

# Comparison of Quality of Life in Children with Chronic Kidney Disease Undergoing Peritoneal Dialysis Versus Hemodialysis at Regional Public Hospital Dr. Soetomo Surabaya

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## Abstract

This research was aimed at finding out about maintaining pediatrics Chronic Kidney Disease patient with dialysis Quality of life (QOL) by analyzing and comparing quality of life in children with hemodialysis (HD) and peritoneal dialysis (PD) with its factor at Regional Public Hospital Dr. Soetomo Surabaya. To maintain the survival of pediatric CKD patients, renal replacement therapy (RRT), such as Hemodialysis (HD) and continuous ambulatory peritoneal dialysis (CAPD), is carried out. A cross sectional study that collected secondary data from 25 pediatrics patient's medical history aged between 5-18 years old and primary data using PedsQL 4.0 Generic Core Scale questionnaire to collect health related quality of life. Normality test using Shapiro-Wilk, and comparison using Mann-Whitney test. Of the 25 children, the number of female patients is slightly more than male (52%), the majority age group is 13-18 years (64%), the majority came from outside Surabaya (76%). The longest duration of therapy is more than 6 months (64%), and the type of therapy is dominated by HD (68%). Analysis of differences in quality of life according to parent report for the median total score of CKD patients with HD is significantly lower (63.04 (45.65-81.52)) than CAPD (71.73 (60.87-84.78)) (( $P=0.000$ )). According to child report for the median total score of CKD patients with HD is lower (58.69 (43.48-85.87)) undergoing CAPD (65.21 (61.96-85.87)) ( $P=0.000$ ). The median total score for male patients (63.58 (60.87-68.48)) is lower than that for female patients (80.43 (75-84.78)) ( $P=0.021$ ) in the parent-report. The median total score for children aged 13-18 undergoing HD (70.65 (52.17-85.87)) is significantly higher than that for children aged 5-12 undergoing HD (68.75 (37,5-93.75)) ( $P=0.039$ ). In terms of duration of therapy and domicile, there are no significant differences.

**Keywords :** *chronic kidney disease; quality of life; dialysis; hemodialysis; peritoneal dialysis; children.*

## 1. Introduction

Chronic Kidney Disease (CKD) is a decline or loss of kidney function over more than three months, progressively leading to End-Stage Renal Disease (ESRD). Chronic Kidney Disease (CKD) in children has become a global health issue. CKD significantly impacts children's health and quality of life. It not only affects their health but also has long-term implications for their future lives [8].

To sustain the lives of pediatric CKD patients, dialysis therapy needs to be implemented as a form of renal replacement therapy (RRT). Dialysis is divided into hemodialysis and peritoneal dialysis. Hemodialysis (HD) for children with chronic kidney disease uses a machine to filter blood, effectively and safely removing uremic

toxins and excess fluid [1]. Peritoneal dialysis (PD) involves using a catheter to introduce dialysis fluid into the peritoneal cavity, where metabolic waste products and excess fluid are removed [17].

In literature, data on the prevalence of CKD in children is still scarce [14]. The prevalence of CKD in Indonesia is 0.38% or 3.8 individuals per 1000 population. Based on research by the Indonesian Nephrology Association (PERNEFRI) in 2006, the prevalence of CKD is 12.5%. The highest prevalence of kidney disease is found in North Kalimantan at 0.64% and the lowest in West Sulawesi at 0.18% [16].

Peritoneal dialysis is the most commonly used dialysis modality for children worldwide [18]. In pediatric patients, PD is preferred as therapy because maintaining vascular access routes in HD is challenging, and children can engage in activities such as attending school during the day [1]. Patients undergoing HD experience more frequent and severe HD-related complications compared to adults. During HD, children often experience acute hemodynamic instability, contributing to morbidity and mortality [1]. On the other hand, PD is associated with risks of peritonitis and catheter-related infections (Tiewsoh et al., 2021). Both HD and PD require significant lifestyle changes, including dietary restrictions and fluid management, which can be challenging for children and their families [19].

According to data, 220 children with End-Stage Renal Disease (ESRD) underwent dialysis as renal replacement therapy, collected from 16 teaching hospitals in Indonesia in 2017 [16]. The data shows a consistent increase in the number of new and active ESRD patients undergoing dialysis. The number of new patients tripled compared to 2017 [15]. The mortality rate for children with ESRD receiving dialysis therapy is 30-150 times higher than the general pediatric population, and the life expectancy for children undergoing dialysis is 50 years lower than that of healthy children [5].

