

Renal rehabilitation in occupational therapy for patients with chronic kidney disease

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Introduction

The recent epidemiologic data pointed out, that the general number of patients on hemodialysis (HD) is steadily increasing. Chronic kidney disease (CKD) includes conditions that damage their kidneys and decrease their ability to keep their healthy by doing the jobs listed. As medical advances are made in the care of persons with chronic illnesses including those with end-stage renal disease (ESRD), patients are not only experiencing increasing life expectancy but also bearing the burden of illness and treatment for a longer duration of time. It is increasingly important for medical staff to pay close attention to their individual physical, psychological, social functioning, in addition to perceptions of their life satisfaction, and well-being. Disability, as measured by reduced physical functioning [1,2], frailty [3,4], and decreased cognitive functioning [5-8] is commonly reported among people with CKD and ESRD. Previous studies have shown that exercise improves aerobic capacity, muscular functioning, cardiovascular function, walking capacity, and health-related quality of life (HRQOL) in patients with CKD and dialysis. Recently, additional studies have shown that higher physical activity contributes to survival and decreased mortality as well as physical function and HRQOL in patients with CKD and dialysis [9]. Numerous studies suggest that higher exercise capacity, muscle strength, activities of daily living (ADL), and physical activity contribute to lower mortality in patients with CKD and dialysis [10-14]. We should recognize the importance of physical function in CKD and dialysis.

Activities of Daily Living (ADL) in CKD Patients

Multiple studies show that new dialysis patients undergo a substantial decline among ADL. It has reported that ADL are limited in patients on HD because they already have various complications when starting dialysis treatment. According to the Cardiovascular Multimorbidity in Primary Care (CLARITY) study in the West of Ireland, 40.4% of patients from primary care centers was functional impairment, with a higher proportion of impairment reported by patients with CKD (55.6%) than those without (37.1%). When it comes to basic ADL (BADL) and instrumental ADL (IADL), 29.4% of patients was impairment in BADL (CKD patients; 44.3%, No CKD patients; 26.1%), and 35.4% of patients was impairment in IADL (CKD patients; 49.2%, No CKD patients; 32.4%) [15].

The other study of ADL and IADL by 148 participants with ESRD receiving maintenance dialysis, 58.8% demonstrated dependence in ADLs or IADLs, 47.2% exhibited IADL dependence alone, and 11.5% exhibited combined IADL and ADL dependence [16]. Housework was the most frequent impaired IADL, followed by transportation use, grocery shopping, managing finances, meal preparation, taking medications, and finally, telephone use. Regarding the ADL items,

bathing was the most frequent impaired activity, followed by dressing, ambulating, and transferring from a chair was the least frequent impaired activity [16].

In the prospective cohort study of Dialysis Outcomes and Practice Patterns Study (DOPPS) phase 4 (2009-2011), the proportion of patients who could perform each ADL task without assistance ranged from 97% (eating) to 47% (doing housework). 36% of patients could perform all tasks without assistance, and 14% of patients had high functional dependence. Functionally independent patients were younger and had many indicators of better health status, including higher HRQOL [12-14].

Health-Related Quality of Life (HRQOL) in CKD Patients

Patients with CKD endure compromised HRQOL. Diminished HRQOL is common in dialysis patients and associated with increased risks for morbidity and mortality. Poor physical HRQOL may be defined by limited physical function, role limitations due to physical health, dissatisfaction with physical ability, and poor mental HRQOL may be defined by depressive thinking, lack of positive affect, anxiety, and feelings of social isolation. In recent years, there has been a growing interest in understanding HRQOL of patients with CKD. It is now widely accepted that HRQOL is significantly compromised in patients with ESRD and HRQOL has been associated with increased mortality and morbidity [17,18].

Psychological Functioning in CKD Patients

Anxiety is a common yet frequently overlooked psychiatric symptom in patients with ESRD treated with HD. Among the many symptoms that affect patients on chronic dialysis, depression and pain are particularly common, strongly associated with decrements in HRQOL [19]. The prevalence of depression is high in dialysis patients. This psychiatric condition has a significant adverse impact on patients' perception of HRQOL. A number of recent, large and well-conducted

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studies have confirmed markedly raised rates of depression amongst those with CKD, with meta-analysis suggesting the prevalence of interview-defined depression to be approximately 20% [20]. Depression is the most common psychiatric illness in patients with ESRD. The reported prevalence of depression in dialysis population varied from 22.8% (interview-based diagnosis) to 39.3% (self- or clinician-administered rating scales) [21].

Renal Rehabilitation (RR) and Occupational Therapy (OT)

Renal rehabilitation (RR) is coordinated, multifaceted interventions designed to optimize a renal patient's physical, psychological, and social functioning. Exercise training or intervention to increase physical activity may ameliorate poor physical functioning and frailty, and even may improve survival in patients with CKD. Although exercise interventions improve outcomes across the spectrum of CKD, including patients treated with dialysis, patients treated with dialysis face barriers to exercise that patients with predialysis CKD do not.

Rehabilitation at earlier stages of CKD (or prehabilitation before dialysis) might be more beneficial than not addressing the decreasing physical functioning and low physical activity until patients are receiving dialysis. Recently, exercise intervention and high levels of plasma adsorption (PA) have been recommended for patients on HD. Studies have found that these are effective for improving exercise tolerance, pulmonary function, cardiac function, coronary risk factors, and survival prognosis and for preventing the progression of coronary artery stenotic lesions [22-29].

The recent epidemiologic data pointed out, that the general number of patients on HD is steadily increasing, especially in group of elderly patients over 75 years old. As the number of elderly patients on HD increases, it is important to maintain appropriate PA to protect against decreases in physical function and ADL function caused by disuse in daily life.

Moreover, elderly patients on HD tend to have low participation in social activity, and they mostly stay indoors, which further reduces their physical levels of PA. In elderly patients on HD, the amount and intensity of PA are important. However, few studies have addressed the level of everyday activities that patients on HD are engaged in or their attitudes toward exercise and their state of psychological preparedness.

Patients with CKD and ESRD present with many health problems, which may lead to increased mortality and dysfunction. Numerous comorbidities may contribute toward physical, emotional, and social problems and a decreased HRQOL. Difficulty ambulating, balance deficits, joint pain and stiffness, muscle spasm and weakness, fatigue, neuropathy, and difficulty with ADL may contribute to a decrease in functional independence.

RR aims to restore physical functioning, facilitate independence in ADL, and promote functional independence by using various therapeutic procedures. Especially, occupational therapy (OT) is the only profession that helps people across the lifespan to do the things they want and need to do through the therapeutic use of daily activities (occupations). OT enable people to live life to its fullest by helping them promote ADL and IADL and prevent—or live better with—injury, illness, or disability. Very few studies have investigated the effect of OT in patients with CKD. Recently, Watanabe et al. reported the effectiveness of OT by improved ADL scores in HD patients [30].

Decrease in physical function is one of factors responsible for difficulties in ADL experienced by dialysis patients. The individualized

care that takes into account these factors is important for dialysis patients with limitations in ADL. It needs comprehensive strategies such as simultaneous intervention by rehabilitation specialists, which could increase the level of ADL in dialysis patients. The occupational therapists could contribute to improve not only ADL and IADL, but also HRQOL in CKD patients.

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