

Use of Self Report Scales in Clinical Assessment and Practice

Behavior and Symptom Identification Scale (BASIS-24): Developing Clinical Cut Scores and Effective Change for Psychiatric Patients

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Introduction

- BASIS-24 instrument is a twenty-four item patient self-report questionnaire designed to assess treatment outcomes by measuring symptoms and functional difficulties experienced by individuals seeking mental health services.
- Currently over 280 hospitals in 6 countries use BASIS-24.
- Clinical cut scores for BASIS-24 have not been available.
- This study will provide empirically-derived clinical and community cutoff scores for the BASIS-24 for a community sample representative of the US population, as well as for a clinical sample.
- The scores will be used for determining how a client or patient's BASIS-24 scores compare with various levels of care such as inpatient and outpatient.

Objective

- Develop guidelines for BASIS-24 clinical cut-scores that best discriminate by levels of care such as outpatient vs. inpatient.
- Determine how the BASIS-24 can be used at both the individual and aggregate level as a clinical tool for evaluating clinically meaningful changes.

Methods

- **Sample:** The clinical sample consisted of 2,656 inpatients and 3,222 outpatients that completed BASIS-24, and the non-clinical data came from the community sample of 998, representative of U.S. population.
- **Measure:** Behavior and Symptom Identification Scale. BASIS-24 subscales and the overall score were calculated using the standard algorithm.
- **Statistical Analysis:** Logistic regression models were employed to obtain cut scores and thus classification tables for each of the subscales and the overall score.

Two-step sequential logistic regression model was employed.