Quality of life (QOL) is a comparison between an individual's expectations and their actual experiences. Quality of life in CKD patients reflects the quality of treatment aimed for, as the treatment process involves physical, psychological, and social aspects [22]. One of the most widely accepted instruments for measuring Health-Related Quality of Life (HRQOL) in children and adolescents is the Pediatric Quality of Life Inventory Generic Core (PedsQL) 4.0 [20]. This questionnaire is easy to use and has been widely used worldwide for both healthy children and those with medical conditions [15].

The PedsQL questionnaire is one of the instruments used to assess the quality of life in children and includes a generic module used for 25,000 children and their parents, as well as disease-specific modules. The PedsQL questionnaire has good reliability (Cronbach Alpha = 0,88 children-self report, parent proxy-report= 0,90) with a wide age range of 2-18 years [21]. In a previous study conducted the PedsQL 4.0 was used to measure the QOL aspect in pediatric CKD patients undergoing HD and PD showed that children with CKD, especially those undergoing dialysis, have lower HRQOL scores compared to healthy children. The choice of therapeutic modalities, such as HD or PD, was reported to negatively impact the quality of life of children, particularly in the physical health aspect [8].

There is limited research comparing the quality of life of pediatric CKD patients undergoing HD versus CAPD. Patients undergoing HD have lower HRQOL scores compared to those undergoing PD [8]. Several factors can influence the quality of life of CKD patients, including age, gender, level of knowledge, comorbidities such as anemia, depression, and social support. Quality of life comparison in children with CKD at Dr. Soetomo General Hospital in Surabaya is currently unavailable, highlighting the need for such research. This study aims to provide an overview of the differences in the quality of life of pediatric CKD patients undergoing HD and CAPD. The quality of life scores of these children can serve as a reference for increasing awareness among parents and healthcare professionals to improve healthcare services and optimize the quality of life for children affected by or experiencing complications from CKD.

## 2. Materials and Method

The research type is analytical observational, conducted using medical records of pediatric chronic kidney disease (CKD) patients at Dr. Soetomo General Hospital and the PedsQL 4.0 questionnaire. The aim is to analyze the differences in quality of life between pediatric CKD patients undergoing peritoneal dialysis (PD) and hemodialysis (HD). A cross-sectional design was used, utilizing medical records and the PedsQL 4.0 questionnaire to study quality of life differences between PD and HD in pediatric CKD patients at Dr. Soetomo General Hospital. The independent variable in this study is the type of dialysis administered to pediatric chronic kidney disease (CKD) patients aged 5-18 years. The dependent variable is the quality of life of these pediatric CKD patients within the same age range.

The study population includes pediatric dialysis patients at the Hemodialysis Installation, pediatric inpatient installation and outpatient installation in Dr. Soetomo General Hospital, Surabaya. The sample size is total sampling, involving pediatric CKD patients aged 5-18 years at the Hemodialysis Installation of Dr. Soetomo General Hospital. Inclusion Criteria:

- a. Pediatric CKD patients aged 5-18 years.
- b. Consent to participate in the research.

Exclusion Criteria:

- a. Patients who have been undergoing dialysis for less than 3 months.

Total sampling was used, with respondents being the parents of the children and the pediatric CKD patients at the Hemodialysis Installation pediatric inpatient installation and outpatient installation of Dr. Soetomo General Hospital. The materials utilized in this study include primary data obtained through the PedsQL 4.0 Generic Core questionnaire and secondary data derived from medical records. The instruments employed consist of the medical records of pediatric CKD patients at the Hemodialysis Installation of Dr. Soetomo General Hospital, as well as the PedsQL 4.0 Generic Core questionnaire, which assesses physical, emotional, social, and school functioning. This study has been ethically approved by the Health Research Ethics Committee of Dr. Soetomo General Hospital, with the certificate number 1406/KEPK/VIII/2019.

Categorical data were describe as percentage, for variables such as gender, type of therapy, domicile (origin). Age and duration of therapy was described by mean and standard deviation (mean $\pm$ SD). The normality distribution was using the Saphiro-Wilk test. If the data distribution is not normal, median with minimum and maximum were used to describe the QOL subscales. The comparisons between some category such as, type of therapy, gender, age, duration of therapy, and regional origin (domicile) category were performed using the Mann-Whitney-Test using IBM SPSS software version 23.

