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Effect of qigong training on fatigue in haemodialysis patients: A non-randomized controlled trial

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KEYWORDS
End-stage renal disease;
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Summary
Background: Fatigue is a debilitating symptom in haemodialysis patients. Qigong presents a potentially safe modality of treatment for chronic fatigue patients but has not yet been evaluated in haemodialysis patients.
Objective: The aim of this study is to investigate whether qigong exercise affects fatigue in haemodialysis patients.
Design: A 6-month non-randomized control trial with six measurement periods was conducted. The qigong group was taught to practice qigong three times per week for six months. The control group received usual routine care.

Main outcome measure Fatigue, as measured by the ''Haemodialysis Patients Fatigue Scale''.
Results: A total of 172 patients participated in this study, with 71 patients in the qigong group and 101 patients in the control group. The results indicated that all patients experienced mild to moderate fatigue. There was no difference between the qigong and control groups in fatigue at baseline. However, fatigue was lower in the qigong group than in the control group at 8 weeks (43.5 vs. 53.9), 12 weeks (44.7 vs. 53.6), 16 weeks (43.2 vs. 50.8), 20 weeks (42 vs. 50.2), and 24 weeks (41.4 vs. 48.4). The results, based on the generalized estimating equation method, showed that fatigue was significantly lower in the qigong group than in the control group (odds ratio = 0.004, $p = 0.005$).

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Conclusion: Fatigue in the qigong group showed a continuous decrease, which was maintained until the end of data collection at 24 weeks. Thus, qigong presents a potentially effective and safe method to reduce fatigue in haemodialysis patients.

Introduction

End-stage renal disease (ESRD) is a common chronic illness that has been increasing in incidence and prevalence around the world, including in Taiwan.[1] Patients with ESRD are commonly treated with haemodialysis (HD). This treatment removes metabolites, including uremic toxins, and water through diffusion, convention, and ultrafiltration.[2] Dialysis partially replaces kidney function, but patients endure many distressful symptoms.[1,2] A common debilitating symptom in ESRD patients on maintenance HD is fatigue.[3] Fatigue has been defined as a subjective feeling of tiredness, an unpleasant experience that is difficult with which to live.[4,5] A high prevalence of fatigue, ranging from mild to severe, has been reported in HD patients.[6,7]

Fatigue in patients on HD has been associated with many physiological factors, including accumulation of metabolic waste, metabolic disturbance, abnormal energy consumption, and loss of appetite.[6–8] Moreover, dialysis patients' fatigue can worsen due to physical inactivity (sedentary behaviour) and emotional distress.[7,9] Poor management of fatigue may limit physical activities, affect daily living, impair the quality of life, increase the risk of cardiovascular events, and negatively influence survival.[3,5,10,11] Thus, fatigue is understood as a common, severe problem and needs management in ESRD patients on maintenance HD.

Traditional Chinese medicine is based on the theory that discomfort, pain, and sickness are a result of a blockage or stagnation of energy flow through channels in the human body.[12,13] In traditional Chinese medicine, fatigue is considered to reflect disharmony and depletion in the supply of energy, or ''Qi'', in the body. Qigong is one of the traditional complementary interventions used to strengthen Qi through self-practice.[12,14] If performed regularly, qigong, which consists of a mindfulness technique, steady deep breathing, slow body movement, and relaxing one's posture, affects the muscular system and leads to increased muscle strength and a sense of relaxation. It also may improve psychological functioning and diminish emotional stress and, thereby, beneficially affect fatigue.[12,15]

Previous studies have found that qigong represents a potentially safe method of treatment for chronic fatigue syndrome and cancer-related fatigue. In one study, in which 18 Caucasian, British females participated in qigong exercises, the results indicated a significant reduction in the symptoms of chronic fatigue.[12] A randomized trial was used to assess the effect of a four-month qigong intervention programme among patients with chronic fatigue syndrome. The results indicated that fatigue symptoms and mental functioning were significantly improved in chronic fatigue patients who received qigong training, as compared to the controls.[16] One trial included 162 cancer patients who participated in qigong training for 10 weeks. The results showed that the qigong training significantly improved their quality of life and reduced their fatigue.[13] However, there are few studies that have investigated the effect of qigong on fatigue in HD patients.

Several studies have tested the effect of complementary therapy, such as acupuncture, yoga-based exercise, and acupressure, on the fatigue of HD patients.[17–19] It is relatively simple for patients to practice qigong training as compared to other methods such as acupuncture and yoga-based exercise. The effect of qigong exercise on fatigue as well as the long-term effect in ESRD patients, however, has not yet been evaluated. If research provides evidence that qigong training will reduce the fatigue of HD patients, then it can be incorporated into the clinical care plan to improve patients' well-being. Thus, the aim of this study is to investigate the effects of qigong exercise on fatigue in ESRD patients on HD. We hypothesized that patients who engage in qigong exercise would experience a reduction in fatigue and that the effect would be maintained for a six-month period.

Materials and methods

Design

A non-randomized control 6 month trial with six measurement periods (baseline, 8 weeks, 12 weeks, 16 weeks, 20 weeks, and 24 weeks after intervention) was conducted. The patients underwent HD three times per week on a Monday-Wednesday-Friday schedule or a Tuesday-Thursday-Saturday schedule at an HD centre that had an open design. This meant that random assignment of participants was difficult to achieve because patients in the experimental and control groups could come to the centre at the same time. To avoid contamination, we used a coin toss to assign the patients on the Monday-Wednesday-Friday schedule to the qigong group.

The experimental group did qigong exercises 10 min per day, three times per week on their HD day at the centre and self-practiced twice per day on non-HD days at home. Patients were asked to record the times of qigong self-practice in a diary. Patients in the control group received usual routine care.

The qigong exercises were conducted for six months. A total of six months was chosen because, according to previous research, qigong, yoga, or tai chi participants may need more than three months to achieve the effects of the practice. In addition, the aim of this study was to evaluate the long-term effect of qigong training on fatigue.

Setting and participants

ESRD patients who were undergoing maintenance HD three times per week at the outpatient dialysis units of a medical centre in northern Taiwan were recruited for the study. The inclusion criteria was a diagnosis of ESRD, having received regular HD treatment for at least 6 months, aged 18 years or