Short report

Absence of economic barriers does not reduce disparities in the access to renal transplantation: A population based study in a region of central Italy

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Renal transplantation in people with end stage renal disease (ESRD) is the most successful treatment in terms of survival and quality of life. The rate of renal transplantation in the Lazio region of central Italy is much lower than that in other industrialised countries. In 1997, the new transplantation rate was 19.8 per million population (pmp), compared with rates of 44 and 42 pmp, respectively, for the USA and Spain.¹ Recent studies carried out in the USA have found differences in the access to, and candidacy for, renal transplantation that are associated with non-clinical factors such as sex, race, and income.²⁻⁴ However, in countries such as Italy, where the National Health Service (NHS) provides renal transplants at no cost to the person, and where socioeconomic characteristics would thus not be expected to play a part in the level of access, this issue has been not deeply explored.

The objective of this study was to evaluate the effect, on access to renal transplantation among patients undergoing dialysis in the Lazio Region, of level of education, as a component of socioeconomic status^{5 6} related to the capability to choose between different treatments, and the ability to find the best opportunities to benefit from the NHS.

Methods

The source of data was the Dialysis Register of the Lazio Region, which collects individual forms filled in by the personnel of the dialysis units, from all patients undergoing dialysis in this region.⁷ On the Register's data collection form, renal transplantation is listed among the possible reasons for discontinuing dialysis.

All 1177 patients aged 18-64 years, who began dialysis in the period from 1 July 1994 to 30 June 1998 were enrolled in a cohort and follow up lasted until the end of treatment (renal transplantation or death).

Patients who were not eligible for renal transplantation, because of serious vascular, infectious or psychotic disease or cancer, were excluded from the analysis (n=132). We did not exclude from the analysis 11 subjects not enrolled in a waiting list because they would have refused a renal transplantation, in that the refusal was not attributable to medical reasons. In all, 1045 subjects were analysed in our study.

We used the Kaplan-Meier method to compare the cumulative incidences of transplanta-

tion among different groups, defined according to educational level (elementary/junior, high school, and college degree). We evaluated the effect of educational level on access to renal transplantation with a Cox proportional hazards multivariate regression, adjusting for sex, age at onset of ESRD, area of residence, primary disease causing ESRD (glomerulonephritis, diabetes, vascular diseases, other causes), presence of selected comorbid conditions, presence of antibodies anti-hepatitis C virus (HCV), type of dialysis unit (public versus private), and type of dialysis performed (haemodialysis and peritoneal dialysis). The outcome variable was the time (in months) from the first dialysis session to the first renal transplantation. Patients who died before the end of the analysis period (n=82), and those who were transferred to other dialysis centres out of Lazio region (n=31), were censored at their death date or at the date of their last dialysis session. All other subjects were undergoing dialysis in Lazio at the end of follow up.

Results

Of the patients studied, 64.2% were male; 54.6% began dialysis when they were older than 50 years of age; 22.5% had a high school diploma; and 11% had a college degree; 11.1% had diabetes as the primary cause of ESRD, and 9.1% were anti-HCV positive. A total of 144 patients (13.8%) underwent renal transplantation.

Figure 1 illustrates the cumulative probability of transplantation in the 36 months after the first dialysis session, by level of education. During the first 10 months of treatment, we observed no important differences among the groups. Beginning in the 11th month, the differences between patients with a college degree or those with a high school diploma, and those with a lower educational level began to progressively increase.

From the multivariate analysis (data not shown), educational level was strongly associated with access to renal transplantation: compared with patients with an elementary school/junior educational level, those with a high school diploma or college degree had a higher probability of undergoing transplantation (RR=2.53, 95% CI 1.67, 3.82 for patients with a high school degree, and RR=2.71, 95% CI 1.67, 4.39 for those with a college degree).

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(a list of the participants of the register is shown at the end of the article)

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Figure 1 Cumulative probability of transplantation by educational level.

Among the potential confounders studied, only older age was associated with a significantly lower probability of transplantation (RR=0.41, 95% CI 0.26, 0.66 for patients over 50).

Conclusions

Our data show that educational level plays an independent part in the rate of performance of renal transplantation, even when taking into account some important demographic, clinical, and health care setting factors.

It is probable that lower educational level may be associated with late referral for treatment and therefore significant delays in the transplant work up process that may have been initiated pre-dialysis in those referred earlier. Regarding this issue, we did not find any significant difference in the percentage of low creatinine clearance level (<5 mg/l) at the start of dialysis, as an indicator of late referral for dialysis, among subjects with different educational level. Furthermore, education may be a surrogate for other factors such as likelihood of being identified as a transplant candidate. As our register does not collect information on the waiting list timing, we are not able to investigate the possible role of this factor.

Finally, from a public health perspective, it is of extreme concern that in an industrialised country providing transplantation free of charge, the absence of economic barriers does not reduce the level of discrimination in the access to a life saving treatment.

Conflicts of interest: none.

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