## 3. Results and Discussion

### 3.1 General Overview of the Sample

The sampling technique used in this study is random sampling. The total sample size consists of 25 pediatric CKD patients, with 17 patients undergoing hemodialysis and 8 patients undergoing Continuous Ambulatory Peritoneal Dialysis (CAPD). The 25 respondents are categorized based on gender, age, type of therapy, duration of therapy, domicile (origin), and quality of life aspects.

Table 1. Sample Overview

| Characteristics                                          | Total (n=25)        |                     |
|----------------------------------------------------------|---------------------|---------------------|
| Gender                                                   | Male                | 13 (52%)            |
|                                                          | Female              | 12 (48%)            |
| Age (mean $\pm$ SD)                                      | 13.44 $\pm$ 2.75    |                     |
|                                                          | 5-12                | 9 (36%)             |
|                                                          | 13-18               | 16 (64%)            |
| Type of Therapy                                          | HD                  | 17 (68%)            |
|                                                          | CAPD                | 8 (32%)             |
| Duration of Therapy (mean $\pm$ SD)                      | 11.84 $\pm$ 9.64    |                     |
|                                                          | $\leq$ 6 months     | 9 (36%)             |
|                                                          | >6 months           | 16 (64%)            |
| Domicile                                                 | Outside Surabaya    | 19 (76%)            |
|                                                          | Surabaya            | 6 (25%)             |
| Quality of life (children-self report), Median (min-max) | Total score         | 64,13 (43,48-85,87) |
|                                                          | Physical health     | 68,75 (28,13-93,75) |
|                                                          | Psychosocial health | 63,33 (43,33-93,33) |
| Quality of life (parent proxy-report), Median (min-max)  | Total score         | 66,30 (45,65-84,78) |
|                                                          | Physical health     | 65,62 (37,5-96,88)  |
|                                                          | Psychosocial health | 68,33 (48,33-86,67) |

The total of male patients is almost the same as the female patients. Age groups were dominated by 13-18 (64%), majority of the patients is undergoing HD therapy (68%), duration of the therapy is dominated by >6 months (64%) and most patients come from outside Surabaya. The median score of parent-report and children report is not looking good. The total score and every aspect shows that quality of life in CKD children patients dialysis is bad (child-report cutoff point: 69.7, parent-report: 65.4) This means there is a decrease in quality of life in CKD children patients undergoing HD and CAPD.

### 3.2 Comparison of QOL between Children with CKD Undergoing HD ver CAPD

Table 2. Comparison of QOL between CKD patients on HD and CAPD according to Parent-report and children-report.

| Quality of life             | HD<br>Median (min-max) | CAPD<br>Median (min-max) | P     |
|-----------------------------|------------------------|--------------------------|-------|
| <b>Parent proxy-report</b>  |                        |                          |       |
| Total score                 | 63.04 (45.65-81.52)    | 71.73 (60.87-84.78)      | 0,000 |
| Physical health             | 62.5 (37.5-81.52)      | 68.75 (59.38-96.88)      | 0,000 |
| Psychosocial health         | 68.3 (48.33-83.33)     | 70.83 (58.33-86.67)      | 0,000 |
| <b>Children-self report</b> |                        |                          |       |
| Total score                 | 58.69 (43.48-85.87)    | 65.21 (61.96-85.87)      | 0,000 |
| Physical health             | 50 (28.13- 93.75)      | 70.31 (62.50-93.75)      | 0,000 |
| Psychosocial health         | 63.33 (43.33-85)       | 63.33 (58.33-93.33)      | 0,000 |

From parent proxy-report, all quality of life domains have a  $P < 0.05$ , then there was a significant differences in the quality of life scores between HD and CAPD according to the parent proxy-report. Parent reported median total scores for CKD patients underwent HD were significantly lower (63.04 (45.65-81.52)) compared to CAPD patients (71.73 (60.87-84.78)) ( $P = 0.000$ ). The median physical health score of HD patients were significantly lower (62.5 (37.5-81.52)) compared to CAPD patients (68.75 (59.38-96.88)) ( $P = 0.001$ ). And the psychosocial health score of HD patients was lower (68.3(48.33-83.33)) compared to CAPD patients CAPD (70.83 (58.33-86.67)) ( $P = 0.000$ ).

