Social and Professional Determinants for Withdrawing and Withholding Chronic Dialysis Among Polish Pediatric Nephrologists, Neonatologists and Anesthesiologists*

Abstract

Objectives. The aim of this multicenter nationwide study was to reveal the influence of social and non-medical factors on qualifying children to commence chronic dialysis, to withhold it or to withdraw it. It was also important to compare the real and postulated significance of particular factors that were taken under consideration by pediatric nephrologists, neonatologists and anesthesiologists (intensivists).

Material and Methods. The survey was addressed to the whole population of specialists dealing with chronic renal replacement therapy for children at key pediatric nephrology centers in Poland.

Results. Most of the respondents accepted that withholding or withdrawing chronic dialysis is an alternative in certain clinical situations. The statistical analysis showed that the physicians’ social characteristics had little influence on their preferences when deciding about withholding or withdrawing chronic dialysis.

Conclusions. The study showed that non-medical factors did not influence physicians’ attitudes to the problem of withholding or withdrawing chronic dialysis (Adv Clin Exp Med 2014, 23, 5, 791–796).

Key words: children, chronic dialysis, dialysis withholding/withdrawing, pediatric nephrology, non-medical determinants.

In the last several years, significant progress in the technical aspects of dialysis have created opportunities for applying renal replacement therapy even in very difficult clinical cases (low birth weight children, multiple organ failure, multiple malformations). The decision to commence dialysis depends not only on nephrologists, but also on other specialists – neonatologists and anesthesiologists working in intensive care units (ICUs) [1, 2]. In this unique clinical setting, the problem of futile therapy often arises [3–5]. The situation is particularly difficult when the patient is a child who does not understand the treatment procedures and manifests refusal or physical resistance [3, 6–8].

When clear national guidelines for particular medical problems/diseases have not been implemented, physicians are forced to make decisions about commencing, continuing or discontinuing therapy on the basis of their own experience and data from the available literature. Do some social factors have an impact on those decisions? In opinion of specialists, are the proper criteria being considered?

The aim of this study was to describe the influence of selected social factors on opinions about non-commencement or withdrawal of chronic dialysis in children with CKD stage 5 chronic kidney disease (CKD) among Polish pediatric nephrologists, neonatologists and anesthesiologists from different medical centers dealing with dialysis for CKD.

* The study was supported by the Polish Society for Pediatric Nephrology.
Material and Methods

An anonymous survey was designed as a multicenter analysis including all 14 pediatric nephrology and dialysis centers in Poland. The Polish Society of Pediatric Nephrology gave appropriate approval for the study. Fully anonymous paper questionnaires were mailed to the 14 centers with a request to deliver the forms to each specialist (nephrologist, neonatologist and anesthesiologist-intensivist) employed there who was involved with chronic dialysis in neonates or children. The estimated number of personnel this covered was 250 (about 100 nephrologists, 100 anesthesiologists and 50 neonatologists).

The survey, containing 29 questions (24 closed-ended and 5 open-ended), was designed with the cooperation of physicians, a sociologist and a psychologist. The overall response rate for the questionnaires distributed was 56% (140/250), which is quite a good result, according to Polish research experiences [9]. The highest number of responses was observed among nephrologists (74/100).

A detailed description of the research sample is presented in the Table 1. The following social and professional characteristics of the respondents were collected: sex, marital status, religion, number of children, specialization, clinical experience and professional position.

The statistical analysis was carried out using Statistica 7 PL statistical software package and Microsoft Excel. The normality of distribution was tested by the Kolmogorow-Smirnow test. Student’s t-test (p = 0.05) was performed in order to compare arithmetic means for specified sub-groups. Finally, Spearman’s rank correlation coefficient was used.

Results

The basic empiric finding was that the vast majority of the physicians surveyed (88%) stated that there are some situations that justify withdrawing/withholding chronic dialysis. No significant difference in the structure of the answers from the different medical specialists was observed (Fig. 1). The vast majority of respondents that had already participated in the process of decision-making regarding the withdrawal/withholding of dialysis (90%) would repeat the decision they had made.

