

Hematological Abnormalities and Indices Across Stages of Chronic Kidney Disease (CKD)

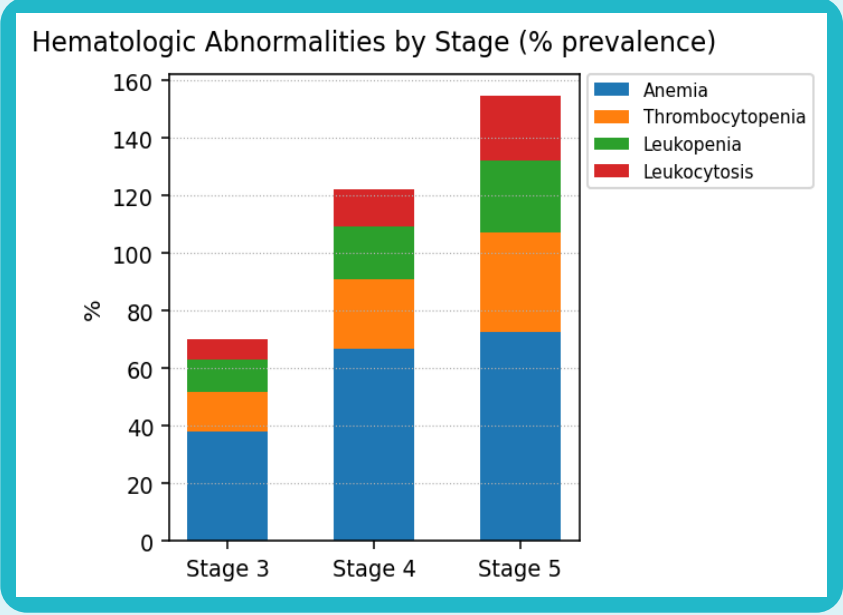
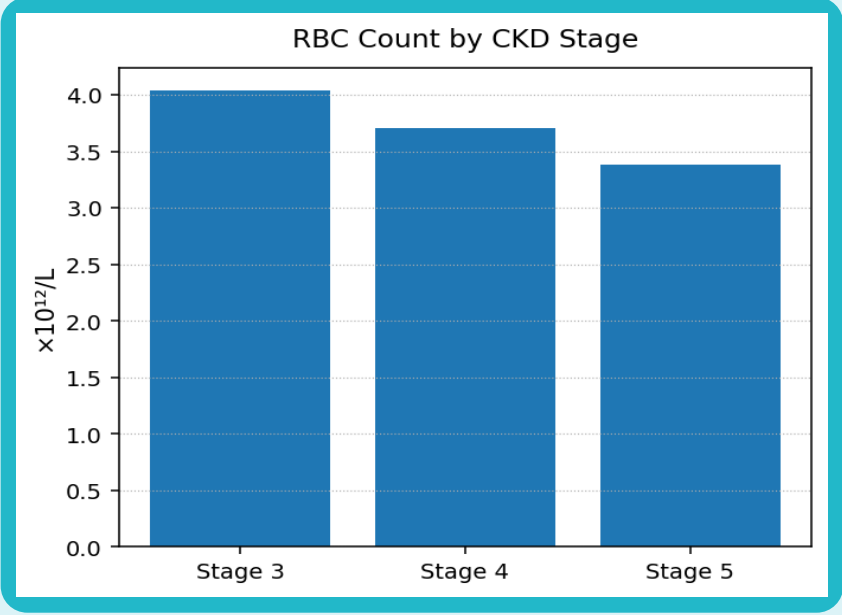
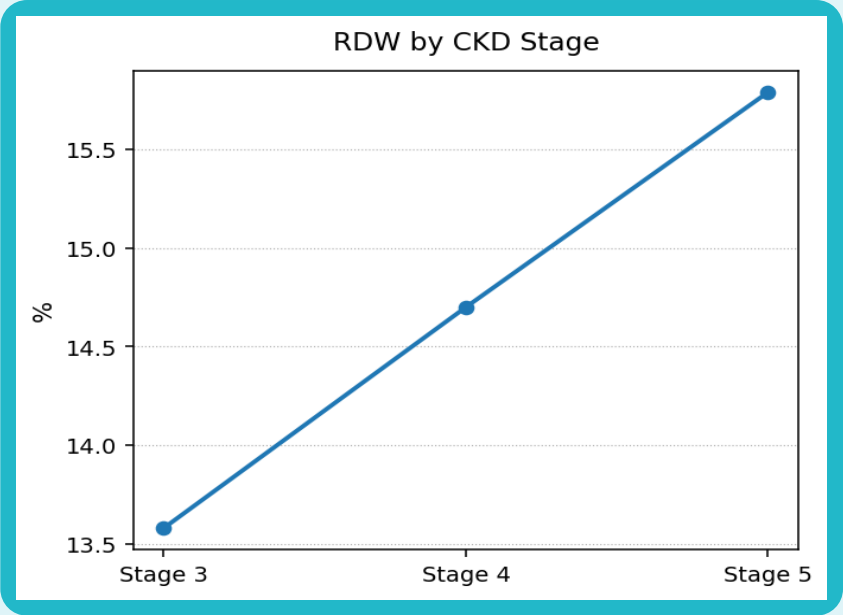
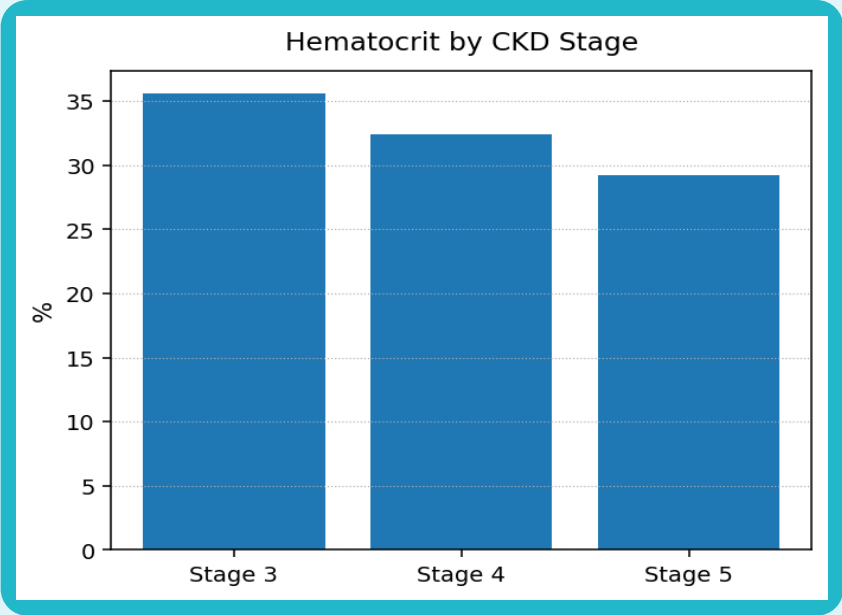
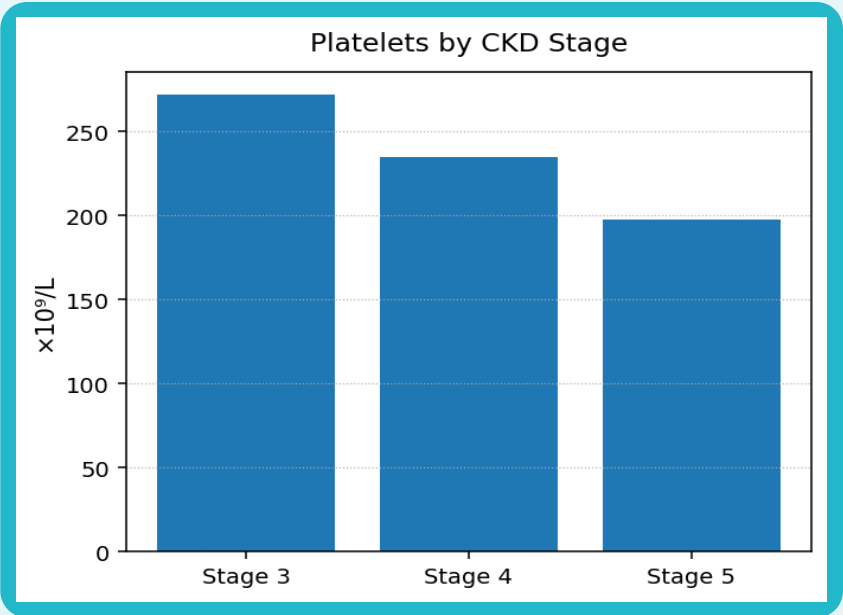
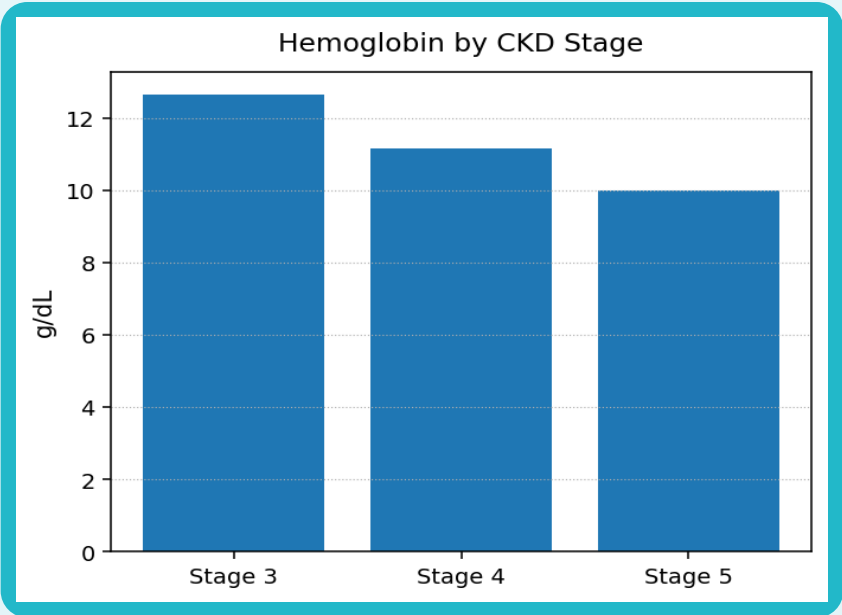
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Abstract

Background & Objective — Chronic kidney disease (CKD) commonly presents with hematological abnormalities (anemia, thrombocytopenia, leukocyte disorders) affecting morbidity and survival. We evaluated hematological indices and abnormalities across CKD stages 3–5 and their association with disease severity.

Methods

Cross-sectional observational study in the Department of Nephrology, Lahore General Hospital (July 2023–June 2024). Adults 18–70 years with CKD stages 2–5 (KDIGO) were enrolled (n=412) by non-probability consecutive sampling; exclusions: hematologic disorders, active infection, malignancy, HBV/HCV/HIV, recent transfusion, ESA use, pregnancy. Hematology via Sysmex KX-2; biochemistry via Cobas Integra 400 Plus.



Conclusion

Hematological indices deteriorate with advancing CKD. Anemia, thrombocytopenia, and leukocyte abnormalities increase significantly with disease severity ($p < 0.001$ for key trends). Routine hematologic monitoring across stages 3–5 enables early detection and timely management to reduce morbidity and improve outcomes.

Keywords — Chronic kidney disease; hematological abnormalities; anemia; leukocytosis; thrombocytopenia.

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