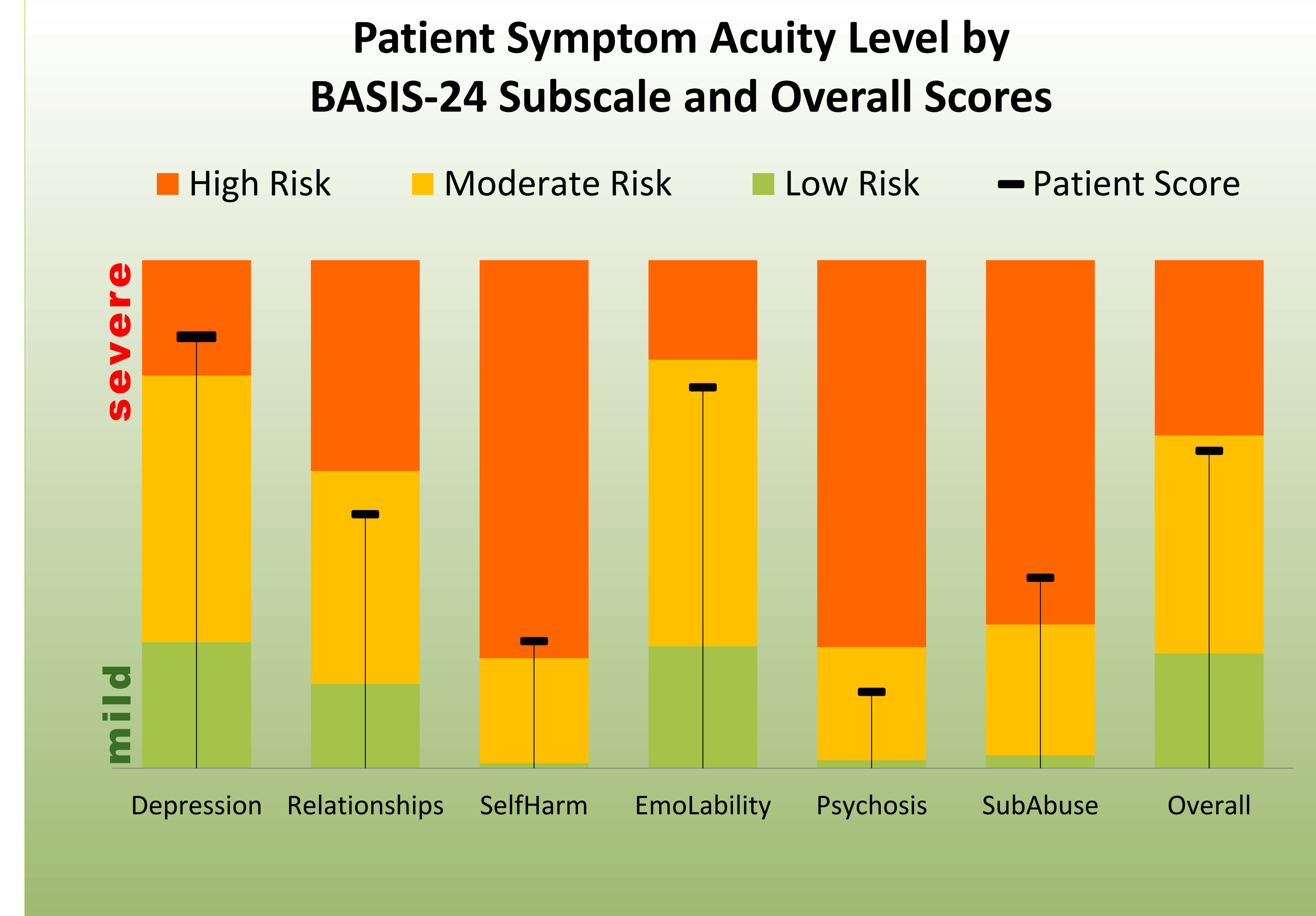
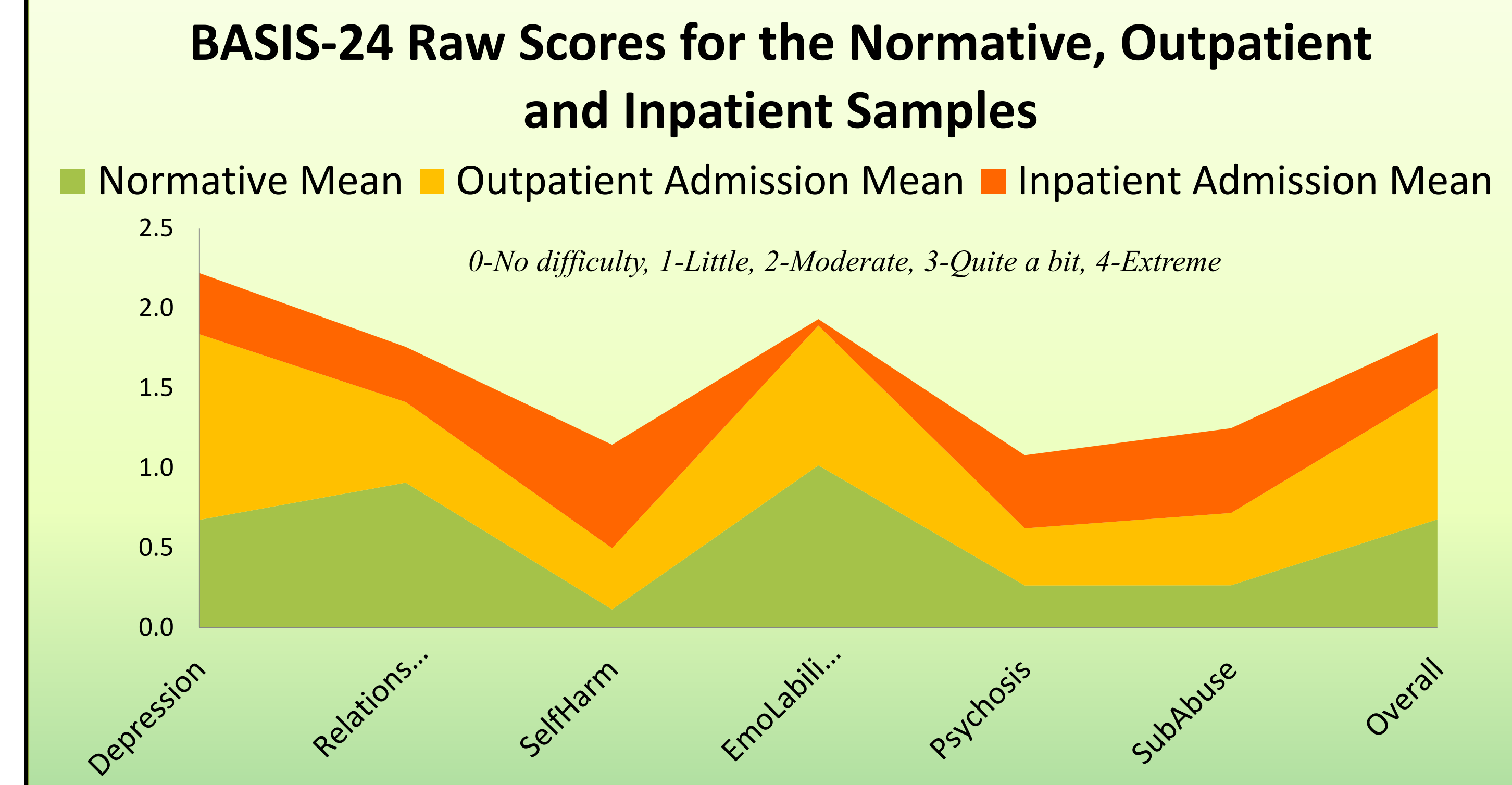
First step: discriminate between low and high/moderate risks by defining $p = P[\text{having high/moderate risk}]$ vs $1 - p = P[\text{having low risk}]$