The study aimed to identify various elements that are considered in decisions regarding qualifying patients for dialysis treatment. A list of 9 possible factors was presented to the respondents. Their task was to describe the actual significance of each factor on a scale from 1 to 9, where 1 was “completely meaningless” and 9 was “very important”. The factors specified were: (1) the patient’s age; (2) concomitant diseases; (3) mental and growth

![Fig. 1. Are there situations that justify not commencing chronic dialysis?](image)

Table 1. Detailed characteristics of the study group

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>97 female (69%)</td>
<td>43 male (31%)</td>
</tr>
<tr>
<td>Marital status</td>
<td>119 married</td>
<td>21 single</td>
</tr>
<tr>
<td></td>
<td>or in a longterm relationship (85%)</td>
<td>(widowed, divorced, single, separated) (15%)</td>
</tr>
<tr>
<td>Religion</td>
<td>124 believers (89%)</td>
<td>13 non-believers (10%)</td>
</tr>
<tr>
<td>Parenthood</td>
<td>117 with children (84%)</td>
<td>23 no children (16%)</td>
</tr>
<tr>
<td>Professional position</td>
<td>96 junior doctors or physicians (69%)</td>
<td>44 in management (31%)</td>
</tr>
<tr>
<td>Age</td>
<td>arithmetic means</td>
<td>47 y. (28–66 y.)</td>
</tr>
<tr>
<td>Overall professional experience</td>
<td>22 y. (2–45 y.)</td>
<td></td>
</tr>
<tr>
<td>Experience as a specialist</td>
<td>5 y. (1–38 y.)</td>
<td></td>
</tr>
<tr>
<td>Experience in dialysis</td>
<td>9 y. (0–32 y.)</td>
<td></td>
</tr>
</tbody>
</table>
Determinants for Withdrawing and Withholding Chronic Dialysis

retardation; (4) the parents’ opinion; (5) the possibility of future transplantation; (6) the overall prognosis; (7) socio-economic issues; (8) legal issues; (9) the department’s usual practice. The statistical analysis of the results (arithmetic mean) showed that the most important factors were concomitant diseases, overall prognosis and the parents’ opinion. The factors of the least actual importance were socio-economic and legal issues.

The respondents were asked not only about the actual importance of the specified elements, but also about their hypothetical ideal importance. The catalog of factors listed above was duplicated, which allowed the researchers to assess Spearman’s rank correlation coefficient. The results was $\rho = 0.9 \ (p = 0.001)$. This means that the rankings in both questions were very similar, indicating that in the opinion of Polish pediatric nephrologists, neonatologists and anesthesiologists, proper criteria are used in the decision-making process qualifying patients for dialysis treatment, and no essential changes need to be implemented (Fig. 2).

The role of the physicians’ social and professional characteristics as a potential influence on the decision-making process was also considered. Student’s t-test was used to compare the arithmetic means for specified socio-professional groups. Do sex, age, religion etc., influence physicians’ views of the hypothetical ideal importance of the factors considered in the decision-making process qualifying patients for dialysis? If so, the means calculated for those factors would not be equal. In the analysis, the following characteristics were considered: (1) the respondent’s professional position (manager vs. physician); (2) whether the respondent had ever taken part in the decision-making process regarding withdrawing/withholding chronic dialysis (yes or no); (3) the respondent’s sex (male or female); (4) whether the

Fig. 2. What factors have and should have an influence on the decision to withdraw/withhold dialysis? (from 1 to 9, where 1 is “completely meaningless” and 9 is “very important”) [28]
Discussion

Pediatric nephrologists have recently begun to confront the problem of withdrawing/withholding chronic dialysis [3, 10–13]. Many authors postulate that this difficult decision might be accepted in selected cases with a very poor prognosis and multiple concomitant malformations or health problems [14–18]. The decision to withdraw or not to commence a life-sustaining but futile therapy is difficult for every clinician who is limited by ethical and legal regulations [5, 19, 20]. Professional societies in North America and other Western countries have prepared guidelines not directly related to withdrawing dialysis, but related to the non-commencement of any futile therapy [16, 19, 21, 22]. At the time of the analysis presented in the current article, there were no such recommendations in Poland, but they were issued later by the Polish Society of Pediatricians [23]. The authors of this paper are convinced that this fact does not diminish the importance of the results obtained, which refer to physicians’ opinions and attitudes and to social (or even subjective) determinants.

A team of French researchers obtained results similar to those presented in this paper. Key clinical factors influencing decisions to withdraw/withhold dialysis were (in order of importance) the possibility of further development, mental retardation, consequences for the family, additional malformations and the parents’ will [14]. The study reported in this paper showed that the same factors were the crucial ones, but multiple malformations, prognosis and the parents’ opinion had equal importance. However, the French study described only nephrologists’ attitudes [14], while the study presented in this paper provided an opportunity to investigate and compare the opinions of representatives of different specializations (nephrologists, anesthesiologists-intensivists and neonatologists) dealing with the same group of patients. This may be considered as a strong point of the study.

