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Early Detection of Anxiety Disorders in Single Mothers Through Explainable Machine Learning Models

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1. Round 1

1.1. Reviewer 1

Reviewer:

The paragraph beginning "A substantial body of sociological and psychological research has documented…" introduces "role strain" and "role overload" but does not clearly distinguish between these constructs. Please consider adding a brief conceptual clarification or citation explicitly differentiating them to improve theoretical rigor.

The phrase "a validated anxiety assessment scale widely used in clinical and epidemiological research" is vague. Please explicitly name the scale and report key psychometric properties (α, sensitivity/specificity) relevant to the Iranian population.

Given that anxiety and depressive symptoms were both included, please clarify how multicollinearity between these constructs was assessed or mitigated prior to model training.

The sentence "missing values were handled using appropriate imputation strategies" requires greater specificity. Please state which imputation method was used (e.g., mean, multiple imputation, k-NN) and justify its suitability.

Defining the outcome as "presence or absence of clinically significant anxiety symptoms" based on cutoff scores raises concerns about diagnostic validity. Please discuss potential misclassification bias and justify this operationalization for early detection purposes.

While Table 1 is informative, the Results text could better interpret the finding that 39.5% of participants met anxiety criteria by comparing it with population-level prevalence estimates to highlight the magnitude of risk.

Response: Revised and uploaded the manuscript.

1.2. Reviewer 2

Reviewer:

In the sentence "conventional screening approaches often rely on static cutoff scores…", the manuscript critiques traditional methods but does not provide concrete examples (e.g., specific scales or cutoff practices). Adding a brief illustration would strengthen the argument and contextualize the methodological gap.

The paragraph beginning "Explainable machine learning holds particular promise…" would benefit from a clearer distinction between intrinsic interpretability (e.g., logistic regression) and post-hoc explainability (e.g., SHAP, feature importance), as both appear later in the Methods but are not theoretically differentiated here.

The final sentence of the Introduction states the aim clearly; however, consider explicitly mentioning which explainability techniques (global vs. local) are evaluated to better align expectations with the Methods section.

In "Participants were recruited from public health centers, family counseling clinics, and community support organizations…", please clarify whether these sites were selected via convenience sampling or strategic selection. This has implications for external validity and should be explicitly stated.

The exclusion of women "currently receiving intensive psychiatric treatment" is reasonable, but the manuscript should clarify how this information was verified (self-report vs. clinical records), as this affects diagnostic accuracy.

Response: Revised and uploaded the manuscript.

2. Revised

Editor's decision after revisions: Accepted.
Editor in Chief's decision: Accepted.

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