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## **Determinants of Patterns of Outpatient Care in Patients with Chronic Kidney Disease**

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**Objectives :** Chronic kidney disease (CKD) is a major global health problem owing to its progressive nature, high risk of complications, and substantial healthcare burden. The Kidney Disease: Improving Global Outcomes (KDIGO) guidelines recommend outpatient visit intervals based on CKD severity; however, adherence to these recommendations and the factors influencing the visit interval remain unclear. A better understanding of these factors could improve follow-up care and optimize healthcare resource allocation.

**Methods :** This retrospective observational study analyzed the data of 13,621 patients with CKD at a tertiary hospital in South Korea. Using electronic medical records, we used linear regression and Shapley Additive Explanations (SHAP) to assess the influence of clinical, demographic, and healthcare utilization factors on nephrology visit intervals. Key variables included the CKD stage, comorbidities, age, hospital distance, and physician assignment.

**Results :** As CKD severity increased, the visit interval decreased, although significant variability was observed among physicians. SHAP analysis identified the CKD stage, age, prior outpatient visits, and hospital distance as important predictors of the visit interval. Physician-specific SHAP plots revealed substantial variations in clinical practice. Patients with higher engagement with the healthcare system had shorter visit intervals, whereas those living further away from the hospital had longer visit intervals.

**Conclusions :** Both clinical and non-clinical factors were significantly associated with nephrology visit interval, underscoring the complexity of outpatient CKD management. This variability highlights the need for tailored guidelines that consider patient characteristics and physician practices. A more personalized approach could increase adherence to evidence-based recommendations while improving resource utilization and patient outcomes.

Figure 1.jpg