Second step: discriminate between moderate and high risks by defining $p = P[\text{having high risk}]$ vs $1 - p = P[\text{having moderate risk}]$

Models were adjusted for age, gender, race, marital status, education, and employment status.

Predictability measures including sensitivity, specificity, hit rate, and ROC curves were obtained in discriminating between low, moderate, and high risk groups for psychiatric disorders.

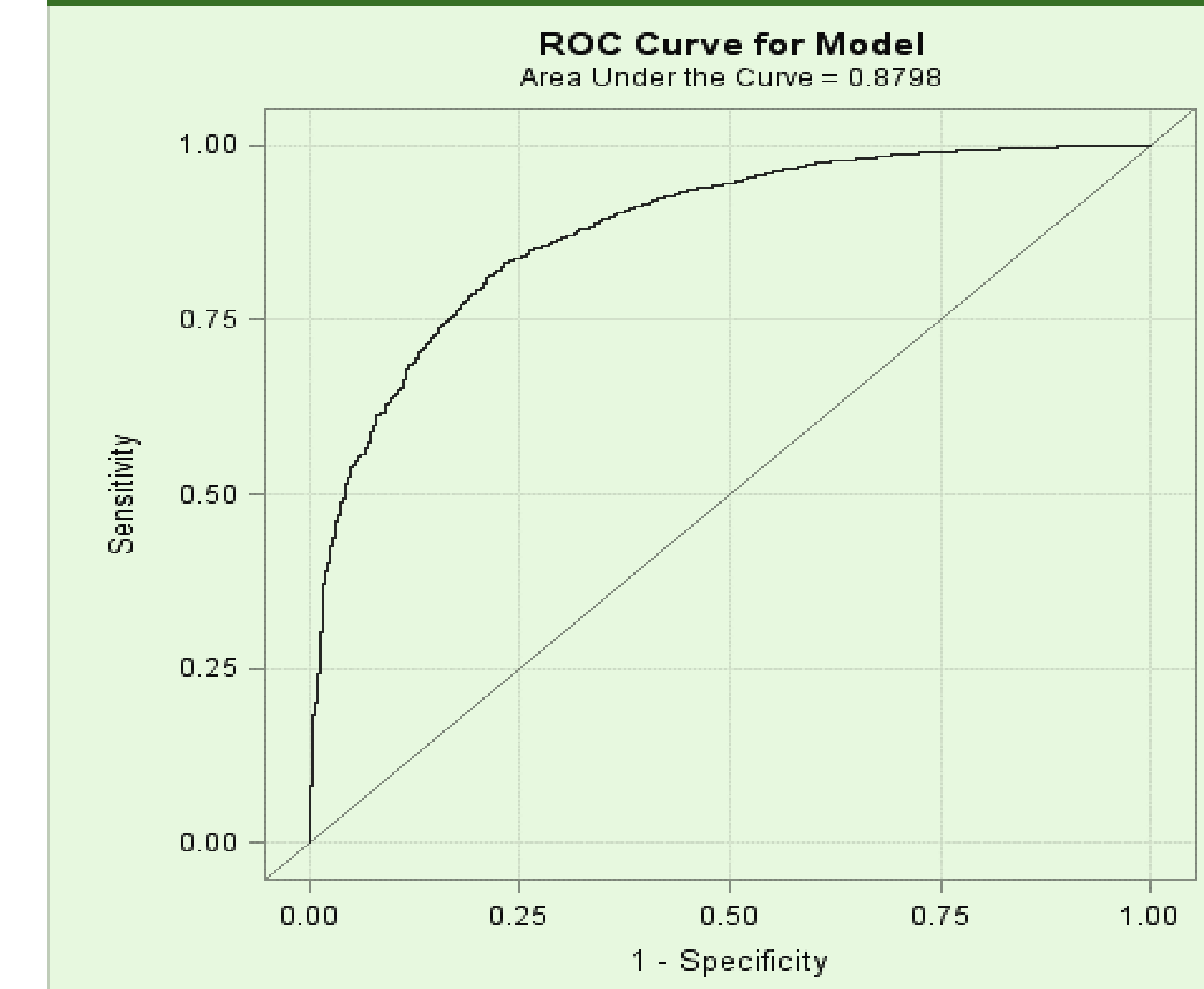
Results



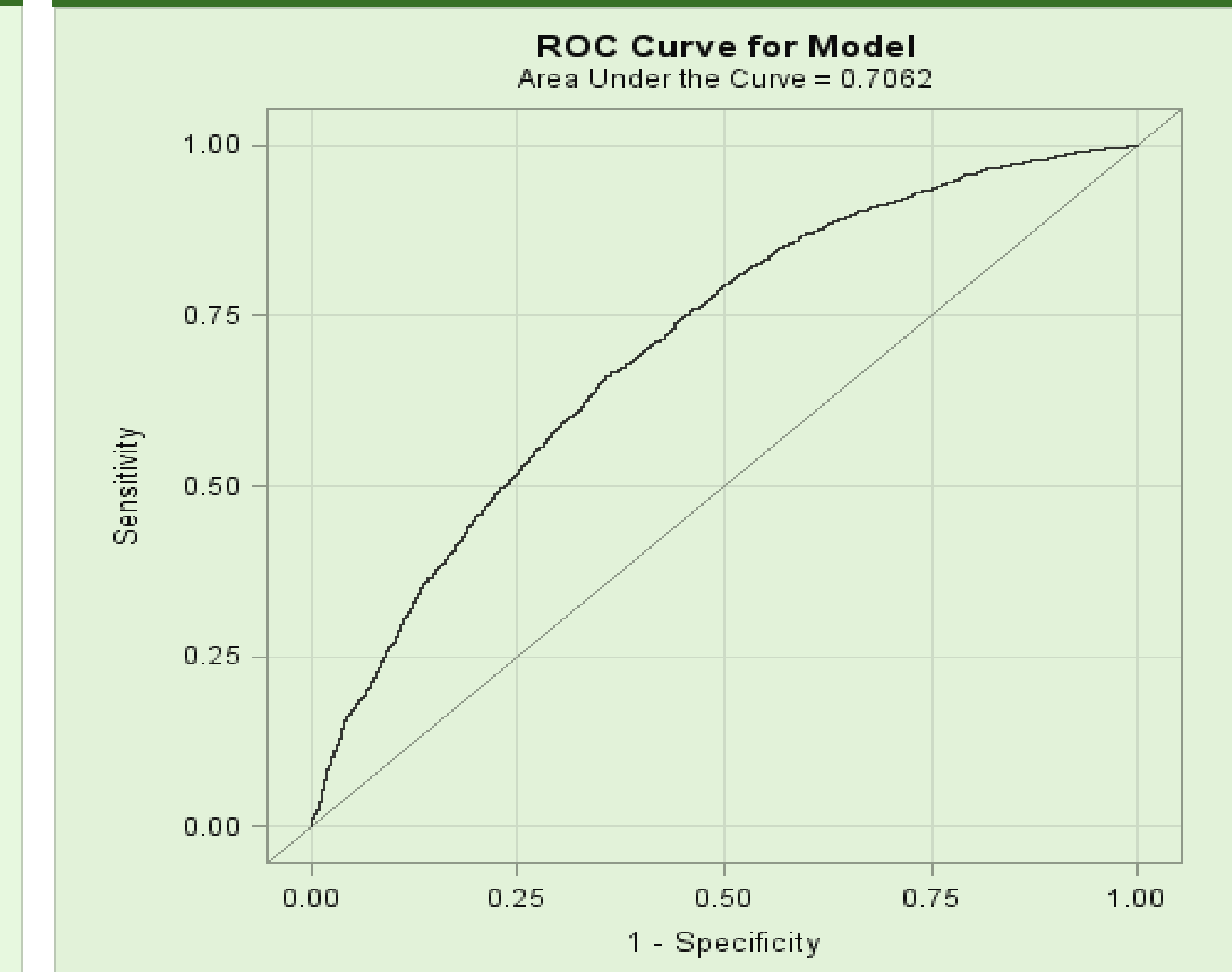
Predictability between High, Moderate and Low risk groups

