Quality of Life in Patients with Chronic Kidney Disease Managed with or without Dialysis: An Observational Study

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Key Points
- Patients on conservative kidney management reported no significant decline in quality of life domains at 12 months or in quality of life scores at 18 months.
- Appropriately supported patients on conservative kidney management can maintain quality of life.

Abstract

Background Emerging research suggests that quality of life (QOL) outcomes, such as maintenance of independence, rather than length of life, are the main priority for many patients with end stage kidney disease (ESKD). There is therefore a need to focus on whether QOL for older patients on dialysis differs significantly from conservative kidney management (CKM). This study aimed to describe the QOL trajectory for patients with ESKD, comparing CKM to dialysis and transplantation.

Methods This retrospective, observational study included all patients who attended the Kidney Supportive Care Clinic at St. George Hospital and had one or more EuroQOL (EQ5D5L) questionnaires between July 2014 and May 2020. Kruskal–Wallis tests compared QOL scores between groups at baseline and 12 months. Wilcoxon signed rank tests compared QOL scores from baseline to 18 months within groups. Chi-squared tests compared proportions of patients reporting problems with QOL “domains” between the groups at baseline and 12 months. McNemar’s tests compared changes in proportions of patients reporting problems with QOL “domains” within groups from baseline to 12 months.

Results A total of 604 patients had an initial survey. At baseline, patients who were managed conservatively reported more problems with mobility, self-care, and ability to perform usual activities. However, pain/discomfort and anxiety/depression were no higher in the conservative population. CKM patients reported no significant decline in mobility, self-care, ability to perform their usual activities, pain/discomfort, or anxiety/depression after 12 months or in QOL scores after 18 months compared with the other groups.

Conclusions QOL scores or symptom burdens did not change significantly in patients receiving CKM compared with dialysis, suggesting that appropriately supported CKM can maintain patients’ QOL.

Introduction

CKD affects older adults at disproportionately higher rates. In Australia, 42% of those aged ≥75 years have a diagnosis of CKD (1), and older individuals (aged ≥65 years) have the highest incidence of ESKD commencing RRT (2). Similarly, in the United States, 38% of adults aged ≥65 years have CKD—more than three times the prevalence of the 45–64 years age group (12%) (3). Traditional decision making around RRT for ESKD has prioritized prolonging life. However, a survival advantage may no longer be present in patients aged ≥80 years initiating RRT compared with those on conservative kidney management (CKM) (4–6). Furthermore, even in younger patients (aged 70-75 years), the survival advantage of RRT was significantly reduced if they had significant comorbid burden (5–7).

Emerging research suggests that quality of life (QOL) outcomes, such as physical independence, rather than length of life are the main priorities for many patients (8–10). In one study of patients approaching ESKD with a median age of 63 years, patients were willing to forgo 7 months of additional life expectancy to reduce the number of required visits to hospital and forgo 15 months of life expectancy to increase their ability to travel (11). Dialysis regret has

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also been reported in a significant proportion of maintenance dialysis patients (9,12,13). Within the first 6 months of starting dialysis, functional decline is common in patients aged ≥65 years (14). One study of community-dwelling elderly patients showed that almost 50% of elderly patients experienced decline in functional status or death within the first 6 months after initiating dialysis (15), with an even higher risk in older and frailer patients (14–16).

On this basis, there is a need to focus on QOL considerations in patients with CKD, particularly the QOL of older comorbid patients on RRT, and those being managed conservatively without dialysis.

The primary aim of this study was to describe the QOL trajectory in patients with ESKD on various treatment pathways, who attended our Kidney Supportive Care clinic for symptom management. These included patients with ESKD managed with CKM, peritoneal dialysis, and hemodialysis, and selected patients who received kidney transplantation yet still had the need for expert management of their ongoing symptoms.

**Materials and Methods**

We conducted a single-center, retrospective observational study in patients with ESKD. This study (2020/ETH01586) was assessed by the South Eastern Sydney Human Research Ethics Committee and deemed low/negligible risk, and not requiring independent ethics review. Reporting of this study complies with the STROBE guidelines.