From children-self report, all Qol domains also have  $P < 0.05$ , meaning there was a significant differences in the quality of life scores of children who underwent HD and CAPD according to children-self report. Children-reported median total for CKD patients undergoing HD were significantly lower (58.69 (43.48-85.87)) compared to CAPD patients (65.21 (61.96-85.87)) ( $P = 0.000$ ). The median physical health score of HD patients were significantly lower (50 (28.13- 93.75)) compared to CAPD patients (70.31 (62.50-93.75)) ( $P = 0.000$ ). And there was no difference between the medians of the for psychosocial health score of HD a patients, but there were significantly difference between HD patients (63.33 (43.33-85)) with CAPD 63.33(58.33-93.33) ( $P = 0.000$ ).

### 3.3 Comparison of QOL in Children with CKD Undergoing Dialysis According to Gender

Table 3. Comparison of QOL in pediatric CKD patients with HD according to gender based on parent-report and children-report.

| Quality of life             | Male<br>Median (min-max) | Female<br>Median (min-max) | P     |
|-----------------------------|--------------------------|----------------------------|-------|
| <b>Parent proxy-report</b>  |                          |                            |       |
| Total score                 | 71.19 (46.74-81.52)      | 53.2 (45.65-80.43)         | 0.082 |
| Physical health             | 65.62 (37.5- 84.38)      | 53.12 (37.5-84.38)         | 0.266 |
| Psychosocial health         | 75.83 (51.67-83.33)      | 61.67 (43.33-80)           | 0.090 |
| <b>Children-self report</b> |                          |                            |       |
| Total score                 | 70.10 (43.48-85.87)      | 54.34 (44.57-80.43)        | 0.289 |
| Physical health             | 60.93 (28.14-93.75)      | 50 (34.38-84.38)           | 0.885 |
| Psychosocial health         | 75.8 (51.67-85)          | 63.33 (43.33-80)           | 0.123 |

Table 3 shows that there was no difference in QOL in parent-report and children-report of CKD patients with HD by gender group.

Table 4. Comparison of QOL between pediatric CKD patients with CAPD according to age group based on parent-report and children-report.

| Quality of life             | Male<br>Median (min-max) | Female<br>Median (min-max) | P     |
|-----------------------------|--------------------------|----------------------------|-------|
| <b>Parent proxy-report</b>  |                          |                            |       |
| Total score                 | 63.58 (60.87-68.48)      | 80.43 (75-84.78)           | 0.021 |
| Physical health             | 64.06 (59.38-70)         | 75 (62.5-96.88)            | 0.191 |
| Psychosocial health         | 62.5 (58.33-68.33)       | 80.83 (73.33-86.67)        | 0.021 |
| <b>Children-self report</b> |                          |                            |       |
| Total score                 | 63.58 (61.96- 66.30)     | 82.60 (64.13- 85.87)       | 0.058 |

|                     |                     |                      |       |
|---------------------|---------------------|----------------------|-------|
| Physical health     | 68.75 (62.5- 74)    | 71.87 (65.63- 93.75) | 0.381 |
| Psychosocial health | 61.67(58.33- 63.33) | 82.5 (63.33- 93.33)  | 0.028 |

Table 4 shows a significant differences in the total quality of life score for pediatric CKD patients underwent CAPD according to parent report. Based on parent reports, the median total score for male CKD patients with CAPD (63.58 (60.87-68.48)) were lower compared to female patients (80.43 (75-84.78)) (P=0.021). The psychosocial health scores of male CKD patients with CAPD (62.5 (58.33-68.33)) were significantly lower than female patients (80.83 (73.33-86.67)) (P=0.021). There was no significant difference the total score and physical health of male and female in CKD patients with CAPD based children-self report.

Psychocosal health in children report also shows a significant difference. The psychosocial health scores of male CKD patients with CAPD (61.67(58.33- 63.33)) were significantly lower than female patients (82.5 (63.33- 93.33)) (P=0.028). There was no significant difference between male and female CKD patients with CAPD according to the total score and physical health based on children-self report.

