

# Predicting Aggressive Behavior in the Inpatient Psychiatric Units at Children's Hospital Colorado

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## Background

- Highly aggressive patients admitted to the inpatient psychiatric units at Children's Hospital Colorado (CHCO) have produced an unacceptable rate of healthcare staff injuries in 2020. Several of these injuries were severe enough to require time off work.
- Injuries to staff members affect unit morale<sup>1</sup> and are costly for the organization.<sup>2</sup>
- Thus, there is a need for an effective assessment to predict patient aggression on IPUs.
- One effective aggression screening tool: Brief Rating of Aggression by Children and Adolescents (BRACHA).<sup>3</sup>
- While we know that the total scores of the BRACHA seem to relate to aggressive behavior, it is unclear how well individual items predict the likelihood of aggressive behavior.
- The purpose of this study was to evaluate the extent to which the items from the modified BRACHA (mBRACHA) were effective in predicting patient aggression at CHCO.

## Methods

### Participants

- We collected data on 75 patients admitted to the Intensive Psychiatric Unit (IPU; 63 patients) and the Neuropsychiatric Special Care (NSC) unit (12 patients) between January 2021 to March 2021.

### Materials

- See Table 1 for the mBRACHA.

### Procedure

- Patients presented to the CHCO-Anschutz emergency department (ED) by ambulance or private vehicle. Following their crisis evaluation by a behavior health clinician (BHC), the BHC scanned a QR code and completed the mBRACHA on their cell phones.
- The patients were transferred to IPU or NSC, then engaged in unit programming throughout their admission. Unit staff charted any behavioral concerns exhibited by the patient daily.
- The second and third authors completed the mBRACHA for each patient and determined if the patient engaged in aggression by evaluating unit staff notes daily.

### Statistical Analyses

- Descriptive analysis, logistic regression, and chi-square tests were conducted to answer our research question.

## Results

Table 1. Unadjusted likelihood of observed aggression, Logistic regression, N=75

Item number	Item	OR (95% CI)	LR Chi-Sq (DF), Significance
1	Does the patient have a history of psychiatric hospitalization?	0.927 (0.317, 2.706)	0.0194 (1), 0.889
2	Does patient have a history of school suspensions or expulsions?	3.21 (1.018, 10.137)	3.965 (1), 0.0465
3	Does patient have trouble accepting adult authority?	14.25 (3.685, 55.109)	14.821 (1), 0.000118
4	Has the patient ever physically assaulted others?	12.05 (3.738, 38.857)	13.625 (1), 0.0000308
5	Has the patient attempted or committed acts of violence more than 7 days ago?	8.18 (2.680, 24.976)	13.625 (1), 0.00022
6	Has the patient ever destroyed property (e.g., broken a vase or vandalism)?	17.52 (5.123, 59.946)	20.825 (1), 0.0000050
7	Has the patient ever displayed a pattern of either verbal or physical aggression against self or others, either as a delayed or immediate emotional reaction to a trigger (e.g., threatening a peer who accidentally bumps into him/her in the hall or impulsively cutting self when angry)?	7.00 (1.834, 26.710)	1.946 (1), 0.0044
8	Does the patient have a diagnosis of autism spectrum disorder?	3.07 (0.924, 10.166)	3.355 (1), 0.067
9	Does the patient have a diagnosis of moderate-to-severe intellectual disability?	4.03 (0.624, 25.997)	2.142 (1), 0.14

### Significant Findings

- Six of the nine mBRACHA items were statistically significant predictors of patient aggression on IPU and NSC.
  - Items 2 – 7
- Items 3, 4, and 6 had odds ratio (OR) values greater than 10.0.
  - Patients who received a "Yes" for item 3, item 4, and item 6 were 14.25, 12.05, and 17.52 times, respectively, more likely to be aggressive during their inpatient admissions compared to patients who received a "No" for these items.