**Study Population**

At St. George and Sutherland Hospitals, all RRT (dialysis and transplant) and CKM patients going through the Kidney Supportive Care (KSC) clinic undergo routine 6-monthly QOL assessment using the EuroQOL (EQ5D5L) survey. Patients are referred to the KSC service by their treating nephrologists. In our study, patients on the CKM (nondialysis) pathway are defined as those with an eGFR of <15 ml/min per 1.73 m², having discussed treatment options and made the decision to pursue conservative management for progressive renal failure rather than RRT. They are automatically referred to KSC, which provides comprehensive symptom assessment and multidisciplinary support, staffed by a palliative care specialist, nephrology trainee, senior renal/palliative care nurses, a dietitian, and a social worker. In our service, all patients are outpatients referred by nephrologists. So, our CKM group consists of CKD patients who have anticipated further renal decline rather than those who have stable CKD as a comorbidity. Choosing CKM as a treatment pathway means that death from renal failure has been discussed as a likely scenario, although not all patients died from a renal cause. Patients on RRT identified as needing additional KSC support are referred to the clinic by their nephrologist or renal nurse. Patients on a RRT pathway but who had not yet commenced RRT were excluded. For all patients, the KSC clinic is provided separately from and in addition to the patient’s usual nephrology care. All patients with one or more completed questionnaires between July 2014 and May 2020 were included.

**Data Collected**

Data were collected from the KSC clinic database and the service’s electronic health record. Baseline data included age, sex, date of birth, country of birth, highest level of education, primary cause of renal failure, treatment pathway (CKM, hemodialysis, peritoneal dialysis, or transplantation), date of commencement of RRT, date of death, Karnofsky functional performance score, eGFR (calculated by the Modification of Diet in Renal Disease formula for nondialysis patients), Charlson comorbidity score, and comorbidities (congestive heart failure, peripheral vascular disease, cerebrovascular disease, dementia, chronic obstructive pulmonary disease, connective tissue disease, peptic ulcer disease, diabetes mellitus, hemiplegia, leukemia, malignant lymphoma, solid tumor, liver disease, and AIDS), symptom burden (using the Palliative Care Outcome Scale-Renal [IPOS-Renal] [17] questionnaire), assessment of “domains” of QOL (mobility, ability to perform self-care, ability to perform usual activities, pain/discomfort and anxiety/depression), and self-perceived QOL on a numerical scale from 0 to 100 (EQ-VAS scores, using the EQ5D5L questionnaire) (18). Baseline timepoint for conservative patients was the first KSC clinic date, and for RRT patients, the date of the first survey received during the study period.

**Statistical Analyses**

Statistical analyses were performed with IBM SPSS Statistics for Windows v26.0 (IBM Corp, Armonk, NY). A P value of <0.05 was regarded as significant. Missing data were excluded from analysis.

Continuous variables were summarized with means±SD for normally distributed data and medians±interquartile range (IQR) for non-normally distributed data. Comparisons of baseline characteristics between modalities were performed with the chi-squared test for categorical variables and Kruskal–Wallis test for continuous non-normally distributed variables.

Kruskal–Wallis tests were used to compare EQ-VAS scores between patients managed with each pathway (conservative care, peritoneal dialysis, hemodialysis, and transplantation) at baseline and at 6- and 12-month time points after entry.

Wilcoxon signed rank tests were used to compare the difference in EQ-VAS scores from baseline to 12-month follow-up for each pathway.

Chi-squared tests were used to compare the prevalence of patients reporting difficulty with QOL domains between the different pathways at baseline and at 6- and 12-month time points after entry.

McNemar’s tests were used to compare changes in the prevalence of patients reporting difficulty with QOL domains for each pathway from baseline to 12-month follow-up. These statistical tests were chosen because we were limited by small numbers at 12-month follow-up.

