AJKD

Original Investigation

Predictors of Health Deterioration Among Older Adults After 12 Months of Dialysis Therapy: A Longitudinal Cohort Study From New Zealand

Sarah Derrett, PhD,[1] Ari Samaranayaka, PhD,[1] John B.W. Schollum, MBChB, FRACP,[2] Bronwen McNoe, MSc,[1] Mark R. Marshall, MBChB, FRACP,[3,4,5] Sheila Williams, PhD,[1] Emma H. Wyeth, PhD,[6] and Robert J. Walker, MBChB, MD, FRACP[2]

Background: Involving patients in dialysis decision making is crucial, yet little is known about patient-reported experiences and patient-reported outcomes of dialysis.

Study Design: A prospective longitudinal cohort study of older patients receiving long-term dialysis. Predictors of worse health status were assessed using modified Poisson regression analysis.

Setting & Participants: 150 New Zealanders 65 years or older with end-stage kidney disease dialyzing at 1 of 3 nephrology centers.

Predictors: Patient-reported social and health characteristics based on the 36-Item Short Form Health Survey, EQ-5D, and Kidney Symptom Score questionnaires and clinical information from health records.

Outcomes: Health status after 12 months of follow-up.

Results: 35% of study participants had reported worse health or had died at 12 months. Baseline variables independently associated with reduced risk for worse health status were Pacific ethnicity (relative risk [RR], 0.63; 95% CI, 0.53-0.72), greater bother on the Kidney Symptom Score (RR, 0.78; 95% CI, 0.62-0.97), and dialyzing at home with either home hemodialysis (RR, 0.55; 95% CI, 0.36-0.83) or peritoneal dialysis (RR, 0.86; 95% CI, 0.79-0.93). Baseline variables independently associated with increased risk were greater social dissatisfaction (RR, 1.66; 95% CI, 1.27-2.17), lower sense of community (RR, 1.70; 95% CI, 1.09-2.64), comorbid conditions (RR, 1.70; 95% CI, 1.09-2.64), EQ-5D anxiety/depression (RR, 1.61; 95% CI, 1.07-2.42); poor/fair overall general health (RR, 1.60; 95% CI, 1.37-1.85), and longer time on dialysis therapy (RR, 1.03; 95% CI, 1.00-1.05).

Limitations: Small sample size restricted study power.

Conclusions: Most older dialyzing patients studied reported same/better health 12 months later. Home-based dialysis, regardless of whether hemodialysis or peritoneal dialysis, was associated with reduced risk for worse health, and older Pacific People reported better outcomes on dialysis therapy. Social and/or clinical interventions aimed at improving social satisfaction, sense of community, and reducing anxiety/depression may favorably affect the experiences of older patients receiving long-term dialysis.

Am J Kidney Dis. 70(6):798-806. *© 2017 by the National Kidney Foundation, Inc.*

INDEX WORDS: Dialysis; older age group; patient-centred outcomes; quality of life outcomes on dialysis; health deterioration; end-stage kidney disease (ESKD); home dialysis; medical decision-making; elderly; end-stage renal disease (ESRD); health disparities; symptom bother; social engagement.

As in other developed countries, New Zealand has seen a considerable increase in older patients initiating dialysis therapy, a population with relatively poor survival.[1-6] Older patients on dialysis therapy can be profoundly affected by uremic symptoms, often with an unacceptably poor quality of life.[7-9] Superimposed on these burdens are the intensive health service interventions associated with dialysis therapy. For many older patients, the overall burden of dialysis care may outweigh the benefits.[10-15]

Involving patients in decision making and management in relation to end-stage kidney disease is crucial.[16-20] Three important considerations for patient-centered care have previously been identified: knowledge of the patient's complete medical condition and realistic treatment goals, patient preferences and expectations within their psychosocial context, and the patient's prognosis.[21] To help inform such a patient-centered vision, data about older patients' experiences and patient-reported outcomes of dialysis are required.[22]

The DOS65+ (Dialysis Outcomes in Those Aged ≥65 Years) Study is a longitudinal study of

---

From the Departments of [1]Preventive and Social Medicine and [2]Medicine, University of Otago, Dunedin; [3]Department of Renal Medicine, Middlemore Hospital, Counties Manukau Health; [4]School of Medicine, University of Auckland, Auckland, New Zealand; [5]Therapeutic Area, Baxter Healthcare (Asia) Pte Ltd, Singapore; and [6]Ngai Tahu Māori Health Research Unit, Department of Preventive and Social Medicine, University of Otago, Dunedin, New Zealand.

Received March 13, 2017. Accepted in revised form June 21, 2017. Originally published online August 17, 2017.

Address correspondence to Robert J. Walker, MBChB, MD, FRACP, Department of Medicine, University of Otago, PO Box 56, Dunedin, New Zealand. E-mail: rob.walker@otago.ac.nz

0272-6386
http://dx.doi.org/10.1053/j.ajkd.2017.06.023

older contemporary New Zealanders with chronic kidney disease stage 5 (CKD5) diagnosed.[23] The overall aim of this study was to obtain prospective health-related quality-of-life and patient experience data to inform clinicians' and patients' decision making with respect to CKD5 and options for management. This study presents patient-reported global health outcomes among DOS65+ Study participants on dialysis therapy. It aims to describe and compare characteristics of older New Zealanders with end-stage kidney disease who were dialyzing at the start of the study and report "same or better" health outcomes 12 months after baseline assessment with those who report "worse health" (or had died) and identify which, if any, baseline demographic, social, health, functioning, and clinical characteristics independently predict worse health outcomes 12 months later.