### 3.4 Comparison of QOL in Children with CKD with Dialysis According to Age Group

Table 5. Comparison of QOL between pediatric CKD patients with HD according to age group based on parent-report and children-report.

| Quality of life             | 5-12<br>Median (min-max) | 13-18<br>Median (min-max) | P     |
|-----------------------------|--------------------------|---------------------------|-------|
| <b>Parent proxy-report</b>  |                          |                           |       |
| Total score                 | 62.5 (45.65-78.26)       | 63.04 (45.65-81.52)       | 0.546 |
| Physical health             | 51.56 (37.5- 65.63)      | 62.5 (37.5- 84.38)        | 0.130 |
| Psychosocial health         | 68.33 (50-83.33)         | 68.33 (48.33-83.33)       | 0.840 |
| <b>Children-self report</b> |                          |                           |       |
| Total score                 | 68.4 (65.22-75)          | 70.65 (52.17-85.87)       | 0.039 |
| Physical health             | 62.5 (59.38-75)          | 68.75 (37.5-93.75)        | 0.049 |
| Psychosocial health         | 68.33 (61.67-80)         | 65 (53.33-85)             | 0.056 |

Based on table 5, there was no significant difference between the total score, physical health and psychosocial health according to age group in HD patients based on parent proxy-report. In children-self report the median total score of children aged 13-18 undergoing HD (70.65 (52.17-85.87)) were significantly higher than that of children aged 5-12 undergoing HD in the child report (68.75 (37.5- 93.75)) (P=0.039). The physical health of children aged 13-18 who underwent HD based on child report (68.75 (37.5-93.75)) were significantly higher than that of children aged 5-12 who underwent HD 62.5 (59.38-75) (P= 0.049). Based one children-self report, there was no significant difference in the psychosocial health of CKD patients with HD.

Table 6. Comparison of QOL between pediatric CKD patients with CAPD according to age group based on parent-report and children-report.

| Quality of life             | 5-12<br>Median (min-max) | 13-18<br>Median (min-max) | P     |
|-----------------------------|--------------------------|---------------------------|-------|
| <b>Parent proxy-report</b>  |                          |                           |       |
| Total score                 | 62.5 (45.65-78.26)       | 77.17 (60.87-84.78)       | 0.230 |
| Physical health             | 51.56 (37.5- 65.63)      | 71.87 (62.50-96.88)       | 0.227 |
| Psychosocial health         | 68.33 (50-83.33)         | 71.33 (58.33-86.67)       | 0.539 |
| <b>Children-self report</b> |                          |                           |       |
| Total score                 | 68.4 (65.22-75)          | 77.17 (60.87-84.78)       | 0.655 |
| Physical health             | 62.5 (59.38- 75)         | 71.87 (73.33-86.67)       | 0.230 |
| Psychosocial health         | 68.33 (61.67-80)         | 68.33 (62.67-80)          | 0.655 |

Table 6 shows that there was no difference in QOL in parent-report and children-report quality of life of CKD patients by gender group. There was also no difference in QOL in children-self report in CKD patients with CAPD by gender group.

### 3.5 Comparison of Quality of Life in Children with CKD Undergoing Dialysis According to Duration of Therapy

Table 7. Comparison of QOL between pediatric CKD patients with HD according to duration of therapy based on parent proxy-report and children-self report.

| Quality of life             | ≤6 months<br>Median (min-max) | > 6 months<br>Median (min-max) | P     |
|-----------------------------|-------------------------------|--------------------------------|-------|
| <b>Parent proxy-report</b>  |                               |                                |       |
| Total score                 | 66.84 (45.5-79.35)            | 63.04 (47.83-81.52)            | 0.920 |
| Physical health             | 62.5 (37.5- 71.88)            | 62.5 (37.50-84.38)             | 0.801 |
| Psychosocial health         | 68.33 (50-83.33)              | 68.33 (48.33-80)               | 0.578 |
| <b>Children-self report</b> |                               |                                |       |
| Total score                 | 52.71 (43.48-80.43)           | 61.95 (47.83-85.87)            | 0.227 |
| Physical health             | 43.75 (28.13-81.25)           | 53.12 (37.5-93.75)             | 0.207 |
| Psychosocial health         | 57.50 (50-85)                 | 65 (43.33-81.67)               | 0.420 |

Based on table 7, there was no difference in quality of life in parent-report and children-report of CKD patients with HD according to duration of the therapy.

