of demographic criteria, although the values of the female patients remained lower than those of the men. The quality of life gain, as rates, is of special importance in the context of an economy study. For kidney transplant, compared to the dialysis treatment, there were no improvements in mortality. From the point of view of the patients a benefit was shown exclusively in the improvement of their living condition and quality, which can be quantitatively measured from the results of the preceding analyses. On the basis of this result, it will be necessary to return to the calculation of the cost utilisable value quotient.

Cost-utility analysis by means of QALYs

A discounting interest rate of 5% was set for the calculation of the QALYs gained. For dialysis patients a value of 0.76 had been determined and was used as a reference value. From the determined quality of life and survival data overall 0.76 QALYs per patient were gained as a result of kidney transplant (see table 5). If the discounting is not employed this value rises to 1.02, which is strongly dependent on the quality of life measure used. With use of the EuroQol VAS (instead of the EuroQol index value), the quality-corrected life years gained by kidney transplant rise to 1.48 with 5% discounting, or 1.98 without discounting. This result reacts highly sensitively to modifications of the discounting interest rate.

Thus, the cost-utility value quotient for dialysis amounts to 147,800 DM per QALY and for kidney transplant

Table 4. NHP values before and after kidney transplantation.

	Waiting list	14 days after transplant	1 month after transplant	3 months after transplant	6 months after transplant	1 year after transplant	15 months after transplant
Mobility	18	25	19	16	15	16	11
Pain	15	13	7	12	13	11	8
Energy	38	26	19	19	17	20	17
Sleep	32	34	22	13	13	9	5
Social isolation	9	6	3	4	5	3	2
Emotional reaction	19	16	12	9	8	6	6

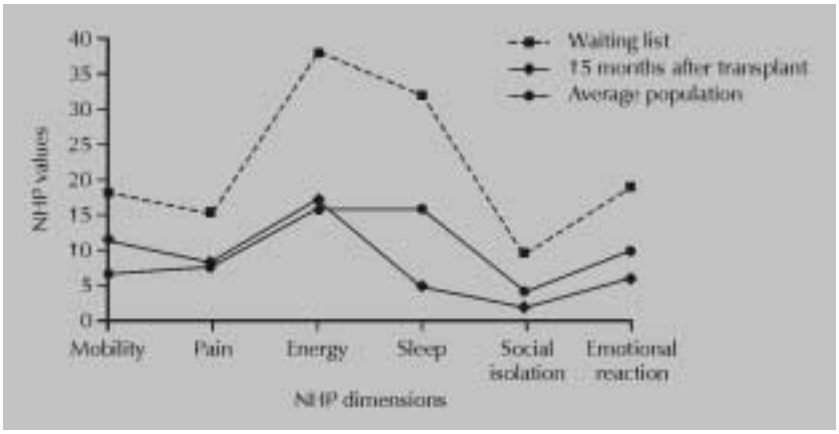

Figure 3. NHP profile before and after kidney transplant.

Table 5. QALYs calculation after kidney transplant.

Time after transplant	Survival rate patients (%)	Quality of life index	QALYs gained	Commulated QALYs
14 days	97	0.73	0.0012	0.0012
1 month	96	0.78	0.0012	0.0014
3 months	89	0.82	0.0063	0.0049
6 months	86	0.83	0.015	0.020
1 year	84	0.86	0.039	0.059
2 years	78	0.88	0.093	0.152
3 years	73	0.88	0.082	0.234
4 years	67	0.88	0.073	0.307
5 years	64	0.88	0.065	0.372
6 years	59	0.88	0.058	0.430
7 years	55	0.88	0.051	0.481
8 years	53	0.88	0.046	0.527
9 years	49	0.88	0.041	0.568
10 years	48	0.88	0.038	0.606
11 years	43	0.88	0.033	0.639
12 years	38	0.88	0.029	0.668
13 years	33	0.88	0.024	0.692
14 years	29	0.88	0.020	0.712
15 years	24	0.88	0.016	0.728
16 years	19	0.88	0.012	0.740
17 years	14	0.88	0.009	0.749
18 years	10	0.88	0.006	0.755
19 years	5	0.88	0.004	0.759
20 years	0	0.88	0.001	0.760

38,300 DM per QALY, since dialysis is more expensive and of lower value concerning the patient quality of life obtained.

