

# Post-Transplant Dietetic Audit: Evaluation of knowledge and adherence to dietary advice post-kidney transplant

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**Background:** As kidney function stabilizes, UK national guidelines (NGs) recommend that kidney transplant recipients (KTRs) maintain a "healthy lifestyle" to reduce the risk of post-transplant obesity, hypertension, and diabetes<sup>12</sup>. However, these guidelines are largely opinion-based, and lack specificity for post-kidney transplant (PKT) dietetic services. At a London Kidney Transplant Center (LKTC), local audit standards (LAS) were developed by adapting NGs to meet the specific needs of the patient population. The LAS cover three areas: dietary education and information (5 standards), follow-up and dietetic support (3 standards), and patient satisfaction and adherence (2 standards). This audit aimed to evaluate adherence to LAS within the dietetic service at the time of the audit and to explore patient's perceptions of the dietetic service.

**Methods:** A cross-sectional audit was conducted using a semi-structured survey and clinical data, with a planned sample size of n=24. KTRs who underwent kidney transplantation at the LKTC between September 2023 and February 2024 were eligible. Participants were required to have a functioning kidney transplant (eGFR $\geq$ 20ml/min/1.73m<sup>2</sup>), be aged 18-80 years, and having documented contact with both a kidney dietitian and the LKTC clinic. Telephone interviews were conducted after obtaining explicit informed consent. Clinical and demographic data were retrieved from the hospital's database, and analysis was conducted using descriptive statistics,  $\chi^2$ -tests, t-tests, logistic regression, and ANOVA in SPSS v.29.0.2.0.

**Results:** 24 were contacted and all agreed to participate so no further invitations were made. Several LAS were partially met. 88% of KTRs reported understanding what constitutes a healthy diet, indicating that current educational resources and dietetic support at LTTC are generally effective. 21% of patients expressed difficulties reading resources provided, despite a preference for English-language materials. 66.7% of patients recall of receiving PKT dietary recommendations, and 54.2% recall of receiving dietary resources (p < 0.967). Overall, patients reported a mean satisfaction score of 4.3  $\pm$  0.79 (s.d.) out of 5 for the PKT dietetic service. One LAS standard was unmet due to a patient not being referred, revealing operational inefficiencies in the referral process.

**Discussion:** Several barriers contribute to the unmet LAS, including limitations such as staffing and appointment availability. As 21% of KTRs struggled with the provided materials, the lack of culturally sensitive dietary resources may present a challenge<sup>3</sup>. Systemic barriers, including financial constraints and the need for interdisciplinary collaboration, complicate the implementation of changes such as adding a 3-month dietetic review or expanding virtual consultations<sup>4</sup>. Such changes could enhance patient outcomes, addressing dietary issues early and empowering patients to make informed decisions<sup>5</sup>. Qualitative interviews could offer deeper insights into patient experiences and identify what changes might be most impactful for patients, supporting the development of more patient-centred dietary interventions and service improvements.

**Conclusion:** This audit revealed both successes and gaps in the PKT dietetic services at LTTC. While patients generally understood healthy dietary practices, issues like infrequent follow-up, resource accessibility, and limited cultural sensitivity need attention. Addressing these challenges through a 3-month review and more inclusive resources could improve patient outcomes, such as reducing post-transplant complications. Future audits should use validated tools and qualitative methods to better assess dietary patterns and refine PKT dietetic care.

<sup>1</sup> Baker RJ, Mark PB, Patel RK, Stevens KK, Palmer N. Renal association clinical practice guideline in post-operative care in the kidney transplant recipient. *BMC Nephrology*. 2017 Jun 2;18(1):174.

<sup>2</sup> Eckardt KU, Kasiske BL, Zeier MG. Special Issue: KDIGO Clinical Practice Guideline for the Care of Kidney Transplant Recipients. *American Journal of Transplantation*. 2009 Nov 1;9:S1–155.

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# Service Evaluation of Post-Kidney Transplant Dietetic Services: Evaluation of knowledge and adherence to dietary advice post-kidney transplant

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**Background:** As kidney function stabilizes, current UK national guidelines recommend that kidney transplant recipients (KTRs) should aim to uphold a “healthy lifestyle” to reduce the risk of developing obesity, hypertension and/or diabetes post-kidney transplant (PKT)<sup>67</sup>. At a London kidney transplant center (LKTC), this has been interpreted as following a mediterranean-style diet with regular exercise. The WELL diet questionnaire (WDQ) has been validated against the Alternative Healthy Index (HEI) score in terms of predicting diet quality as well as protective health factors in other populations<sup>8</sup>. This service evaluation aimed to assess adherence and understanding of dietary advice using the WDQ and determine the practicality of this tool within this population.