METHODS

Design

The DOS65+ Study protocol has been described previously.[23] Briefly, participants were recruited from 3 New Zealand District Health Board nephrology units (Counties Manukau, Hawkes Bay, and Southern District Health Boards). Counties Manukau is a tertiary nephrology unit that serves a large urban population with higher numbers of Māori and Pacific People and those in a lower socioeconomic group. Hawkes Bay is a provincial rural center with a relatively higher proportion of Māori. Southern is a tertiary nephrology center with a more geographically dispersed population, with an exclusive home dialysis policy.

The DOS65+ Study has an accelerated longitudinal design whereby individuals with CKD5 (estimated glomerular filtration rate < 15 mL/min/1.73 m^2) and who commenced dialysis education (predialysis), newly incident patients initiating dialysis therapy ($<$12 months on dialysis therapy), or prevalent dialysis pattients 65 years or older were invited to participate in a first (baseline) interview.[23] Subsequent follow-up interviews were scheduled for 12, 24, and 36 months after the first interview. At the time of interview, participants had to be clinically stable, with no recent acute illness in the previous 30 days that may have affected the quality-of-life questionnaires. Clinical information was collected, with participants' consent, from their health records at the time of recruitment and throughout the follow-up period.[23] New Zealand has a tax-funded public health care system accessible to all citizens. As such, New Zealand is well suited to outcomes research for patients with end-stage kidney disease because there are neither direct health care costs incurred by patients nor financial incentives for health care professionals that may affect treatment choice or provision.[24] Ethics approval was granted by the New Zealand Health and Disability Multi-region Ethics Committee (MEC/10/084). The study is registered with the Australasian Clinical Trials Registry (study number: ACTRN 12611000024943).

This study reports data provided by participants who were: (1) dialyzing at baseline and (2) either completed the 12-month interview or died before the scheduled 12-month follow-up interview (Fig 1).

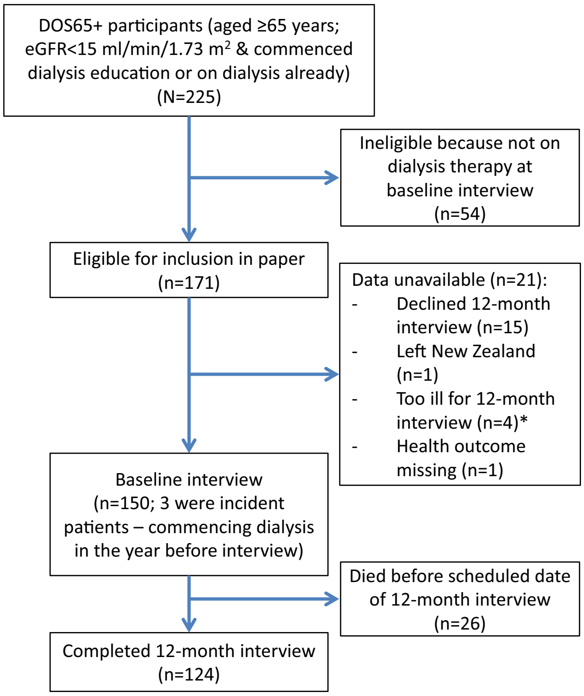

Figure 1. Flow chart of DOS65+ (Dialysis Outcomes in Those Aged ≥65 Years) Study participants recruited for this analysis. *Four participants were not interviewed at 12 months due to acute illness and were excluded as per protocol.[23] Abbreviation: eGFR, estimated glomerular filtration rate.

Health Outcome Collected at 12-Month Follow-up Interview

The outcome was determined by asking participants, "Compared to 1 year ago, how would you rate your health in general now?"[25] People who responded that their health is "About the same as 1 year ago," "Somewhat better now than 1 year ago," or "Much better than 1 year ago" were classified as having the "Same or better health"; those responding that their health is "Somewhat worse now than a year ago" or "Much worse now than 1 year ago" were classified as "Worse health." Participants who died before their scheduled 12-month follow-up interview were also classified as "Worse health."

Explanatory Variables Collected at Each Interview

Potential explanatory variables were grouped according to demographic, socioeconomic, health and functioning, characteristics of dialysis, and end-stage kidney disease symptoms. Demographic information collected at the baseline interview were derived from questions asking participants about their age, sex, ethnicity, and living arrangements based on the 2006 New Zealand Census.[26] For analyses, a prioritized ethnicity approach was used in which participants reporting at least 1 ethnicity as Māori (New Zealand's indigenous population) were classified as Māori; from those remaining, those reporting at least 1 ethnicity as Pacific (Samoan, Tongan, Fijian, or Cook Island Māori among our cohort) were classified as Pacific, the rest who did not report either Māori or Pacific ethnicity but reported another (non–New Zealand European) ethnicity were classified as Other ethnicities, and New Zealand Europeans reporting none of the preceding ethnicities were classified as New Zealand European.[27,28] For multivariable analyses, the New Zealand European and Other categories were combined.

Adequacy of household income was determined by asking "How well does your total household income meet your everyday needs for such things as accommodation, food, clothing and other necessities?" Those responding that they have "More than enough money" or "Enough money" were classified as having an "Adequate" household income; those responding they had "Just