

PREDICTIVE PERFORMANCE OF THE CHA₂DS₂-VASC SCORE FOR STROKE RECURRENCE: A STUDY OF AGE AND GENDER DIFFERENCES IN UZBEKISTAN

Kalash Dwivedi,¹ Boykhurozov Jasurbek Asilbek o'g'li,²

Fifth Year International Medical Student Tashkent Medical Academy 1,
Fourth Year student at Faculty of Medical Prevention and Public Health 2,
Tashkent Medical Academy.

Scientific Advisor - Doctor of Medical Sciences prof.
Asadullayev Maqsud Maxmudovich. Department of Neurology TMA.

Introduction: Stroke is a major public health concern worldwide, particularly in low- and middle-income countries like Uzbekistan, where cardiovascular diseases, including stroke, are leading causes of disability and mortality. Effective prediction of stroke recurrence is vital for improving patient outcomes and alleviating healthcare burdens. This study aims to assess the predictive performance of the CHA₂DS₂-VASC score for stroke recurrence in the Uzbek population, focusing on the impact of age and gender differences.

Research Objective: The main objective of this study is to evaluate the effectiveness of the CHA₂DS₂-VASC score in predicting stroke recurrence within the Uzbek population. Specifically, the study seeks to identify the optimal threshold of the score that balances sensitivity and specificity, investigate how age and gender affect the score's performance, and examine the practicality of using this score in resource-limited healthcare settings to improve stroke prevention efforts.

Methods: This study employed statistical analyses using JASP and R+AI tools to evaluate the predictive accuracy of the CHA₂DS₂-VASC score. Precision and recall curves, ROC AUC, and sensitivity/specificity tests were used to assess the score's performance. Demographic comparisons were performed using Mann-Whitney U tests, Kruskal-Wallis tests, and two-proportion Z-tests. The study adhered to strict ethical guidelines with informed consent obtained from all participants.

Results: The CHA₂DS₂-VASC score demonstrated strong discriminative ability, with an Area Under the Curve (AUC) of 0.84. The optimal threshold for predicting stroke recurrence was found to be 3, balancing sensitivity (95.8%) and specificity (61%). This threshold effectively identified high-risk patients while minimizing false positives. The study also found significant gender and age differences in CHA₂DS₂-VASC scores, with females, particularly those under 65, exhibiting higher scores and a higher likelihood of being classified as high-risk compared to males. Additionally, the scores increased significantly with age.

Conclusion: This study confirms the CHA₂DS₂-VASC score's effectiveness in predicting stroke recurrence in the Uzbek population. The score's high sensitivity and specificity make it a valuable tool for identifying high-risk individuals, especially when demographic-specific adjustments are made. The findings advocate for the use of CHA₂DS₂-VASC in routine screening for stroke prevention, particularly in women and older adults. Future research should focus on validating these findings in broader populations, exploring long-term outcomes, and developing digital health tools for real-time risk assessment.