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Chronic Kidney Disease and Unmet Needs for Comprehensive Rehabilitation in Australia

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ABSTRACT

Chronic kidney disease (CKD) affects over 2 million Australians and imposes substantial clinical, societal and economic burdens. A pervasive yet under-recognised consequence is progressive muscle loss and functional decline, manifesting as sarcopenia and frailty, which are highly prevalent across CKD stages and strongly associated with hospitalisation, disability and mortality. Although exercise-based interventions improve physical function, quality of life and cardiovascular risk profiles, access and participation remain limited. Furthermore, compared with cardiac and pulmonary rehabilitation, funding for CKD-specific allied health services is fragmented and inadequate, with no dedicated funding pathways. Strategic policy reform is urgently needed to embed renal rehabilitation into standard kidney care.

JEL Classification: Urologic diseases, Rehabilitation

1 | Introduction

Chronic kidney disease (CKD) affects over 2 million adults in Australia and represents a rising public health challenge, with a disproportionately high prevalence among First Nations peoples and culturally and linguistically diverse populations [1, 2]. In 2024, although most affected individuals were at an early stage, over 30,000 Australians were living with advanced (Stage 5) CKD, requiring either dialysis or kidney transplantation [2]. CKD imposes a substantial burden on individuals and the healthcare system. The cost to the Australian economy in 2021 was estimated at $9.9 billion, including over $182,000 per person for individuals undergoing kidney replacement therapy. Importantly, this burden is not solely financial. CKD is associated with marked reductions in quality of life and well-being, which, in 2021, accounted for more than 55,000 disability-adjusted life years lost, which can be valued at $13.2 billion using the value of a statistical life year [1].

2 | Muscle Loss and Functional Decline

A critical but often under-recognised consequence of CKD is the progressive loss of muscle mass, strength and functional capacity, which are collectively referred to as sarcopenia and frailty. Although sarcopenia primarily denotes the loss of skeletal muscle mass and strength, frailty encompasses a broader multidimensional syndrome that includes additional physical, psychological and social vulnerabilities. In CKD, these interrelated conditions arise from physical inactivity, chronic inflammation, metabolic derangements and dialysis-related factors and lead to substantial impairments in independence and quality of life. These deleterious changes typically and, arguably inevitably, occur across the CKD continuum. A recent meta-analysis reported a global prevalence of sarcopenia in CKD of 24.5%, with no significant differences between the various CKD stages or those patients requiring kidney replacement therapies, with high rates of frailty and pre-frailty affecting 34.5% and 39.4% of patients with CKD, respectively [3]. However, patients receiving

dialysis are more likely to have severe sarcopenia. Low muscle strength, for instance—a key feature of sarcopenia—is present in over 50% of such patients [4].

The associated functional limitations and related physical impairments of sarcopenia and frailty have been linked to poor clinical outcomes, including an increased risk of falls, fractures, hospitalisation, dependence on long-term care and mortality. Despite convincing evidence supporting the benefits of physiotherapy and exercise physiology in improving a suite of health-related parameters, such as cardiovascular risk factors, physical fitness, quality of life and fatigue [5], the translation into routine clinical practice is hindered by a lack of systematic funding and integration into kidney care pathways. In non-dialysis CKD, there is some concern that low-protein diets intended to reduce renal workload may inadvertently increase the risk of sarcopenia; however, appropriate management of protein intake, when combined with structured exercise, can preserve muscle mass while maintaining renal protection. In patients receiving dialysis, service provision gaps are pronounced, with only 4% of dialysis units providing access to exercise physiologists, compared with 97% for dietitians and 35% for clinical psychologists [6]. These findings highlight the need to embed multidisciplinary support within CKD services. Incorporating patient preferences and individual goals further ensures interventions are tailored, acceptable and more likely to be sustained, supporting person-centred care across the CKD spectrum.

3 | Funding Pathways and Barriers

The current funding mechanisms for allied health services in CKD are fragmented, limited and inequitable. Under the Medicare Benefits Schedule (MBS), chronic disease management plans allow for up to five subsidised allied health sessions per year (or up to ten for patients of Aboriginal or Torres Strait Islander descent), shared across all eligible disciplines, including physiotherapy, podiatry, audiology, exercise physiology, psychology and dietetics. These services are rebated at a rate of about $61.80 per session (with higher rebates possible once the Medicare Safety Net threshold is reached). However, many providers charge fees exceeding the rebate, resulting in potentially substantial out-of-pocket expenses. Furthermore, patients must first consult a general practitioner (GP) to initiate a GP Chronic Condition Management Plan (GPCCMP), adding an additional access barrier.