DISCUSSION

Transplantation is today an established procedure in many countries, having gone far beyond the experimental phase. However, it remains a very cost-intensive intervention in the field of high-tech medicine, which puts pressure on the providers to show a substantial advantage in relation to other medical services. In the area of high-tech medicine where there are considerable costs involved, it is necessary to use scientific tools which can clarify the relative advantages of single alternative uses, since market processes only determine the balance of supply and demand to a limited extent. In Germany the national and social security authorities have the final decision regarding the allocation of permanently available resources.

Against this background, the subject of this study concerned primarily the question whether the current available tools for economic studies are suitable for supporting health care policy makers in the allocation of scarce resources (e.g. through the budgeting of whole health care sectors or via the legally enacted principle of the stability of the contribution rate). The unrestricted provision of high-tech medical procedures will eventually affect the provision of basic care to the general population. With limited resources available the rationing problem is thus permanently present and rational decision-making will greatly benefit from the availability of sufficient information about the costs and benefits of possible alternative uses.

The cost-analysis showed that the cost of kidney transplants are balanced out by the even higher costs of the alternative treatment, long-term dialysis. After completion of the second post-operational year, the costs of dialysis on average outweigh those of a transplantation plus the post-operative care costs. In the case of kidney transplants, this simple form of analysis is sufficient to demonstrate the economic advantage of a transplant, provided that a medically equal outcome for transplant and dialysis is assumed. Additionally, with the analysis of the transplant costs it can be shown that from an economic viewpoint, lump sum remuneration systems are entirely suitable in this medical area. Although the individual outcomes differ substantially, demographic factors were only slightly related to the results. Finally, it was possible to make a valid estimation of the cost of the hospital stay with the help of a phase-related cost assessment. This methodology avoids the principal problems which occur when using average daily costs.

It could be shown in addition that there is potential for kidney transplants to increase the quality of life of patients and to contribute to medium-term savings for the third-party payers. From the view both of the patient and of the health insurance system, therefore, an increase in the number of kidney transplants is to be welcomed without reservations. Compared to other medical services the cost-effectiveness of liver transplants is rather small regarding the quotient costs per life year gained and costs per QALY and is placed at the lower end of all well-known "league tables". Nevertheless, if it is the policy to further promote the transplant of livers, discussion is needed about alternative uses of scarce resources in the health service and the issue of rationing. Above all, a reduction in the high mortality after the operation would effectively improve the cost-benefit ratio, while the quality of life gains which are possible following a successful liver transplant are clear.

Regarding the method this study showed the suitability of the EuroQol for interventions which have a substantial effect on the patients' well-being. Since with this quality of life instrument the index value can be determined by means of two different methods (VAS, and EuroQol index value) an examination of the qualitative component of the QALY calculation is possible. The non-monetary benefit of kidney transplantations could not be judged on the basis of the reduced mortality, but was quantified in this study by means of QALY-gains. A kidney transplant leads to a significantly improved quality of life in most patients. This could be shown on the basis of the results derived from the profile and index instruments. The average value first drops briefly after the operation, then rises to a level which is close to that of the normal population. This is remarkable, considering that the patients must continue to take drugs regularly and remain under close medical observation and that there is the constant risk of rejection after the operation which could lead to the loss of the organ. Given these promising results and the increasingly restricted financial means devoted to health care, allocating mechanisms in this area should be based on rational choice and scientifically derived information. Studies like this can help to improve the decision-making process by making it more effective and more transparent.

