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ORIGINAL ARTICLE

The impact of nutrition intervention on quality of life in pre-dialysis chronic kidney disease patients

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Summary
Background & aims: Uraemic symptoms as a result of reduced kidney function may impact on an individual's functional and nutritional status. This study aims to investigate whether providing individualised nutritional counselling can improve nutritional status and influence quality of life in pre-dialysis chronic kidney disease patients.
Methods: Fifty-three stage IV and V pre-dialysis chronic kidney disease patients underwent assessment of nutritional status (by Patient Generated Subjective Global Assessment) and quality of life (by Kidney Disease Quality of Life™). Participants were assessed at baseline and following a 12-week randomised-controlled treatment, allocated to either individualised counselling with regular follow-up ($n = 24$) or standard care treatment (generic education only ($n = 23$)).
Results: At baseline, nutritional status was significantly correlated with all general quality of life sub-scales. There was a statistically significant mean difference in change between groups for: symptoms of kidney disease (7.1 (0.1–14.1) $p = 0.047$); cognitive functioning (14.6 (5.4–23.7) $p = 0.003$); and vitality (12.0 (4.6–19.5) $p = 0.002$) favouring intervention treatment.
Conclusions: Quality of life is related to nutritional status in pre-dialysis patients. Providing individualised nutritional counselling improves many components of quality of life, compared with standard nutrition care, in the stage prior to dialysis treatment.

Introduction

Health-related quality of life (QOL) is related to a patient's functioning, wellbeing and general health perception in physical, psychological and social domains.[1] In chronic disease, and specifically chronic kidney disease (CKD), a close relationship exists between QOL, morbidity and mortality.[2,3]

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It has been established that CKD patients experience a significantly lower QOL compared with healthy controls, which is more pronounced in the pre-dialysis phase (Stage 4 and 5), especially in the elderly.[4–6] A decline in GFR and an increase in uraemic symptoms (including fatigue, weakness, anorexia and muscular cramps) is associated with a reduced functional status and quality of life.[7]

Nutritional status has been shown to impact on QOL in dialysis patients by various nutrition assessment parameters.[8,9] Although improved nutritional management has been proposed as beneficial to the QOL of CKD patients, there has been a limited evidence base to date to support this.

This randomised controlled trial was developed to determine if providing individual nutrition counselling with regular telephone follow-up resulted in improved nutritional status and QOL, compared with standard care. The specific aims were to investigate: (1) the cross-sectional relationship between patients' QOL and nutritional status, at the onset of pre-dialysis treatment; and (2) whether individualised nutritional counselling or standard care treatment influenced the patient's QOL, and nutritional status leading up to dialysis treatment. The results reported here are part of a larger study designed to measure the effect of a nutrition intervention on body cell mass and nutritional status.

Sample and methods

The study was conducted through Royal Brisbane and Women's Hospital (RBWH) Department of Renal Medicine pre-dialysis clinic. Participants met the following criteria: adult (>18 years), glomerular filtration rate (GFR) < 30 ml/min CKD, not previously seen by a dietitian for Stage IV CKD, absence of communication or intellectual impairment inhibiting their ability to undertake the intervention and an absence of malnutrition from a cause other than CKD. Potential participants were identified upon consecutive entry into the pre-dialysis clinic, where informed consent was sought from those who met the eligibility criteria.

The CONSORT flowchart of participants in this study is provided in Fig. 1. Following the consent of 60 eligible participants, four were excluded from baseline assessment (two participants voluntarily withdrew and two transferred care to dialysis (1) and transplant (1)). Fifty-six patients underwent baseline assessment, with valid QOL assessment on 53, which is the sample used for this analysis (Male 59%; age mean (SD) 69.9 (11.9) years). Patients were randomised to receive either individual counselling with fortnightly telephone follow-up, or standard care (written material only), allocated via a computer-generated number sequence, which was concealed to the recruiting officer (see Figure 1). No participants in either group voluntarily dropped out of the study following receipt of intervention, as per CONSORT flowchart in Fig. 1.

The intervention treatment, administered by a single dietitian, experienced in renal nutrition, was undertaken over a 12 week period and aimed to optimise nutritional status and attain evidence-based dietary prescription,[10] whilst managing symptoms of reduced kidney function. The delivery of the intervention was guided by the medical nutrition therapy framework from the American Dietetic Association.[11,12] The intervention treatment group was provided with an initial individual consultation with a dietitian, and then patients were regularly monitored by telephone consultation, fortnightly for the first month, then monthly. The intervention utilised self-management principles (goal setting, menu planning, label reading and identification of foods containing protein, sodium etc, depending on requirements) and was individualised to each participant, depending on their level of kidney function, existing symptoms of kidney disease and co-morbidities.

At the time of this study, there was a lack of consistency as to what constituted standard care. In Australian practice, individualised education is not provided as standard[13] treatment for patients with severe CKD and, in this institution, involved ad hoc provision of written education material and/or one-off referral to a dietitian. Therefore, for consistency, participants in the standard care group received generic nutrition information (as provided in regular clinical practice) containing an overview of nutrition advice for chronic kidney disease and co-morbidity management. No individualised advice or monitoring was provided.

Ethical approval was granted by the Royal Brisbane and Women's Hospital and Queensland University of Technology Human Research Ethics Committees. This is Registered Trial ACTRN012606000493549.

Quality of life

Quality of life was measured by Kidney Disease Quality of Life Short Form version 1.3 (KDQOL-SF™ v1.3, © Rand University), combining the Short Form-36 (SF-36), with a kidney disease-specific module.[14] The disease-specific part includes 43 items directed at the kidney disease (symptoms/problems, effects of kidney disease on daily life, burden of kidney disease, cognitive function, work status, sexual function, quality of social interaction, sleep). Also included are multi-item measures of social support, dialysis staff encouragement, and patient satisfaction, as well as an overall rating of health.[14] This tool required minor modification for use in pre-dialysis patients: specifically, changing the wording for satisfaction with care from ''kidney dialysis'' to ''kidney disease'' (item 23), and omitting the questions about dialysis staff encouragement and support (items 24A and 24B).

The KDQOL-SF™ v1.3 was provided to each subject prior to the baseline and follow-up assessment. The scoring spreadsheet for KDQOL-SF™ v1.3 was downloaded to Microsoft Office Excel© 2003 from the KDQOL webpage (http://gim.med.ucla.edu/kdQOL/downloads/download.html, accessed February 20, 2005). Data from individual surveys were input into this spreadsheet. Each question is precoded numerically, and then transformed into a scale of 0 to 100; the highest values reflect better QOL. QOL summary scores for each sub-scale were manually input into the main SPSS database.

Nutritional status assessment

Patient-Generated Subjective Global Assessment (PG-SGA) was used to assess nutritional status. The PG-SGA consists of