Table 8. Comparison of QOL between pediatric CKD patients with CAPD according to duration of therapy based on parent proxy-report and children-self report.

| Quality of life             | ≤6 months<br>Median (min-max) | > 6 months<br>Median (min-max) | P     |
|-----------------------------|-------------------------------|--------------------------------|-------|
| <b>Parent proxy-report</b>  |                               |                                |       |
| Total score                 | 73.36 (61.96-84.78)           | 71.73 (60.87-83.70)            | 0.739 |
| Physical health             | 79.68 (62.5- 96.88)           | 68.75 (59.38-78.13)            | 0.615 |
| Psychosocial health         | 72.5 (63.33-81.67)            | 70.83 (58.33-86.67)            | 0.739 |
| <b>Children-self report</b> |                               |                                |       |
| Total score                 | 73.91 (61.96-85.87)           | 65.21 (63.04-85.87)            | 0.866 |
| Physical health             | 81.25 (68.75- 93.75)          | 70.31 (62.5-75)                | 0.399 |
| Psychosocial health         | 70 (58.33-81.67)              | 63.33 (61.67-93.33)            | 0.500 |

Based on table 7, there was there was there was no difference in quality of life in parent-report and children-report of CKD patients with CAPD according to duration of the therapy.

### 3.6 Comparison of Quality of Life in Children with CKD Undergoing Dialysis according to Regional Origin.

Table 9. Comparison of quality of life between pediatric CKD patients with HD according to regional origin based on parent proxy-report and children-self report.

| Quality of life             | Outside Surabaya<br>Median (min-max) | Surabaya<br>Median (min-max) | P     |
|-----------------------------|--------------------------------------|------------------------------|-------|
| <b>Parent proxy-report</b>  |                                      |                              |       |
| Total score                 | 63.04 (45.65-81.52)                  | 61.95 (52.17-78.26)          | 1,000 |
| Physical health             | 65.62 (37.5- 84.38)                  | 56.35 (50-65.63)             | 0.649 |
| Psychosocial health         | 68.33 (48.33-83.33)                  | 65.83 (51.67-83.33)          | 0.820 |
| <b>Children-self report</b> |                                      |                              |       |
| Total score                 | 58.69 (44.57-85.87)                  | 58.69 (43.48-70.65)          | 0.427 |
| Physical health             | 53.12 (34.38- 93.75)                 | 50 (28.13-81.25)             | 0.609 |
| Psychosocial health         | 63.33 (48.33-85)                     | 59.16 (51.67-73.33)          | 0.691 |

Based on table 9, there was there was no difference in quality of life aspect in parent-report of outside Surabaya and Surabaya in CKD patients with HD. There was also no difference in children-report of outside Surabaya and Surabaya of therapy in CKD patients with HD.



Table 10. Comparison of quality of life between pediatric CKD patients with CAPD according to regional origin based on parent proxy-report and children-self report.

| Quality of life             | Outside Surabaya<br>Median (min-max) | Surabaya<br>Median (min-max) | P     |
|-----------------------------|--------------------------------------|------------------------------|-------|
| <b>Parent proxy-report</b>  |                                      |                              |       |
| Total score                 | 71.73 (45.65-81.52)                  | 71.19 (65.22-77.17)          | 0.699 |
| Physical health             | 60.87 (37.5- 84.38)                  | 68.75 (59.38-78.13)          | 1,000 |
| Psychosocial health         | 84.78 (48.33-83.33)                  | 70.83 (63.33-83.33)          | 0.699 |
| <b>Children-self report</b> |                                      |                              |       |
| Total score                 | 70.31 (65.63-93.75)                  | 71.19 (63.04-79.35)          | 0.736 |
| Physical health             | 65.21 (61.96-85.87)                  | 67.18 (62.5-71.88)           | 0.399 |
| Psychosocial health         | 62.5 (58.33-93.33)                   | 73.33 (63.33-83.33)          | 0.399 |

Based on table 10, there was there was no difference in quality of life outside Surabaya and Surabaya in CKD patients with CAPD. There was also no difference in total score, physical health, and psychosocial health in children-self report of outside Surabaya and Surabaya of therapy in CKD patients with CAPD.

## 4. Discussion

### 4.1 CKD Quality Of Life

Quality of life consists of several aspects: physical functioning, emotional functioning, social functioning, and school functioning. These aspects are evaluated using three scores: total score, physical health, and psychosocial health. The cutoff scores for assessing quality of life using the PedsQL are 65.4 for parent reports and 69.7 for children-reports. In this study, the PedsQL scores for parent reports (HD) fell below 65.4 in the physical functioning aspect, indicating poor quality of life for children with CKD in this domain. For parent reports (CAPD), the physical functioning scores also indicated poor quality of life for children with CKD.