**Methods:** A cross-sectional service evaluation was conducted via telephone interview, and review of clinical data with a planned sample size of n=24. KTRs who underwent kidney transplantation at the LKTC between September 2023 and February 2024 were eligible. Participants were required to have a functioning kidney transplant (eGFR $\geq$ 20ml/min/1.73m<sup>2</sup>), be aged 18-80 years, and having documented contact with both a kidney dietitian and the LKTC clinic. The WDQ was adapted to UK English, and telephone interviews were conducted after obtaining explicit informed consent. Responses were recorded in Qualtrics. Clinical and demographic data were retrieved from the hospital’s database, and analysis was conducted using descriptive statistics,  $\chi^2$ -tests, t-tests, logistic regression, and ANOVA in SPSS v.29.0.2.0.

**Results:** A total of 24 KTRs consented, achieving a 100% response rate. The average age of KTRs was 54  $\pm$  11 years, with 75% being male. According to hospital records, 25% were White British and 25% identified with other ethnic groups (25%). When categorized by time post-transplant, mean potassium levels significantly differed between the <6-month (4.5 mmol/L  $\pm$  0.4) and <12-month groups (3.9 mmol/L  $\pm$  0.1,  $p < 0.05$ ). The median diet quality score was 77 (67–85) with lower scores reported for the intake of beans & pulses (3  $\pm$  2 out of 10) and nuts & seeds (3.5  $\pm$  3.5 out of 10). Informal comments from KTRs indicated a need for more support in transitioning off low-potassium diets to PKT recommendations. 75% of KTRs reported the questionnaire length to be “just right,” while 17.5% felt it was “too long,” and 17.5% found it “too short.”

**Discussion:** The overall diet quality score of 77/120 suggests considerable room for improvement but is higher than Taiwanese KTRs (62) and UK individuals without chronic kidney disease (49)<sup>910</sup>. Despite PKT normalisation of potassium levels, some patients reported continuing to adhere to low-potassium diets or expressed anxiety about reintroducing potassium-rich foods. This is supported by the lower intake scores observed for high-potassium food groups. Targeted interventions aimed at addressing these concerns may help improve dietary adherence and overall WELL diet scores in KTRs. However, a key limitation is the lack of validated PKT-specific dietary assessment tools, as the WDQ does not include alcohol consumption, portion size, or psychological influences on eating behaviour. This suggests that another tool may be required to evaluate these in future studies.

**Conclusion:** Although the KTRs scored better than other populations on the WELL Diet Score, they still demonstrated suboptimal dietary patterns and may require additional support to implement healthy eating dietary recommendations confidently. Understanding current dietary patterns and barriers to adherence to recommendations is essential in improving dietetic services for KTRs and improving post-transplant health outcomes.

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<sup>6</sup> Baker RJ, Mark PB, Patel RK, Stevens KK, Palmer N. Renal association clinical practice guideline in post-operative care in the kidney transplant recipient. *BMC Nephrology*. 2017 Jun 2;18(1):174.

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## Rates of hypokalaemia and peritonitis in a single peritoneal dialysis centre population

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**Background:** The International Society for Peritoneal Dialysis (PD) (ISPD) recommended modifiable peritonitis risk factors including hypokalaemia are managed<sup>1</sup>. In PD populations hypokalaemia was associated with a higher risk of peritonitis, which increased linearly with the duration and severity of hypokalaemia when compared to normokalaemic cohorts<sup>2</sup>. RCT data shows that potassium supplementation to maintain normokalaemia significantly reduced the risk of peritonitis when compared to potassium replacement once hypokalaemia was identified (HR 0.47)<sup>3</sup>. The ISPD, UK Kidney Association and Midlands Peritonitis Quality Improvement Project have target peritonitis rates of <0.4, <0.5 and <0.35 peritonitis episodes per patient year (PPY), respectively<sup>1,4</sup>. We aimed to identify if the centre rate of peritonitis aligns with these targets and the prevalence of hypokalaemia.

**Methods:** Between 01/06/2022-01/08/2023 the centre PD population, centre peritonitis reports and average serum potassium over 3-months were used to identify peritonitis prevalence within the following cohorts: Total centre population, those with an average potassium 3.99-3.51mmol/L (Moderately Low Potassium (MLK)) and <3.50mmol/L (Low Potassium (LK)). Ethical approval was not required for this audit.

**Results:** The centre PD population ranged from 92-105 people on PD, 19 (11.1%) had MLK and 4 (4.1%) had LK. There were 61 peritonitis episodes, see the rates PPY of primary peritonitis in figure 1. If recurrent, relapsing, repeat and refractory episodes are included there were 68 peritonitis cases, see figure 2 for rates PPY.