The problem of non-medical factors that may influence physicians’ decisions has been inspiring research studies for a couple of decades [24–27]. Usually the results have shown that non-medical elements play a vital role in decision-making processes. However, non-medical elements were often conceptualized as non-personal and objective, related mainly to the way health care is organized in a particular country. For example, in one study conducted in the USA [24] the list of non-medical factors associated with higher rates of hospitalization included hospital occupancy rates and low per capita income in the county. In the survey presented in this paper, Polish physicians reported themselves to be resistant to the influence of non-medical factors. Nevertheless, it should be emphasized that in the presented survey the role of personal characteristics – non-medical factors of a subjective status – was investigated, rather than the role of health-care organizations. This may explain the differences in the general conclusions of the present study and the US study.

As reported in a previous publication [28], medical factors were conclusive among the physicians surveyed in the study reported here. The primary decision-making responsibility should rest with a multidisciplinary team in which a nephrologist should play the most crucial role. In the present analysis, all 3 groups of specialists – nephrologists, anesthesiologists-intensivists and neonatologists – reported similar attitudes to the problem of withholding/withdrawing chronic dialysis in children. Moreover, the detailed Student’s t-test proved that social/subjective factors did not influence the attitude of investigated physicians to the problem of withholding/withdrawing of chronic dialysis in children.

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Table 2. Student's t-test: factors that may influence physicians during the decision-making process qualifying patients for chronic dialysis

<table>
<thead>
<tr>
<th>Factor</th>
<th>Professional position</th>
<th>Had decided in past</th>
<th>Sex</th>
<th>Religion</th>
<th>Age</th>
<th>Marital status</th>
<th>Parenthood</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mean physician</td>
<td>mean-manager</td>
<td>t-test (empiric)</td>
<td>P</td>
<td>decision yes</td>
<td>decision no</td>
<td>t-test (empiric)</td>
</tr>
<tr>
<td>Patient's age</td>
<td>4.2</td>
<td>3.0</td>
<td>2.22</td>
<td>0.028</td>
<td>3.8</td>
<td>3.4</td>
<td>0.74</td>
</tr>
<tr>
<td>Concomitant diseases</td>
<td>7.0</td>
<td>6.9</td>
<td>0.34</td>
<td>0.732</td>
<td>7.0</td>
<td>6.8</td>
<td>0.70</td>
</tr>
<tr>
<td>Mental and growth retardation</td>
<td>5.4</td>
<td>5.5</td>
<td>0.25</td>
<td>0.800</td>
<td>6.1</td>
<td>5.0</td>
<td>2.20</td>
</tr>
<tr>
<td>Parents' opinion</td>
<td>5.4</td>
<td>6.4</td>
<td>1.94</td>
<td>0.054</td>
<td>6.3</td>
<td>5.5</td>
<td>1.50</td>
</tr>
<tr>
<td>Possibility of future</td>
<td>6.3</td>
<td>5.5</td>
<td>1.56</td>
<td>0.122</td>
<td>6.0</td>
<td>5.6</td>
<td>0.73</td>
</tr>
<tr>
<td>transplantation</td>
<td>6.7</td>
<td>6.3</td>
<td>0.91</td>
<td>0.366</td>
<td>6.6</td>
<td>6.3</td>
<td>0.54</td>
</tr>
<tr>
<td>Overall prognosis</td>
<td>3.2</td>
<td>3.2</td>
<td>0.04</td>
<td>0.965</td>
<td>3.3</td>
<td>3.1</td>
<td>0.35</td>
</tr>
<tr>
<td>Socio-economic issues</td>
<td>4.4</td>
<td>4.7</td>
<td>0.54</td>
<td>0.590</td>
<td>4.5</td>
<td>4.3</td>
<td>0.33</td>
</tr>
<tr>
<td>Legal issues</td>
<td>4.0</td>
<td>3.5</td>
<td>0.73</td>
<td>0.466</td>
<td>4.0</td>
<td>3.6</td>
<td>0.72</td>
</tr>
</tbody>
</table>

Hypothesis H0 – no differences between arithmetic means. Hypothesis H1 – statistically significant differences between arithmetic means. Significance level – 0.05
If the empiric value of the t-test is bigger than the t critical value = 1.98, then H0 should be rejected.
References


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