Mortality Risk Factors in Chronic Kidney Disease: A Comprehensive Survival Analysis

# Background

Chronic kidney disease (CKD) patients are at high risk of mortality. Identifying which clinical and anthropometric parameters most strongly predict death can help improve patient management.

# Methods

• Data from 581 CKD patients were analyzed.  
• Patients were grouped as: died within 1 year, died after 1 year, or alive.  
• Statistical tests: univariate logistic regression, t-test, chi-square, ANOVA, Kaplan-Meier, and Cox regression.  
• Survival curves and hazard ratios were calculated for each significant variable.

# Key Results

• Strongest predictors of mortality: Lower eGFR, higher ABSI, WWI, ConI, BRI, older age, higher body fat, higher albuminuria, diabetes.  
• Novelty: Anthropometric indices (ABSI, WWI, etc.) are rarely reported in the literature as mortality predictors in CKD.  
• Survival group differences: Patients who died within 1 year had the worst risk profiles.  
• All results and plots are available on GitHub: https://github.com/SenolDogan/Kidney

# Comparison with PubMed Literature

## A. Well-Established Risk Factors (Confirmed by Literature)

• eGFR: Lower eGFR is a key predictor ([Chen et al., 2023](https://pubmed.ncbi.nlm.nih.gov/37591229/), [Peng et al., 2024](https://pubmed.ncbi.nlm.nih.gov/39334214/)).  
• Age: Older age increases mortality risk ([Li et al., 2025](https://pubmed.ncbi.nlm.nih.gov/40259614/)).  
• Body composition: Obesity and body composition are linked to CKD outcomes, but indices like ABSI and WWI are less commonly reported.  
• Diabetes and blood glucose: Diabetes is a well-known risk factor ([Chen et al., 2023](https://pubmed.ncbi.nlm.nih.gov/37591229/), [Cao et al., 2025](https://pubmed.ncbi.nlm.nih.gov/39915833/)).  
• Albuminuria: Standard marker for CKD progression and mortality ([Peng et al., 2024](https://pubmed.ncbi.nlm.nih.gov/39334214/)).

## B. More Original/Novel Findings in Your Analysis

• ABSI, WWI, BRI, ConI: These indices are not commonly reported in large CKD mortality studies. Their strong association with mortality in your analysis is a novel contribution.  
• Detailed survival grouping: Splitting deceased patients into "died within 1 year" and "died after 1 year" is more granular than most published studies.  
• Comprehensive multi-method statistical approach.

## C. Other Factors in Literature (Not Directly in Your Analysis)

• Lifestyle (physical activity, diet, smoking): Important in literature ([Chen et al., 2023](https://pubmed.ncbi.nlm.nih.gov/37591229/), [Tsai et al., 2024](https://pubmed.ncbi.nlm.nih.gov/39187191/)), but not detailed in your dataset.  
• Comorbidities (periodontitis, NAFLD, cognitive impairment): Recent studies show associations, but not directly analyzed in your dataset.

# Conclusion

Your analysis confirms known risk factors for mortality in CKD and introduces novel anthropometric indices as potential predictors. These findings may help refine risk stratification and guide future research.

# References

• Chen et al., 2023, Am J Nephrol: https://pubmed.ncbi.nlm.nih.gov/37591229/  
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