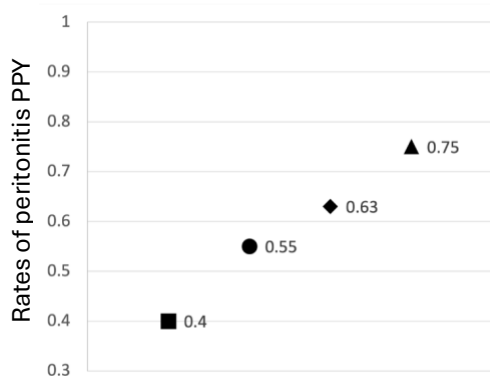


Figure 1: Rates of primary peritonitis episodes PPY

■ IPSD target peritonitis rate PPY<sup>1</sup>  
◆ MLK cohort rates

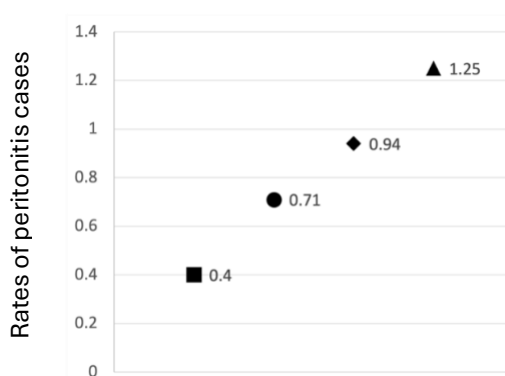


Figure 2: Rates of peritonitis PPY (including recurrent, relapsing and repeat).

● Total centre rates  
▲ LK cohort rates

**Discussion:** Peritonitis episodes were above recommended targets, and the prevalence of primary and non-primary peritonitis episodes increased in a linear manner the lower the average serum potassium. The small sample sizes limits the transferability of these findings but a novel finding was that those with hypokalaemia were more susceptible to relapsing refractory and recurrent PD episodes.

**Conclusion:** The centre data aligns with existing evidence that hypokalaemia is associated with higher risk of peritonitis<sup>1-3</sup>.

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# The impact of sodium intake on dialysis outcomes in Asian populations: A systematic review

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**Background:** Chronic kidney disease (CKD) is prevalent in Asian populations, affecting up to 65.6 million people with advanced CKD, for whom dialysis, including haemodialysis and peritoneal dialysis, is a crucial treatment for end-stage renal disease<sup>(1)</sup>. Traditional Asian diets, high in sodium, present challenges for managing fluid balance and cardiovascular health in dialysis patients<sup>(2)</sup>. Previous research has indicated that dietary sodium intake significantly affects dialysis outcomes<sup>(3)</sup>. This study aimed to evaluate the impact of dietary sodium intake on dialysis outcomes, such as fluid management and dialysis adequacy, in Asian populations.

**Methods:** A systematic review was conducted following PRISMA guidelines, searching PubMed, EMBASE, and the Cochrane Library for studies published from 2014 to July 2024 using keywords such as "dietary sodium," "haemodialysis," "peritoneal dialysis," and "Asian populations." Included studies: (i) involved human participants from Asian populations undergoing dialysis, (ii) were published in English, and (iii) featured either quantitative or qualitative design, including cohort, case-control, cross-sectional, and randomised controlled trials. Studies were required to report outcomes related to the impact of dietary sodium intake on dialysis. Exclusion criteria comprised: (i) animal studies, (ii) non-English publications, (iii) studies not involving dialysis, and (iv) those lacking relevant outcome data. Ethical approval was not required as this review analysed existing studies. After de-duplication and relevance screening, four studies from an initial seven met the inclusion criteria, and their quality was assessed using the Newcastle-Ottawa Scale, with scores ranging from 5 to 7, indicating moderate to high quality. A narrative synthesis was employed to integrate the findings, combining qualitative insights with quantitative data<sup>(4)</sup>.

**Results:** The four studies, encompassing a total of 646 subjects, demonstrated that high sodium intake negatively affects dialysis outcomes in Asian populations. A Korean peritoneal dialysis study, with a NOS score of 7, reported a positive correlation between dietary sodium intake and total sodium removal ( $r = 0.595$ ,  $p < 0.01$ ), suggesting higher intake necessitates increased removal efforts. A Malaysian haemodialysis study, with a NOS score of 5, linked high sodium intake to poorer sleep quality, indicating a negative impact on patient well-being. Two Japanese haemodialysis studies, both with a NOS score of 6, found that high sodium intake and misperception of dry weight were associated with increased interdialytic weight gain, complicating fluid management.

**Discussion:** These findings underscore the challenges of managing high sodium intake in traditional Asian diets and highlight the need for culturally tailored interventions. Consistent with previous research, the studies show that reducing sodium intake can improve both haemodialysis and peritoneal dialysis outcomes by enhancing fluid management and reducing cardiovascular risks. The methodological quality of the included studies suggests moderate to high confidence in the findings. Future research should focus on developing effective strategies to address these dietary challenges within the cultural context of Asian populations, incorporating both qualitative and quantitative insights to develop comprehensive interventions.

**Conclusion:** Culturally tailored dietary strategies are crucial for improving dialysis outcomes in Asian populations by addressing high sodium intake. Further research should explore incorporating traditional foods and dietary supplements into these strategies to enhance adherence and improve the quality of life for both haemodialysis and peritoneal dialysis patients.

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