Kaplan–Meier curves were generated to estimate survival of patients in each pathway, and comparison of survivals was done with the log-rank test.
Results

Baseline Characteristics

We included 604 ESKD patients with an initial survey, of whom 365 (60%) were men (Table 1). One hundred and forty-four (24%) received CKM, 265 (44%) received hemodialysis (in-center, satellite, and home hemodialysis), 59 (9%) received peritoneal dialysis, and 136 (23%) received a kidney transplant. Median eGFR at entry was 13 ml/min per 1.73 m² for the patients managed conservatively.

Patients managed conservatively had a median age of 82 years, older than patients in the other groups, and had a higher Charlson comorbidity score at baseline compared with those managed with hemodialysis, peritoneal dialysis, or transplantation (median score 9 versus 7, 7, and 4, respectively; \( P<0.001 \)). At baseline, CKM patients also had a higher prevalence of congestive cardiac failure, cerebrovascular disease, chronic obstructive pulmonary disease, and cancer, with a significantly lower functional assessment (Karnofsky) score and lower self-perceived QOL assessment (EQ-VAS) score compared with those managed with hemodialysis, peritoneal dialysis, or transplantation (median score 50 versus 70, 72.5, and 80, respectively; \( P<0.001 \)). The most common primary cause of renal disease in the overall population was diabetes mellitus (144 patients; 24%).

Survival

Over a median follow-up of 13.4 months per patient, more patients died in the CKM group (\( n=81; 56\% \)) than in any other group (\( n=70 \) [26%] patients receiving hemodialysis; \( n=14 \) [24%] patients receiving peritoneal dialysis; and

| Variable | Conservative, \( N=144 \) | Hemodialysis, \( N=265 \) | Peritoneal Dialysis, \( N=59 \) | Transplant, \( N=136 \) |
|----------|------------------|------------------|------------------|------------------|
| Age at first survey (yr), median (IQR) | 82 (77–87) | 69 (59–77) | 69 (60–77) | 57 (50–64) |
| Sex, \( n \) (%) | | | | |
| Male | 83 (58) | 160 (60) | 43 (73) | 79 (58) |
| Female | 61 (42) | 105 (40) | 16 (27) | 57 (42) |
| Birthplace, \( n \) (%) | | | | |
| Australia | 54 (38) | 109 (41) | 27 (46) | 52 (38) |
| Other | 90 (63) | 156 (59) | 32 (71) | 84 (62) |
| Primary renal diagnosis, \( n \) (%) | | | | |
| Diabetes mellitus types 1 and 2 | 25 (17) | 95 (36) | 16 (27) | 8 (6) |
| Unknown | 28 (19) | 40 (15) | 7 (12) | 68 (50) |
| Renovascular | 50 (35) | 34 (13) | 18 (31) | 7 (5) |
| GN | 7 (5) | 40 (15) | 15 (25) | 26 (19) |
| Polycystic kidney disease | 2 (1) | 17 (6) | 1 (2) | 12 (9) |
| Other | 32 (22) | 39 (15) | 2 (3) | 15 (8) |
| Level of education, \( n \) (%) | | | | |
| University | 10 (7) | 30 (11) | 13 (29) | 39 (35) |
| Diploma/TAFE | 8 (6) | 48 (18) | 13 (29) | 35 (31) |
| High school completed | 17 (12) | 46 (17) | 10 (22) | 21 (19) |
| Some high school | 17 (12) | 32 (12) | 6 (13) | 13 (12) |
| Primary school | 7 (5) | 19 (7) | 3 (7) | 4 (4) |
| No formal education | 1 (0.7) | 6 (2) | 0 (0) | 0 (0) |
| Comorbidities, \( n \) (%) | | | | |
| Congestive cardiac failure | 51 (35) | 33 (13) | 6 (10) | 4 (3) |
| Peripheral vascular disease | 13 (9) | 47 (18) | 4 (7) | 5 (4) |
| Cerebrovascular disease | 14 (10) | 9 (3) | 3 (5) | 7 (5) |
| Dementia | 6 (4) | 7 (3) | 0 | 0 |
| COPD | 36 (25) | 40 (15) | 7 (12) | 5 (4) |
| Chronic liver disease | 8 (6) | 8 (3) | 1 (2) | 3 (2) |
| Cancer\(^a\) | 31 (22) | 40 (15) | 6 (10) | 3 (2) |
| Hematological malignancy | 6 (4) | 7 (3) | 0 | 1 (1) |
| Months from starting dialysis or transplant to first survey date, median (IQR) | N/A | 37.3 (8.4–83.6) | 8.8 (4.3–16.6) | 128 (55.2–189.4) |
| Charlson comorbidity score, median (IQR) | 9 (7–10) | 7 (5–8) | 7 (5–8) | 4 (3–5) |
| Karnofsky score, mean±SD | 65±12 | 74±15 | 73±12 | 87±6 |
| EQ-VAS\(^a\) QOL score, median (IQR) | 50 (40–75) | 70 (50–80) | 72.5 (54–80) | 80 (70–90) |