The five allocated allied health sessions are often consumed by competing clinical needs other than exercise physiology or physiotherapy, leaving insufficient resources for CKD-specific interventions. For example, patients with diabetes might use all five sessions for podiatry care within a single calendar year. That said, patients with type 2 diabetes are entitled to a formal assessment to determine their suitability for group dietetics, diabetes education or exercise physiology services. If deemed suitable, up to eight group sessions per calendar year are rebated for diabetes management. However, many eligible patients do not access these services, possibly because they are unaware that they exist. As a result, opportunities for structured lifestyle support that is critical for improving self-management, physical activity and overall health outcomes are frequently missed, leaving patients with suboptimal care and subject to a spectrum of deleterious factors contributing to ongoing preventable complications.

Practical physiotherapy and exercise physiology-based sessions in CKD are undervalued and infrequently delivered. State-based health services provide variable access, but physiotherapy and exercise physiology are rarely present in dialysis units, with services typically prioritised for acute or post-operative care rather than physical interventions. Private health insurance coverage is inconsistent and often excludes exercise physiology, further amplifying socio-economic inequities. The National Disability Insurance Scheme (NDIS) and aged care pathways offer some limited support, with eligibility criteria excluding many patients with CKD or delaying access until their disability is advanced. As a result, access to exercise-based interventions in CKD are frequently reactive rather than preventive.

4 | Comparative Perspective From Other Specialties and Countries

Patients with CKD are disproportionately disadvantaged compared with other chronic disease populations for funded access to allied health interventions. Patients with heart failure or cardiac disease have ready access to cardiac rehabilitation programs, which are well integrated into public hospital and health service budgets through the Independent Health and Aged Care Pricing Authority (IHACPA) Tier 2 funding code 40.21, with structured programs demonstrating clear functional and health economic benefits. Pulmonary rehabilitation similarly benefits from a designated funding code (IHACPA Tier 2 40.60) and national strategy frameworks that promote equitable access. In stark contrast, CKD receives no comparable systemic investment, despite being responsible for at least equivalent and often greater morbidity and mortality. Patients with kidney disease frequently experience incapacitating sequelae, including reduced mobility, chronic fatigue, anxiety and high healthcare utilisation, yet they face challenges in accessing rehabilitation programs that are regarded as standard for other chronic diseases due to substantial barriers, such as inequitable funding compared with other chronic diseases and the absence of a dedicated funding pathway. This represents a clear and avoidable inequity in the provision of evidence-based supportive care.

Establishing CKD-specific funding pathways and embedding highly coordinated allied health teams, including exercise physiologists, dietitians, psychologists and medical specialists, within dialysis and conservative kidney care services would enable integrated, proactive disease management. Reflecting the Australian model in part, a similar shortfall is observed in the United States, where renal rehabilitation lacks dedicated funding and is not embedded in the routine Medicare reimbursement models [7]. In contrast, in Japan, national insurance reforms have created reimbursable pathways for exercise instruction during CKD care, effectively positioning renal rehabilitation as a recognised, funded clinical service, with increasing uptake reported [8]. Similar successes in Portugal, Canada, Mexico and Germany demonstrate that implementation is feasible despite common barriers. A core theme across these models is robust multidisciplinary support, enabling exercise professionals to deliver culturally tailored care [9]. Collectively, these examples

underscore that policy alignment, institutional commitment and integration of rehabilitation into standard care pathways are critical for sustaining exercise programs in the haemodialysis settings. Notably, the profound physical dysfunction in the CKD population is gaining international attention through multidisciplinary Global Renal Exercise Network (GREX), driving global efforts to integrate exercise into standard kidney care [10].

5 | Policy Recommendations and Future Directions

To address these gaps, several strategic priorities can be considered. First, CKD-specific allied health funding codes should be established under the MBS and state-based health service budgets to reflect the chronic and progressive nature of the disease. Second, CKD care pathways should be aligned with established cardiac and pulmonary rehabilitation frameworks, emphasising structured, evidence-based exercise programs as a standard of care rather than an optional adjunct. Third, exercise physiology and physiotherapy services should be embedded within dialysis units and conservative kidney care clinics to ensure timely, equitable access. Fourth, health economic analyses should be leveraged to demonstrate cost-effectiveness of physical training interventions, supporting investment in preventive interventions that reduce hospitalisation and maintain patient independence. Finally, expanded education and training programs are needed to build a specialised workforce of CKD-trained exercise professionals.

6 | Conclusion

CKD is a highly prevalent condition associated with substantial physical, psychological and economic impacts. Frailty, sarcopenia and functional decline are prevalent across the CKD continuum and contribute markedly to the substantial morbidity and mortality risks and ever-increasing healthcare costs. Evidence demonstrates that exercise-based interventions improve functional outcomes and quality of life, yet access remains severely limited due to fragmented, inadequate and inequitable funding mechanisms. Drawing lessons from cardiac and pulmonary rehabilitation, CKD-specific allied health integration represents a critical, evidence-based and cost-effective opportunity to address unmet needs, reduce health inequities and enhance the overall care and well-being of Australians living with kidney disease.

Author Contributions

Limy Wong: conceptualisation, writing (original draft), writing (review and editing). **Lawrence P. McMahon:** writing (review and editing).

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