| BASIS-24 Scale | %Sensitivity | | %Specificity | | %Hit Rate | |
|--------------------|-----------------------|-------------------|-----------------------|-------------------|-----------------------|-------------------|
| | High/Moderate and Low | High and moderate | High/Moderate and Low | High and moderate | High/Moderate and Low | High and moderate |
| Substance abuse | 72 | 62 | 76 | 68 | 72 | 65 |
| Psychosis | 71 | 60 | 76 | 69 | 72 | 65 |
| Emotional Lability | 74 | 60 | 76 | 65 | 74 | 63 |
| Self-harm | 74 | 63 | 78 | 71 | 74 | 67 |
| Relationship | 73 | 61 | 73 | 66 | 73 | 64 |
| Depression | 78 | 62 | 82 | 66 | 79 | 64 |
| Overall Score | 78 | 63 | 81 | 66 | 78 | 65 |

ROC in discriminating between high/moderate vs. low risks based on adjusted logistic model for overall scale



ROC in discriminating between high vs. moderate risks based on adjusted logistic model for overall scale



Effect Size of Change Score from Admission to Discharge for Clinical Sample

| Scale | Mean of change scores | | SD | | Effect Size | | Clinical Improvement | |
|------------------------|-----------------------|--------------------|------------|-----------|-------------|-----------|----------------------|-------------|
| | Outpatient (N=850) | Inpatient (N=1398) | Outpatient | Inpatient | Outpatient | Inpatient | Outpatient | Inpatient |
| Depression/Functioning | 0.41 | 1.04 | 0.90 | 1.09 | 0.46 | 0.96 | moderate | Significant |
| Relationships | 0.22 | 0.48 | 0.97 | 1.25 | 0.23 | 0.38 | minor | minor |
| Self Harm | 0.18 | 0.74 | 0.79 | 1.17 | 0.23 | 0.63 | minor | moderate |
| Emotional Lability | 0.32 | 0.7 | 0.95 | 1.10 | 0.34 | 0.63 | minor | moderate |
| Psychosis | 0.17 | 0.46 | 0.71 | 1.03 | 0.24 | 0.45 | minor | moderate |
| Substance Abuse | 0.24 | 0.44 | 0.84 | 0.98 | 0.29 | 0.45 | minor | moderate |
| Overall Scale | 0.32 | 0.79 | 0.64 | 0.80 | 0.51 | 0.99 | moderate | Significant |

Note: A positive change is an indicative of improvement in domain score at discharge comparing to that at admission.
 Note: Effect size is defined as Cohen's d, which is a standardized change from admission to discharge.
 Note: An effect size of 0.2 to 0.4 is considered a minor change; 0.4 to 0.8 a moderate change; and 0.8 and above a significant change (Cohen, 1969)

Conclusions

- The BASIS-24 clinical cut scores were produced from sequential logistic regression models to classify patients into low, moderate, and high risk groups.
- The validity of the clinical cut scores was demonstrated by the % distribution of risk groups for normative, outpatient, and inpatient samples at admission; and also at admission and discharge.
- Analysis also showed moderate to excellent predictability for classification in all subscales and overall scale:
 - Sensitivity ranged from 71 to 78%, specificity 73 to 82%, and hit rate 72 to 79% for classification between high/moderate and low risk groups; sensitivity 60 to 63%; specificity 65 to 71%; and hit rate 63 to 67% for classification between high and moderate risk groups.
 - Area under the ROC was 0.88 for classification between high/moderate and low risk groups; and 0.71 between high and moderate risk groups for overall score.
- Patients with both admission and discharge scores showed clinical improvements, some substantial. Furthermore, inpatients improved more significantly than the outpatient sample.
- Since the models were adjusted by covariates including age, gender, race, marital status, education, and employment status, covariate specific cut scores can be developed.

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