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Health-related Outcomes and Safety of Qigong in Patients with Chronic Kidney Disease: A Systematic Review and Meta-analysis

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Preliminary searches.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols INPLASY) on 16 June 2025 and was last updated on 16 June 2025.

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INTRODUCTION

R eview question / Objective To determine the effects of traditional Qigong (e.g., Baduanjin, Tai Chi, Wuqinxi, Yijinjing) compared with no intervention, other exercises, conventional treatment, or mental health education on health-related outcomes in adults ≥18 years with chronic kidney disease (including hemodialysis or peritoneal dialysis patients) based on randomized controlled trials. Primary outcomes include:

- Mortality and hospitalization rates

– Laboratory parameters (e.g., serum creatinine, eGFR, CRP)

- Quality of life (e.g., KDQoL-36/SF-36)
- Mental health status (e.g., HAMA/HAMD)
- Sleep quality (e.g., PSQI)

Physical capacity (e.g., 6-minute walk test, handgrip strength)

Secondary analyses will explore heterogeneity by dialysis status, Qigong type, and intervention duration.

Condition being studied Chronic kidney disease (CKD) is a progressive condition characterized by impaired kidney function and is a major global cause of morbidity and mortality[1-3]. CKD is often associated with reduced physical capacity, which heightens cardiovascular risk and mortality[4-6]. Improving physical activity levels and identifying effective exercise interventions are key to delaying disease progression and improving outcomes in this population[4, 7, 8].

Qigong is a traditional Chinese exercise which contributes to both physical and psychological wellbeing including Tai Chi, Ba duan jin, Wu qin xi, etc[9]. These exercise involves full-body stretching movements, breathing training and psychological relaxation[9]. Numerous previous studies[10, 11] have investigated the potential therapeutic benefits of Qigong in patients with CKD. However, many of these studies are limited by small sample sizes, varying degree of quality and focusing on different health-related outcome, complicating the interpretation of the overview of effectiveness and safety of qigong in this population. To date, there has been a lack of systematic reviews and comprehensive assessments of Qigong for CKD patients. Moreover, it remains unclear whether different types of qigong exert varying effects on health-related outcome in this population.

Considering these gaps, we aim to conduct a systematic review and meta-analysis of RCTs to characterize what health-related outcomes and evaluated the efficacy and safety of Qigong in patient with CKD, providing evidence to inform their application in clinical practice.

[1] GUO J, LIU Z, WANG P, et al. Global, regional, and national burden inequality of chronic kidney disease, 1990-2021: a systematic analysis for the global burden of disease study 2021 [J]. (2296-858X (Print)).

[2] KALANTAR-ZADEH K, JAFAR T H, NITSCH D, et al. Chronic kidney disease [J]. (1474-547X (Electronic)).

[3] CHEN T K, HOENIG M P, NITSCH D, et al. Advances in the management of chronic kidney disease [J]. BMJ (Clinical research ed), 2023, 383: e074216.

[4] YANG C A-O, DUAN R, YANG Z, et al. Physical Activity Elements and Adverse Outcomes in Patients with Chronic Kidney Disease in Guangdong (PEAKING) project: protocol for a prospective cohort study [J]. (2044-6055 (Electronic)).

[5] RAMPERSAD C, BRAR R, CONNELLY K, et al. Association of Physical Activity and Poor Health Outcomes in Patients With Advanced CKD [J]. (1523-6838 (Electronic)).

[6] BISHOP N C, BURTON J O, GRAHAM-BROWN M P M, et al. Exercise and chronic kidney disease: potential mechanisms underlying the physiological benefits [J]. Nature reviews Nephrology, 2023, 19(4): 244-56.

[7] Su G, Qin X, Zhang L, et al. Exploring facilitators and barriers to exercise in chronic kidney disease patients based on the PEAKING cohort. Chinese General Practice. 2020;23(31):3971-3975+3982.

[8] BATTAGLIA Y A-O, BACIGA F, BULIGHIN F, et al. Physical activity and exercise in chronic kidney disease: consensus statements from the Physical Exercise Working Group of the Italian Society of Nephrology [J]. (1724-6059 (Electronic)). [9] General Administration of Sport of China. Management Measures for Health Qigong [Standard]. 2024.

[10] CHANG J H, KOO M, WU S W, et al. Effects of a 12-week program of Tai Chi exercise on the kidney disease quality of life and physical functioning of patients with end-stage renal disease on hemodialysis [J]. Complementary therapies in medicine, 2017, 30: 79-83.

[11] ZHANG F, LIAO J, ZHANG W, et al. Effects of Baduanjin Exercise on Physical Function and Health-Related Quality of Life in Peritoneal Dialysis Patients: A Randomized Trial [J]. Frontiers in medicine, 2021, 8: 789521.