PedsQL scores for child reports (HD) were below 69.7 in both physical and psychosocial functioning. In contrast, child reports (CAPD) showed better outcomes. Scores above the cutoff indicate that the quality of life of children with CKD is relatively normal, with only slight reductions compared to healthy children of the same age. Emotional and social aspects of quality of life in children with chronic illnesses are associated with ethnic, sociocultural, and socioeconomic status [9].

The physical health domain for CAPD patients had a higher average than for HD patients. When comparing both modalities, physical health was significantly better for children with CKD undergoing CAPD than those undergoing HD ( $P=0.000$ ). Despite this, the average physical health scores did not meet the cutoff points (parent report: 65.4; child report: 65.9). Children with chronic diseases typically experience a decline in physical functioning due to factors such as anemia, skeletal muscle weakness, and reduced exercise tolerance associated with dialysis or kidney transplantation.

Psychosocial functioning is divided into emotional, social, and school functioning. Poor emotional functioning in children with CKD is often due to prolonged therapy. Emotions can affect a child's behavior, as their behavior is highly dependent on their mood. Additionally, fear of recurrence, anxiety, and sadness can

contribute to poor scores. A decline in emotional functioning affects not only the child's quality of life but also that of their parents or caregivers.

Children with CKD frequently need to visit doctors, undergo hemodialysis in hospitals, or be hospitalized, leading to frequent school absences. Many children with CKD struggle with concentration, memory, and completing schoolwork or homework. Therefore, the quality of life of the psychosocial is considered poor. PedsQL 4.0 questionnaire used to assess the quality of life of children with CKD undergoing HD and CAPD, based on both child-reports and parent-reports. This study found significant differences in the quality of life assessments between the reports of children with CKD and their parents at Dr. Soetomo General Hospital. Previous research also noted differences in the quality of life between children with CKD undergoing HD and those undergoing CAPD, according to both child and parent reports [4]. In this study, the quality of life scores for CAPD were higher and classified as good since they surpassed the cutoff points for both reports.

Similarly, previous studies have indicated that the quality of life for children with CKD undergoing peritoneal dialysis is better than for those undergoing hemodialysis [4]. Another significant difference in this study was that parent-reports for female children with CKD undergoing CAPD were significantly higher than for male children undergoing CAPD. This contrasts with Alhusaini's (2019) findings, which indicated that male patients had higher quality of life scores. In this study, the psychosocial scores for female children with CKD, both undergoing HD and CAPD, were significantly higher than for males.

#### 4.2 Maintaining the Quality of Life for Children

In this study, child-reports of quality of life were better than parent-reports. Conversely, Longo et al. (2017) mentioned that children often report better quality of life compared to their parents' assessments. Children need to be supported by parents/caregivers and the medical team to continuously improve their quality of life. Chronic illness inevitably lowers the quality of life of affected children compared to healthy peers [20]

Dialysis therapy has side effects, and complications from the disease can further degrade the child's quality of life. Some studies suggest that light exercise under supervision can help improve the quality of life for children with CKD [3]. While physical activity is not a priority for children with CKD and may be limited, significant improvements in muscle strength have been observed in some patients after physical training. Unlike adults, physical exercise can be challenging and often not feasible for many children with CKD [18]

Psychosocial issues are also likely to occur in CKD patients undergoing dialysis. Fear of therapy, recurrence, and lack of social interaction can lead to anxiety and depression in patients. Despite medical advances, CKD can adversely affect the psychosocial aspects (social and emotional functioning) of children's lives. Doctors need to recognize psychosocial problems, adopt a supportive role, and collaborate with families. Treatment adherence will enhance if we as understand and aware of the child's condition. Additionally, monitoring psychological status and referring to mental health services will enable comprehensive care. Caring for children with CKD should involve and manage psychosocial factors to facilitate their transition into adult life [2]

#### Conclusion

1. There is a significant difference of quality of life in children with chronic kidney disease undergoing peritoneal dialysis compared to hemodialysis, according to both parent and child reports.
2. The quality of life of children with chronic kidney disease undergoing peritoneal dialysis is better than that of those undergoing hemodialysis.
3. HD and CAPD in CKD children losses Quality of life and also between the different variable category, such as age, dialysis type.

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