ΠΕΡΙΛΗΨΗ

Κοινωνικοοικονομική αξιολόγηση της μεταμόσχευσης νεφρών στη Γερμανία

W. GREINER, K. OBERMANN, J.-M. GRAF v.d. SCHULENBURG
Centre for Health Economics and Health System Research, University of Hannover, Germany

Αρχεία Ελληνικής Ιατρικής 2001, 18(2):147–155

ΣΚΟΠΟΣ Η τεχνολογία της μεταμόσχευσης νεφρού έχει φτάσει σε πολύ υψηλό επίπεδο τις τελευταίες δεκαετίες και στις αναπτυγμένες χώρες έχει διαδοθεί και πέρα από τα πανεπιστημιακά νοσοκομεία. Ο αριθμός των μεταμοσχεύσεων που πραγματοποιούνται περιορίζεται από τη χαμηλή προσφορά μοσχευμάτων. Η ανάπτυξη νέων τεχνολογιών και μεθόδων στον τομέα, με το αντίστοιχο κόστος σε σχέση με τους περιορισμένους πόρους

για την υγεία, οφείλει να αποδεικνύει το κόστος αποτελεσματικότητας. Σε αυτό το άρθρο παρουσιάζεται μια μελέτη σχετική με το κόστος, την ποιότητα ζωής, καθώς επίσης και το κόστος αποτελεσματικότητας των μεταμοσχεύσεων νεφρού σε μια κύρια νοσηλευτική μονάδα στη Γερμανία. **ΥΛΙΚΟ-ΜΕΘΟΔΟΣ** Στην έρευνα μετείχαν 1.149 ασθενείς σε τελικό στάδιο νεφρικής ανεπάρκειας καταχωρημένοι στη λίστα αναμονής της Ιατρικής Σχολής στο Αννόβερο, από τους οποίους ζητήθηκε να απαντήσουν στα ερωτηματολόγια EuroQol (EQ-5D) και Nottingham Health Profile (NHP). Από τους ασθενείς αυτούς της λίστας αναμονής, οι 199 υποβλήθηκαν σε εγχείρηση μεταμόσχευσης κατά τη διάρκεια της χρονικής περιόδου των 16 μηνών που πραγματοποιήθηκε η έρευνα. Το κόστος για την περίοδο της παραμονής στο νοσοκομείο καταγράφηκε πλήρως για 77 ασθενείς. Τελικά, πραγματοποιήθηκε σύγκριση του άμεσου και έμμεσου κόστους της αιμοκάθαρσης και του άμεσου και έμμεσου κόστους της μεταμόσχευσης, καθώς επίσης και ανάλυση χρησιμότητας (QALYs). **ΑΠΟΤΕΛΕΣΜΑΤΑ** Το μέσο άμεσο κόστος της μεταμόσχευσης των νεφρών είναι 59980 γερμανικά μάρκα (DM) τον πρώτο χρόνο, ενώ το μέσο έμμεσο κόστος ανέρχεται σε 5150 DM για την ίδια περίοδο. Το κόστος των ανοσοκατασταλτικών φαρμάκων και της μετεγχειρητικής φροντίδας είναι 15006 DM ανά έτος. Η μεταμόσχευση νεφρού παρουσιάζει εξοικονόμηση χρηματικών πόρων 2 χρόνια μετά την επέμβαση (σε αντίθεση με την αιμοκάθαρση). Επιπλέον, η ποιότητα ζωής των μεταμοσχευμένων ασθενών είναι σαφώς καλύτερη. **ΣΥΜΠΕΡΑΣΜΑΤΑ** Η μεταμόσχευση των νεφρών είναι αποτελεσματική για τους ασθενείς στο τελευταίο στάδιο νεφρικής ανεπάρκειας, τόσο όσον αφορά την ποιότητα ζωής τους, όσο και σχετικά με το κόστος που απαιτείται για τη θεραπεία.

Λέξεις ευρετηρίου: Αιμοκάθαρση, Γερμανία, Κόστος-ωφελιμότητα, Μεταμόσχευση νεφρού, QALYs

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Corresponding author:

W. Greiner, University of Hannover, Königsworther Platz 1, 30167 Hannover, Germany
e-mail: wg@ivbl.uni-hannover.de