AUG 24, 2023



**DOI:**
dx.doi.org/10.17504/protocols.io.j8nlkooxxv5r/v1

**Protocol Citation:** Ioannis Bellos, Vassiliki Benetou 2023. Assocation of serum galectin-3 levels with survival and cardiovascular disease in dialysis patients: a systematic review and dose-response meta-analysis. **protocols.io** https://dx.doi.org/10.17504/protocols.io.j8nlkooxxv5r/v1



**Protocol status:** Working
We use this protocol and it's working

# Assocation of serum galectin-3 levels with survival and cardiovascular disease in dialysis patients: a systematic review and dose-response meta-analysis

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ABSTRACT

The present systematic review and meta-analysis aims to determine the association of serum galectin-3 levels with the risk of mortality and cardiovascular disease among patients undergoing maintenance dialysis. The outcomes of interest will include mortality (all-cause and cardiovascular), major adverse cardiovascular events, as well as measures of arterial stiffness and echocardiographic parameters. The risk of bias of the included studies will be assessed using the ROBINS-I tool. A dose-response meta-analysis approach will be implemented to define a potential exposure-response association between serum galectin-3 levels and mortality risk.

**Created:** Aug 24, 2023

**Last Modified:** Aug 24, 2023

**PROTOCOL integer ID:** 86925

**Keywords:** dialysis; mortality; cardiovascular; arterial stiffness; galectin

1 Objective To determine the association of serum galectin-3 levels with survival and cardiovascular disease in patients undergoing maintenance hemodialysis.

2 Eligibility criteria The population of the study will consist of adults with diagnosed stage 5 chronic kidney disease, necessitating renal replacement therapy in the form of maintenance hemodialysis. Pre-dialysis patients, peritoneal dialysis patients and kidney transplant recipients will be excluded. The exposure of interest will be serum galectin-3 levels. The primary outcome of interest will be all-cause mortality. Secondary outcomes will include cardiovascular mortality, major adverse cardiovascular events, arterial stiffness and echocardiographic parameters. Cohort (prospective and retrospective), case-control and cross-sectional studies will be held eligible. Descriptive, animal and in vitro studies, as well as case reports/series and review articles will be excluded.

3 Literature search Literature search will be performed by systematically searching from inception PubMed, Scopus, Web of Science and CENTRAL (Cochrane Central Register of Controlled Trials). In addition, Google Scholar will be screened to provide grey literature coverage, while the full reference lists of the included studies will be examined to recognize potential missing articles. No date/language restrictions will be applied.

4 Data extraction The following data will be extracted: year of publication, country, eligibility criteria, sample size, study design, type of population, participants' age, sex, percentage of hypertension, diabetes mellitus, dialysis vintage, single-pool urea Kt/V, as well as the necessary information regarding the outcomes of interest.

5 Quality assessment The risk of bias of the included studies will be evaluated with the ROBINS-I tool, adjusted for exposure studies, taking into account the following domains: confounding, selection of participants, classification of exposures, departures from intended exposures, missing data, measurement of outcomes and selection of the reported results.

6 Data analysis All outcomes will be evaluated qualitatively at first. Quantitative meta-analysis will be performed in case of at least 3 studies per outcome. Confidence intervals will be set at 95%. Dose-response meta-analysis will be conducted to define the potential exposure-response

relationship between serum galectin-3 levels and mortality risk. In particular, a non-linear model using restricted cubic splines will be applied in a one-stage approach. Restricted cubic splines were located at the 25th, 50th and 75th percentiles of the serum galectin-3 level distribution.