



Exploring the Relationship Between Hemoglobin Levels and Clinical Outcomes in Anemic Dialysis-Dependent Chronic Kidney Disease Patients

Gautam Sahu¹, Pramil Tiwari¹, Pooja Arora², Sanjay D'Cruz³, Anita Tahlan⁴

¹Department of Pharmacy Practice, National Institute of Pharmaceutical Education Research, NIPER, Mohali, Punjab, India.

²Department of Pharmacoinformatics, National Institute of Pharmaceutical Education Research, NIPER, Mohali, Punjab, India.

³Department of General Medicine, Government Medical College and Hospital, GMCH, Chandigarh, India.

⁴Department of Pathology, Government Medical College and Hospital, GMCH, Chandigarh, India.

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Overview

Kidney Disease...

... is a growing global Problem

850 million people are estimated to have CKD worldwide [1]

33% increase in global prevalence of CKD between 1990 & 2017 [1]

5.4 million people will receive kidney replacement therapy (KRT) by 2030 [1, 2]

... has multiple adverse consequences

5th cause of global death and disability secondary to CKD by 2050 [1]

7th risk factor for death [1]

5% of year of life lost (YYL) in 2040 will be attributable to CKD [1, 2]

93% of dialysis-dependent CKD patients are affected by anemia [1-3]

Objective

To assess the relationship between hemoglobin levels and clinical as well as biochemical outcomes in elderly and nonelderly anemic dialysis-dependent chronic kidney disease (DD-CKD) patients.

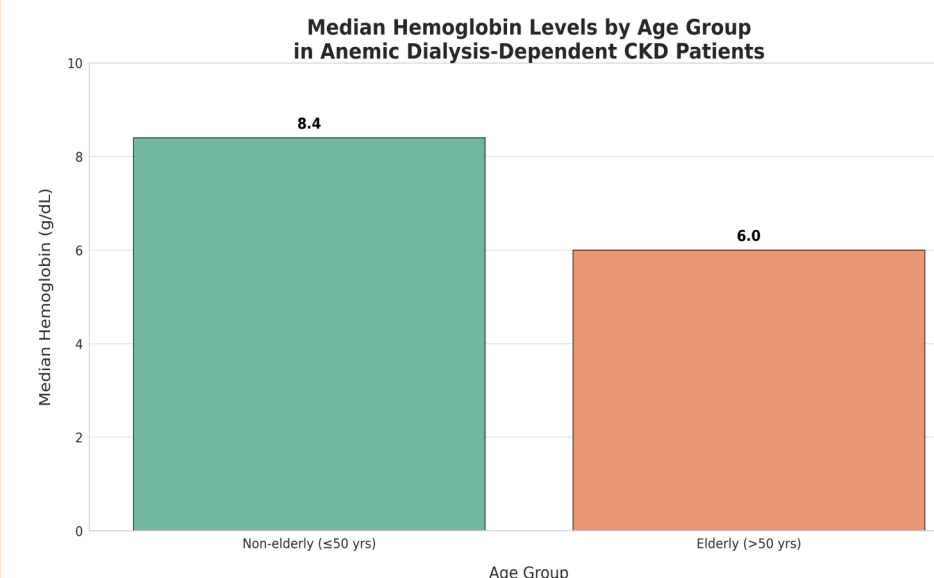
Methodology

This cross-sectional study, conducted at a tertiary care hospital, included 104 randomly selected participants categorized as nonelderly (≤ 50 years) or elderly (> 50 years) and stratified by hemoglobin levels (≤ 8.0 g/dL, > 8.1 g/dL).

Data were analyzed using SPSS (version 20.0). Continuous variables were reported as medians (IQR), and categorical variables as frequencies (%). Relationships were assessed using the Generalized Linear Model (GLM), while binary and multinomial logistic regression analyzed clinical predictors and associations.

Results

The study included 70 (67.30%) male and 34 (32.69%) female patients, with a mean age of 52.63 ± 13.27 years. Among nonelderly patients, the average hemoglobin reduction (≤ 8.0 g/dL) was 8.40 (6.70 -9.20), whereas, in elderly patients, it was 6.00 (5.00-9.00). Elderly patients exhibited a higher comorbidity burden (56.8%) compared to non-elderly patients (21.4%). Higher hemoglobin levels were observed in elderly known cases during 3-hour dialysis sessions compared to freshly diagnosed patients (OR=2.687, CI: 0.421-17.163). Longer dialysis durations (13-26 months) in elderly known patients were associated with elevated levels of urea (OR=1.064, CI:0.915-1.236), creatinine (OR=1.905, CI: 0.484-7.501), ferritin (OR=1.006, CI: 0.989-1.023), and triglycerides (OR=2.626, CI:1.414-2.626). Conversely, shorter dialysis durations (< 12 months) showed improved hemoglobin and vitamin D levels. Female patients demonstrated a higher mean eGFR (8.207, CI: 6.866-9.549) compared to males (7.595, CI: 6.621-8.568).



Conclusion

Hemoglobin levels significantly affect clinical and biochemical outcomes in anemic DD-CKD patients. Elderly patients with lower hemoglobin levels exhibited a higher comorbidity burden, while longer dialysis durations in elderly known cases were associated with elevated biochemical parameters and persistently low hemoglobin levels. Tailored anemia management strategies considering age, gender, and dialysis duration are essential.

References

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