Late social rehabilitation after kidney transplantation in childhood

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Late social rehabilitation after kidney transplantation in childhood

- Patient and graft survival has steadily improved in pediatric kidney recipients over the last 30 years; however, the data on quality of life and social outcome of patients having reached adulthood are still scanty.

- Therefore, we studied the social outcome of a cohort of 266 children transplanted before 1986, younger than 16 years at the time of transplantation and older than 20 yrs at the time of the study.
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Patients I

• From 1/1973 to 12/1985, 388 kidney transplantations were performed in 366 children younger than 16 yrs
• Among them, 54 (15%) had died before age 20 and 46 (12%) had left the country or were lost to follow-up
• The long-term social outcome of the 266 remaining patients older than 20 yrs is the focus of this study.
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Patients II

Population characteristics (n=266)

- 156 males and 110 females
- mean age at ESRD: 9.9 ± 6 yrs
- mean duration of dialysis: 2.3 ± 1.6 yrs
- mean age at transplantation: 11.9 ± 4 yrs
- mean age at the study: 31.7 ± 5.4 yrs
- mean final height: males: 156.6 ± 9.4 cms (-3 SD)
  females: 147.7 ± 8.7 cms (-2.5 SD)
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**Age at ESRD**

\[ m = 9.9 \pm 6 \text{ yrs} \]
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Age at the study

$\bar{m} = 31.7 \pm 5.4$ yrs
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Duration of follow-up

- 16-19 years
- 20-24 years
- 25-29 years
- 30-31 years

Graph showing the duration of follow-up in different age groups.
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**Methods**

- Among the 266 patients, **22 (9%)** have some mental impairment and were studied separately.
- The other **244** were asked (directly or by letter or phone call) to complete, on a voluntary basis, a simple questionnaire about:
  - the most recent mode of treatment
  - their cursus of education
  - their profession and present or past activity
  - their family situation: «marital status» and offspring, lodging

- Information was available for **94%** of patients
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Results I

Mode of treatment at the time of the study

→ 77.5 % with functioning graft
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Results II

Education and diploma

![Graph showing education and diploma distribution for males and females. The y-axis represents percentages up to 50%. The x-axis represents males and females. Different categories include Bac + 5, Bac + 2 yrs, Baccalaureat, vocational, and primary school.]
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Education II

Education and diploma: comparison with the French population

Data INSEE 1991
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Mean age at ESRD in different levels of education

Years

Bac + 5
Bac + 2
Bac
vocational
primary

ns
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Mean duration of dialysis in different levels of education

- Bac + 5
- Bac + 2
- Bac
- Vocational
- Primary

years

ns
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Mean final height in different levels of education

<table>
<thead>
<tr>
<th>Education</th>
<th>Mean Final Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bac + 5</td>
<td>158</td>
</tr>
<tr>
<td>Bac + 2</td>
<td>156</td>
</tr>
<tr>
<td>Bac</td>
<td>154</td>
</tr>
<tr>
<td>Vocational</td>
<td>152</td>
</tr>
<tr>
<td>Primary School</td>
<td>150</td>
</tr>
</tbody>
</table>

P < 0.001
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**Education-VI**

Height and education level over the years

![Bar chart showing height and education level over the years](chart.jpg)

- bac and more
- vocational
- primary sch
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Education - Summary

• The **educational level** was clearly lower than in the French population of same age: 27% (vs 4%) were at the lowest level and 31% (vs 43%) had passed the «baccalaureat» (French high school diploma).

• **Educational level** was not related to age at ESRD or duration of dialysis but was significantly correlated to final height, whatever the years when RRT was started.

• However, height and educational level improved slightly over the years.
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Results - III : Present activity

Type of activity (238 patients)

- Full time work: 53%
- Part time: 18%
- Studying: 16%
- Unemployed: 6%
- Pension: 7%

-> 76 % « active »
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## Occupation

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professionals, managers</td>
<td>21</td>
<td>(11%)</td>
</tr>
<tr>
<td>technical qualified job</td>
<td>65</td>
<td>(36%)</td>
</tr>
<tr>
<td>poorly qualified work</td>
<td>60</td>
<td>(33%)</td>
</tr>
<tr>
<td>intermittent jobs</td>
<td>4</td>
<td>(2%)</td>
</tr>
<tr>
<td>protected workshop</td>
<td>5</td>
<td>(3%)</td>
</tr>
<tr>
<td>Mothers at home</td>
<td>6</td>
<td>(3%)</td>
</tr>
<tr>
<td>Still in education or training</td>
<td>18</td>
<td>(10%)</td>
</tr>
</tbody>
</table>
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Activity-III

Proportion of active patients according to age and sex

Comparison with national data

- 25-29 yrs
- 30-34 yrs
- 35-39 yrs

- males
- females

INSEE m

INSEE f
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Activity-IV

Activity according to the age at ESRD

- Pension
- Unemployment
- Partial time
- Full time

- < 6 years: 47
- 6-9 years: 87
- 10-12 years: 59
- 13-16 years: 52
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Activity according to final height (SD)

![Graph showing activity levels (full time, part time, pension) for different height ranges (< -2.5 SD, > -2.5 SD). The graph indicates a significant difference (p < 0.02) between the groups.]
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**Activity - Summary**

- The activity rate (76%) was slightly lower than in the general population: 65% (vs 72%) had paid employment; of them, 82% worked full-time and 18% (24% of females and 15% of males) worked part-time.