Comparisons for categorical variables done with chi-squared test. Comparisons for non-normally distributed continuous variables done with the Kruskal–Wallis test. No variables had missing values except for “Level of education.” The conservative group was missing 60 (42%) values, the hemodialysis group was missing 181 (67%) values, the peritoneal dialysis group was missing 45 (76%) values, and the transplant group was missing 112 (82%) values. IQR, interquartile range; GN, glomerulonephritis; COPD, chronic obstructive pulmonary disease; EQ-VAS, EuroQOL Visual Analog Scale; QOL, quality of life.

\(^a\)Cancer includes nonmetastatic and metastatic disease.

\(^a\)EQ-VAS QOL score from the EQ5D5L questionnaire.
n=10 [7%] patients receiving a transplant). Median survival time of CKM patients was 14.1 (95% confidence interval, 9.5 to 18.6) months from time of first survey, which was significantly shorter compared with other groups (P<0.001; Figure 1). Median age of death of CKM patients was 84.5 years (IQR 79–88 years). This was significantly older compared with patients receiving hemodialysis (median 78 years; IQR 70.5–86 years), patients receiving peritoneal dialysis (median 80 years; IQR 72.3–87.3 years), and patients receiving a transplant (median 71.5 years; IQR 59–76.3 years).

QOL Trajectory
At baseline, a higher proportion of patients by CKM reported problems with their mobility, self-care, and ability to perform usual activities compared with the patients managed with peritoneal dialysis, hemodialysis, and transplantation. However, the proportion of patients reporting problems with pain/discomfort and anxiety/depression were similar between all groups (Table 2).

CKM patients were significantly older than the patients managed with hemodialysis, peritoneal dialysis, and transplantation (median ages of 82 years, 69 years, 69 years, and 57 years, respectively).

A separate analysis was done for the proportion of patients aged ≥75 years who reported problems with QOL domains at baseline (Supplemental Table 1). At baseline, there was no significant difference between the proportions of patients reporting problems with mobility, self-care, ability to complete usual activities, and anxiety and depression, and there was no significant difference between EQ-VAS scores. However, a significantly higher proportion of patients receiving hemodialysis reported pain/discomfort at baseline.

Trajectory of Symptoms over 12 Months
The proportions of patients who reported any problems with mobility, self-care, ability to perform their usual activities, pain/discomfort, or anxiety/depression did not change after 12 months of follow-up in CKM, peritoneal dialysis, or hemodialysis groups (Table 3). In the transplanted group, the proportions of patients who reported any problems with mobility, self-care, pain/discomfort, or anxiety/depression after 12 months of follow-up did not change. However, the proportion of patients receiving a transplant who reported problems with completing their usual activities significantly increased over 12 months (46% compared with 42% at baseline).

