Adverse health effects of frailty among chronic kidney disease (CKD) patients: A systematic review

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A B S T R A C T

*Aim*: Frailty is associated with increased susceptibility to adverse health outcomes. This systematic review uncovers the adverse health effects of frailty in patients with chronic kidney disease (CKD); we also deliberate the causes and prevalence of the comorbidities of frailty.

*Study design*: PubMed, Medline, CINAHL, Web of Science, Google Scholar, \_\_\_\_\_\_, and \_\_\_\_\_\_\_ were used to identify the articles.

*Data synthesis*: Articles available online before the 16th of February 2019 which mentioned adverse effects of frailty in patients with CKD was qualified for the systematic review.

*Results*: The literature search yielded 621 articles, of which \_\_\_ met the criteria and were included (n = \_\_\_, age range: \_\_\_ years). Several biological (cardiovascular, renal, immunological, cognitive, endocrinologic, etc) and psychological effects are because of frailty in CKD patients. They also present with worse quality of life and increased risk of health-care utilization.

*Conclusion*: Frailty in patients with CKD is associated with an increased risk of adverse health outcomes, with a considerable amount of evidence showing causality between frailty and worsened health.

**Contents**

[1. Introduction 2](#_Toc1213430)

[2. Method 2](#_Toc1213431)

[2.1. Search strategy 2](#_Toc1213432)

[2.2. Selection criteria 2](#_Toc1213433)

[3. Data analysis 2](#_Toc1213434)

1. Introduction
2. Method
   1. Search strategy

The following search terms were used to identify articles that assessed adverse health outcomes associated with frailty among patients with CKD: (“frail” OR “frailty” OR “frail phenotype” OR “frailty index”) AND (“chronic kidney disease” OR “chronic renal disease” OR “chronic renal insufficiency” OR “kidney transplant” OR “renal transplant” OR “end-stage kidney disease” OR “end-stage renal disease” OR “dialysis”) AND (“frail” OR “complication” OR “cause” OR “etiology” OR “aetiology”).

This review intends to find out the adverse health outcomes caused by frailty among patients with CKD. Thus, we limited the search criteria to find out results including causality. To make the search less strict, we add “frail” after the second AND operator. This is meant to look for articles in which “complication”, “cause”, “etiology” or “aetiology” are not used but covers the adverse effects of frailty.

* 1. Selection criteria

We include primary research articles which analyzed the prevalence of comorbidities, or causal relationship between frailty and adverse health outcomes. All studies deal with the effects of frailty in patients with CKD, end-stage renal disease (ESRD), on dialysis, or have gone through kidney transplantation are eligible for the inclusion. We excluded articles if they were not available in English, \_\_\_, or German languages. If over one article approached the same study population with various analyses, the articles that meet the aim of the systematic review were selected and presented in combination.

1. Data analysis

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