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Early Detection of Family Violence Risk Using Ensemble Machine Learning on Psychosocial and Demographic Indicators

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1. Round 1

1.1. Reviewer 1

Reviewer:

The claim “ensemble learning methods… have been shown to outperform single-model approaches across diverse domains” is theoretically important but remains too general. The authors should briefly identify which domains and what type of improvement (e.g., AUC, calibration) to strengthen the argument.

The authors claim that results align with “vulnerability–adaptation models,” but the manuscript would benefit from a clear mapping of your main predictors to specific components of that theoretical framework.

The interaction between substance use and emotional dysregulation is discussed theoretically but not empirically demonstrated in the analysis. Please clarify whether any interaction effects were explicitly modeled or whether this is an interpretive inference.

Response: Revised and uploaded the manuscript.

1.2. Reviewer 2

Reviewer:

The sentence “These intersecting risk pathways cannot be adequately captured by linear models” would benefit from a short methodological justification, explaining why linear assumptions fail for this dataset structure (e.g., interaction effects, nonlinearity).

The study aim is clearly stated; however, the introduction does not articulate specific hypotheses or expected model advantages. Please add at least one explicit research expectation (e.g., ensemble model will outperform individual learners in recall).

The description “multi-stage stratified sampling framework” lacks details on stratification variables (e.g., income, region, household size). Please specify all strata used at each sampling stage.

The statement “Feature engineering was applied to construct higher-order interaction variables” is important but vague. Please provide examples of constructed features and the rationale behind them.

The improvement from XGBoost to Ensemble is presented descriptively. Please include a formal statistical comparison (e.g., DeLong test for AUC or McNemar test for accuracy).

The paper lists relative importance values but does not explain the scale or normalization of these values. Clarify whether these are SHAP mean absolute values, permutation scores, or normalized contributions.

The architecture diagram would be more informative if the caption briefly explained how predictions are generated from the ensemble voting/stacking mechanism.

Response: Revised and uploaded the manuscript.

2. Revised

Editor’s decision after revisions: Accepted.

Editor in Chief’s decision: Accepted.

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