### Table 2. EQ-VAS questions at baseline for the total cohort

| Variable                          | Conservative, N=144 | Hemodialysis, N=265 | Peritoneal Dialysis, N=59 | Transplant, N=136 | P Value |
|----------------------------------|---------------------|---------------------|---------------------------|-------------------|---------|
| Age at first survey (yr), median (IQR) | 82 (77–87)         | 69 (59–77)         | 69 (60–77)                | 57 (50–64)        | <0.001  |
| Mobility—any problems reported, n (%) | 121 (84)           | 185 (70)           | 33 (56)                   | 60 (44)           | <0.001  |
| Self-care—any problems reported, n (%) | 71 (50)            | 95 (37)            | 15 (25)                   | 17 (13)           | <0.001  |
| Usual activities—any problems reported, n (%) | 115 (80)          | 176 (67)          | 36 (62)                  | 58 (43)           | <0.001  |
| Pain or discomfort—any problems reported, n (%) | 89 (62)           | 178 (67)          | 31 (53)                  | 77 (57)           | 0.07    |
| Anxiety or depression—any problems reported, n (%) | 82 (57)          | 125 (48)          | 30 (51)                 | 63 (46)           | 0.23    |

EQ-VAS, EuroQOL Visual Analog Scale; IQR, interquartile range.
Table 3. Trajectory of problems reported with QOL domains over 12 months

| EQ5D5L Domain         | Conservative | Hemodialysis | Peritoneal Dialysis | Transplant |
|------------------------|--------------|--------------|---------------------|------------|
|                        | Baseline,    | Baseline,    | Baseline,           | Baseline,  |
|                        | N=144        | N=265        | N=59                | N=136      |
|                        | 12 Months,   | 12 Months,   | 12 Months,          | 12 Months, |
|                        | N=28         | N=123        | N=26                | N=70       |
|                        | P Value      | P Value      | P Value             | P Value    |
| Mobility, n (%)        |              |              |                     |            |
| Any problem            | 121 (84)     | 185 (70)     | 33 (56)             | 60 (44)    |
| Severe problems or unable | 46 (32)   | 51 (19)      | 10 (17)             | 13 (10)    |
| Self-care, n (%)       |              |              |                     |            |
| Any problem            | 71 (49)      | 95 (36)      | 15 (25)             | 17 (13)    |
| Severe problems or unable | 22 (15)   | 26 (10)      | 4 (7)               | 3 (2)      |
| Usual activities, n (%)|              |              |                     |            |
| Any problem            | 115 (80)     | 176 (66)     | 36 (61)             | 58 (43)    |
| Severe problems or unable | 52 (36)   | 58 (22)      | 6 (10)              | 11 (8)     |
| Pain or discomfort, n (%)|           |              |                     |            |
| Any problem            | 89 (62)      | 178 (67)     | 31 (53)             | 77 (57)    |
| Severe problems or unable | 26 (18)   | 32 (13)      | 7 (12)              | 9 (7)      |
| Anxiety or depression, n (%)|          |              |                     |            |
| Any problem            | 82 (57)      | 125 (47)     | 30 (51)             | 63 (46)    |
| Severe problems or unable | 10 (7)    | 18 (7)       | 2 (3)               | 3 (2)      |

Comparison of the differences in proportions from baseline to 12-month time point performed with McNemar’s test. QOL, quality of life.

*Binomial distribution used.
Within the CKM group, the proportions of patients who reported severe problems with mobility or their ability to perform their usual activities significantly decreased from baseline to 12-month follow-up (P < 0.001 and P < 0.01, respectively). However, the proportions of CKM patients who reported severe problems with self-care or pain/discomfort increased from baseline to 12-month follow-up (P < 0.002 and P < 0.001, respectively).

Within the hemodialysis group, the proportions of patients who reported severe problems with mobility, self-care, ability to perform their usual activities, or anxiety/depression significantly decreased from baseline to 12-month follow-up (P < 0.001, P < 0.001, and P < 0.001, respectively). However, the proportion of patients reporting severe pain/discomfort increased from baseline to 12-month follow-up (P = 0.03).

Within the peritoneal dialysis group, the proportion of patients who reported severe problems with mobility significantly decreased from baseline to 12-month follow-up (P = 0.008; Table 3).

For the patients who had data at both baseline and at 12-month follow-up (Supplemental Table 2), the proportions of patients who reported problems with mobility, self-care, completion of usual activities, pain/discomfort, or anxiety/depression did not change in the CKM, peritoneal dialysis, or hemodialysis groups. In the transplanted group, the proportions of patients who reported problems with mobility, self-care, pain/discomfort, or anxiety/depression did not change after 12 months. However, the proportion of transplanted patients who reported problems with completing their usual activities significantly increased after 12 months.