- Only 6.5% (vs 10.5%) were unemployed; however as much as 18% received a disability pension.

- The level of activity was not related to the age at ESRD or at grafting, but was related to the final height, with less full-time activity in patients with height inferior to – 2.5 SD.
Rate of marital life according to age groups
Comparison with national data

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Results IV - Social life - I

Rate of marital life according to age groups
Comparison with national data

Age groups (years)
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Social life II

Offspring

Proportion of males and females with children according to age
Late social rehabilitation after kidney transplantation in childhood **Social life-III**

**Residence according to age at the time of the study**

![Bar chart showing residence according to age at the time of the study.](chart.png)

- **c/o parents**
- **independents**
- **institution**

**Age group (years)**
- 20-25
- 26-29
- 30-35
- 36-39
- 40-44

**%**
- 100
- 80
- 60
- 40
- 20
- 0
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Social life—Summary

• The rate of marital life increased from 8% in the age group 20–25 yrs to 71% at >40 yrs
• 39/149 males (26%) had a marital life and 12 (8%) had children
• 48/95 females (50%) had a marital life and 26 (27%) had at least 1 child
• Their residence was at the parents’ home in 46% and in an independent lodging in 54%; the rate of independent housing increased from 7% at 25 yrs to 95% at 40 yrs.
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Social life—Summary II

- These data reveal a significant delay in setting up adult social life in these patients, particularly in males.
- As a whole, our results are in agreement with those of other recent reports (Kärrfeld & Berg 2008, Rees 2007, Groothoff 2005, Rosenkranz 2005).
- Finally, we studied the most determining factors of the social life in our patients.
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### Influence of gender

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age ESRD</td>
<td>9.5</td>
<td>9.9</td>
<td>ns</td>
</tr>
<tr>
<td>Dialysis duration &gt; 3y</td>
<td>23%</td>
<td>22%</td>
<td>ns</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td>ns</td>
</tr>
<tr>
<td>Marital life</td>
<td>26%</td>
<td>51%</td>
<td>0.001</td>
</tr>
<tr>
<td>Offspring</td>
<td>8%</td>
<td>27%</td>
<td>0.001</td>
</tr>
<tr>
<td>Independant residency</td>
<td>49%</td>
<td>61%</td>
<td>0.07</td>
</tr>
</tbody>
</table>
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**Associated factors: logistic analysis**

**Marital life**

<table>
<thead>
<tr>
<th>Factor</th>
<th>yes</th>
<th>no</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>34.2</td>
<td>30.3</td>
<td>0.0001</td>
</tr>
<tr>
<td>Age ESRD</td>
<td>11.3</td>
<td>8.8</td>
<td>0.0001*</td>
</tr>
<tr>
<td>Dialysis duration</td>
<td>3.2</td>
<td>3.5</td>
<td>ns</td>
</tr>
<tr>
<td>Education level</td>
<td></td>
<td></td>
<td>ns</td>
</tr>
<tr>
<td>Height</td>
<td>156.3</td>
<td>151.2</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

(*: age and age at ESRD correlated)
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**Associated factors: logistic analysis**

**Residence**

<table>
<thead>
<tr>
<th></th>
<th>independent</th>
<th>parent house</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>34.3</td>
<td>28.7</td>
<td>0.00001</td>
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<td>150.8</td>
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(*: age and age at ESRD correlated)
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Role of final height on educational level, marital life and residence, according to the years of RRT

Educational level

Independent lodging

Marital life
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Conclusions I

- 83% of children who received a kidney graft before 1986 reached adult age and 77% had a functioning graft in 2001.

- Their educational level was lower than national average, but their rate of activity (76%) was quite satisfying.

- However their social life was largely delayed, reaching the national average for the proportion of marital life and independent residence at # 40yrs of age.
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Conclusions II

- Final height was the most prominent factor associated with good educational level, professional achievement and normal social life.
- This emphasizes the key role of statural growth in the outcome of children with ESRD.
- It may be expected that the children treated early with growth hormone will have a better social outcome.
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Outcome of the mentally disabled patients

- **n = 22** (15 females, 7 males)
- **Activity**:
  - 5 full-time employments
  - 1 part-time work (protected workshop)
  - all receive disability pension
- **Residence**:
  - 17 in parents’ home
  - 5 in specialised institutions
- **Marital life**: 0