METHODS

Participant or population

Population:

1. Adults \geq 18 years meeting KDIGO 2012 criteria for chronic kidney disease (CKD), evidenced by either:

(1)eGFR 3 months (2) Albuminuria \geq 30 mg/24h (or ACR \geq 30 mg/g)

2. Including all CKD stages (G1-G5) and subgroups:

①Non-dialysis-dependent CKD (G3-G5)

②Maintenance hemodialysis

③Peritoneal dialysis

3. Exclusion criteria:

1 History of kidney transplantation

2 Acute kidney injury without underlying CKD.

Intervention Received traditional Chinese exercise (e.g., Baduanjin, Tai Chi, Wuqinxi, Yijinjing) intervention.

Comparator No Qigong intervention in the control group, conventional treatment and Mental health education will be retained.

Study designs to be included Randomized controlled trial (RCT).

Eligibility criteria 1. Reported at least one healthrelated outcome of interest, including sleep, quality of life, etc.

2. The following study designs or publication types will be excluded: review literature, meta-analysis, duplicate publication, summary of experiences, animal experiment research, single-arm studies, studies with incomplete outcome data, studies with patients with other diseases, and studies with unclear intervention protocols.

Information sources The following electronic databases will be searched from inception to June

2025: PubMed, Web of Science, Cochrane Library, Embase, China National Knowledge Infrastructure (CNKI), VIP Database for Chinese Technical Periodicals (VIP), Wanfang Data, and China Biology Medicine disc (CBM). Searches will be conducted without language restrictions. Other studies will be identified by: looking through all the articles that cite the papers included in the review ("snowballing"), reference list checking, searching conference proceedings, searching dissertation and thesis databases, and searching trial or study registers.

Main outcome(s) The outcomes of interest comprised health-related indicators including mortality, hospitalization rates, quality of life, mental health status, sleep quality, laboratory parameters (serum creatinine, estimated glomerular filtration rate, C-reactive protein, etc.), clinical characteristics (blood pressure, left ventricular ejection fraction, New York Heart Association classification, ect.), and exercise capacity (6-minute walk test, handgrip strength, etc.). The evaluation criteria incorporated both objective laboratory/clinical measurements and subjective questionnaire outcomes.

Quality assessment / Risk of bias analysis Risk of bias will be assessed using:

Study quality was evaluated using a risk assessment framework (low, unclear, or high risk) using Review Manager (RevMan 5.4.1). Publication bias was analyzed by generating funnel plots, and asymmetry was statistically validated via Egger's and Begg's tests.

Data will be assessed independently by at least two people (or a person/machine combination) with a process to resolve differences.

Additional information will be sought from study investigators if required information is unclear or unavailable in the study publications/reports.

Strategy of data synthesis Statistical descriptions were presented as means and standard deviations for continuous variables and counts for categorical variables.Since various scales as well as biochemical and clinical test results were used to measure the health outcomes of the subjects in the included studies, and all outcome measures from various Qigong interventions were treated as continuous variables and presented as mean, standard deviation (SD), and mean difference (MD) or standardized mean difference (SMD), with 95% confidence intervals (CI). When at least three studies reported the same outcome, we performed a meta-analysis of this outcome, and consided the heterogeneity between studies, we chose a random effects model(DerSimonian and Laird) for

analysis instead of a fixed effects model Descriptive analyses were conducted if there were insufficient similarity information to pool data. 12 was used to measure heterogeneity across studies, which was categorized as low (0%-50%), moderate (51%-75%), or high (>75%). Q test was also used to evaluate heterogeneity, When p > 0.1, it indicates no heterogeneity. We performed sensitivity and subgroup analyses to explore potential sources of heterogeneity. The leave-onestudy method was used to examine whether the overall estimate was influenced by the substantial heterogeneity observed, heterogeneity was explored through subgroup analyses whereby results were stratified by dialysis treatment (hemodialysis, peritoneal dialysis, and no dialysis); type of Qigong (Baduanjin, Wuqinxi, and Taijiquan); different duration (≤ 3 months, > 3 months). Publication bias was assessed by funnel plot and the Begg test. Forest plots were used to display the mean difference or RR and 95% confidence interval (CI) for each study and the pooled summary effect. The meta-analysis was conducted using Review Manager (RevMan 5.4.1) software.

Subgroup analysis

We will conduct subgroup analyses stratified by: 1. Dialysis status including Hemodialysis, Peritoneal dialysis, and Non-dialysis (CKD stages 1-5 without dialysis)

2. Qigong subtype, such as Baduanjin, Wuqinxi, Tai Chi

3. Intervention duration:

(1)Short-term (\leq 3 months)

②Long-term (> 3 months)

Purpose:

To investigate sources of heterogeneity and differential treatment effects across clinically relevant subgroups.

Statistical method:

①Stratified random-effects meta-analysis (DerSimonian-Laird).

②Heterogeneity assessed by l^2 (thresholds: 0– 50% low, 51–75% moderate, >75% high) and Qtest (p < 0.10).

③Sensitivity analysis via leave-one-study-out method.

Sensitivity analysis The leave-one-study-out method will be performed to examine whether the overall estimate is influenced by substantial heterogeneity (defined as $l^2 > 50\%$ or Q-test p < 0.10).

Country(ies) involved China.

Keywords Qigong, Health-related Outcomes, Chronic Kidney Disease, Dialysis, Systematic review, Meta-analysis.

Contributions of each author

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