Changes in Self-Reported QOL Scores

For self-reported QOL scores (EQ-VAS), there was no significant change in median QOL scores from baseline to 12- or 18-month follow-up for each of the ESKD pathways (Table 4). Figure 2 demonstrates the percentages of patients in each group with improved, stable, or worse EQ-VAS QOL scores at follow-up.

Patients who did not have follow-up data available at 12 months were significantly older, with a higher proportion of CKM patients, significantly higher Charlson comorbidity.
Discussion

Our study demonstrated that self-perceived QOL scores did not significantly change over a follow-up period of 12 months for the different ESKD pathways. Previous studies comparing QOL scores in patients receiving CKM with dialysis have been conflicting. It is difficult to extrapolate conclusions from these studies because of baseline differences within populations. One cross-sectional study reported that those receiving dialysis (both hemodialysis and peritoneal dialysis) had a significantly lower QOL compared with those managed conservatively (19). However, in this study, the median age of both cohorts was similar (81 years in dialysis compared with 83 years in CKM). In our population, the opposite was true, where the CKM population reported significantly lower EQ-VAS scores compared with patients managed with dialysis. Our study groups who received hemodialysis and peritoneal dialysis were significantly younger, with a median age of 69 years compared with a median age of 82 years in the conservative group. Patients managed with dialysis in our cohort also had a lesser symptom burden at baseline, particularly the peritoneal dialysis group. This is consistent with previous reports in which patients on peritoneal dialysis generally have better health-related QOL scores and improved physical functioning compared with patients receiving hemodialysis and those managed conservatively (20,21). Interestingly, in our separate analysis of only patients who were aged ≥75 years at baseline, there was no significant difference in proportions of patients reporting problems with QOL domains or median EQ-VAS scores between the different groups, except for pain and discomfort. Pain and discomfort were significantly higher in the group of patients receiving hemodialysis. This suggests that increasing age and frailty may account for some of the self-perceived poorer QOL scores regardless of chosen treatment modality.

Importantly, despite their overall poorer physical status and higher comorbidity burden, there was no significantly higher difference in pain/discomfort and anxiety/depression reported among CKM patients. Similarly, a recent study (22) also reported that mental health symptoms were similar between patients managed conservatively or with dialysis and suggests that clinicians managing patients with CKM or dialysis need to be aware of the burden of pain and anxiety/depression that these patients suffer and implement strategies to help accordingly.

From baseline to 12 months, the proportions of patients who reported any problems with mobility, self-care, ability to perform their usual activities, pain/discomfort, or anxiety/depression did not change in the CKM, hemodialysis, or peritoneal dialysis groups. Although QOL remains poor in both CKM and dialysis groups despite KSC support, our study suggests that dialysis may not necessarily improve QOL, and CKM may help maintain QOL for these patients as their kidney function continues to deteriorate.

Patients in our study receiving CKM were significantly older than patients being managed with dialysis or transplantation, with a higher prevalence of comorbidities, a higher Charlson comorbidity score, and a lower Karnofsky performance score, consistent with previous literature (4,22,23). This is potentially because these patients are considered less likely to benefit from dialysis and at higher risk of functional decline or complications once commencing. Not surprisingly, the CKM population also reported more problems with mobility, self-care, and ability to perform their usual activities, and a lower EQ-VAS score compared with the other groups, which is possibly a reflection of increasing frailty and poorer functional status.

The current literature suggests that although patients opting for CKM over dialysis have more comorbidities (24), those who commence dialysis may experience a decrease in satisfaction with life (24) or experience higher burdens of kidney disease upon their life (25). Patients managed with dialysis experience a significantly higher number of hospitalizations and lower number of hospital-free days per year compared with those managed conservatively (5,15). In our study, over 12 months, problems with mobility, self-care, pain/discomfort, ability to perform usual activities, or anxiety/depression did not change in CKM or dialysis groups. This is similar to previous data showing no significant difference in the change of QOL over 12 months between CKM patients managed conservatively and those planned for dialysis (7). These findings suggest that in a significant proportion of patients, symptoms of renal failure can be reasonably managed without dialysis, in a supported, multidisciplinary KSC clinic environment. Some data also suggest that poorer QOL may be associated with risk of death (26–28). Such data are relevant when counseling patients about their treatment options and prognostication for ESKD and will aid shared decision making around dialysis.

One limitation of our study is that it may have only captured relatively stable patients. Comparing patients who had data available at 12 months with those who did not have follow-up data at 12 months (Supplemental Table 3), those without follow-up data were significantly older with more comorbidities and may have had a higher attrition rate due to death. Furthermore, data for dialysis patients were taken at the time of entry to the KSC clinic rather than at time of starting dialysis, and there were a small number of patients receiving home hemodialysis in the hemodialysis cohort, which may have skewed the data. Despite this, our observations support previous literature suggesting that QOL does not deteriorate significantly over time, even for those not receiving dialysis (25), and that trajectory of mental health symptoms (such as anxiety/depression) between CKM and dialysis groups remains similar (22). Similarly, self-perceived QOL (EQ-VAS scores) did not change over time, suggesting that those receiving CKM do not have an accelerated QOL decline compared with those receiving dialysis or a kidney transplant. These observations are reassuring in counseling patients who may be considering CKM but have concerns regarding an accelerated decline compared with being managed with dialysis. However, our results may not be generalizable to other nephrology services that do not have similar KSC programs. It is likely that without specific expertise that assists in the control of such heavy symptom burdens the
A strength of our study was that there were few missing values for most of the variables, despite our unit servicing a multicultural area including many non-Australian-born patients. Our study also consisted of longitudinal data of KSC patients, whereas prior research in similar cohorts often consisted of cross-sectional studies, making it difficult to draw conclusions regarding trajectory. However, our study is limited by a relatively short follow-up and small overall cohort of patients studied longitudinally. In particular, the CKM population had a high attrition rate, with 144 patients at baseline compared with only 28 patients with follow-up data at 12 months. In addition, the study would have been strengthened by following patients from time of commencement of dialysis, which may have led to a greater understanding of the effect of dialysis upon QOL and allowed a better comparison between the effect of dialysis and conservative management on QOL.

In conclusion, decision making around ESKD can often be difficult for patients, their families, and clinicians. Emerging data suggest that managing symptom burden and having good QOL, rather than length of life, is important to patients when making decisions regarding RRT. We found that over 12 months, there were no significant changes in self-perceived QOL in those managed conservatively compared with those managed with dialysis or transplantation. This suggests that dialysis may not necessarily improve QOL. Importantly, CKM with appropriate KSC support may help maintain QOL, which is reassuring when counseling patients considering CKM regarding QOL trajectory.

Disclosures
All authors have nothing to disclose.

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Author Contributions
M.A. Brown, A.T. Hoffman, K. Li, and S. So were responsible for the methodology; M.A. Brown and E. Josland were responsible for visualization; M.A. Brown, E. Josland, K. Li, and S. So were responsible for conceptualization; M.A. Brown and K. Li were responsible for supervision; A.T. Hoffman was responsible for project administration and software; A.T. Hoffman and E. Josland were responsible for resources; A.T. Hoffman, E. Josland, and S. So were responsible for data curation; S. So was responsible for the formal analysis and wrote the original draft of the manuscript; and all authors reviewed and edited the manuscript.

Supplemental Material
This article contains the following supplemental material online at http://kidney360.asnjournals.org/lookup/suppl/doi:10.34067/KID.001602022/-/DCSupplemental.

Supplemental Table 1. EQ-VAS questions at baseline for patients aged ≥75 years.
Supplemental Table 2. Trajectory of problems reported with QOL domains for patients with data at baseline and 12 months.

Supplemental Table 3. Comparison of baseline characteristics between patients who had 12-month follow-up data available and patients who did not.

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