### Average length of stay



- IPU = 8.3 days
- NSC = 12.3 days

Figure 1. Gender

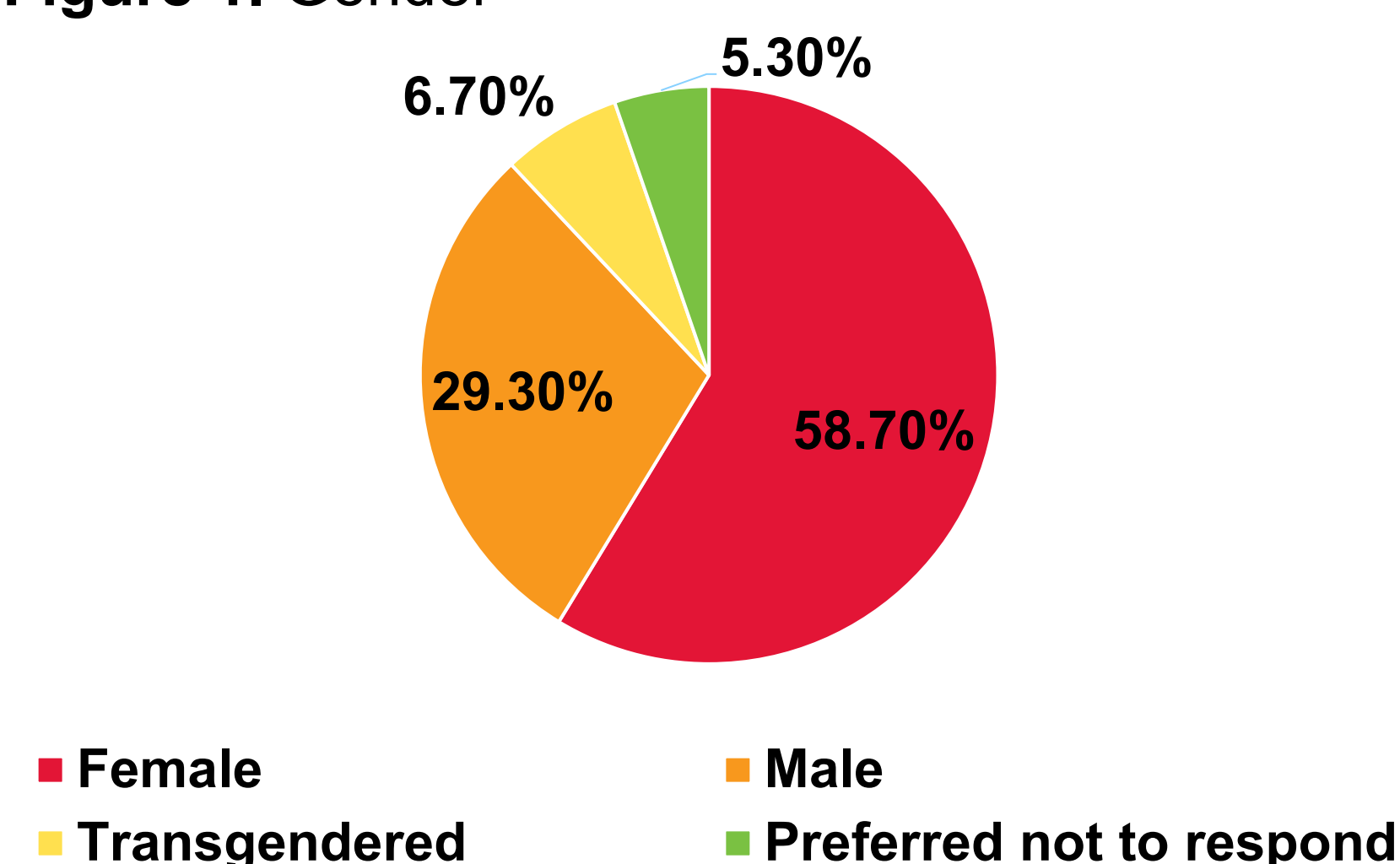


Figure 2. Race

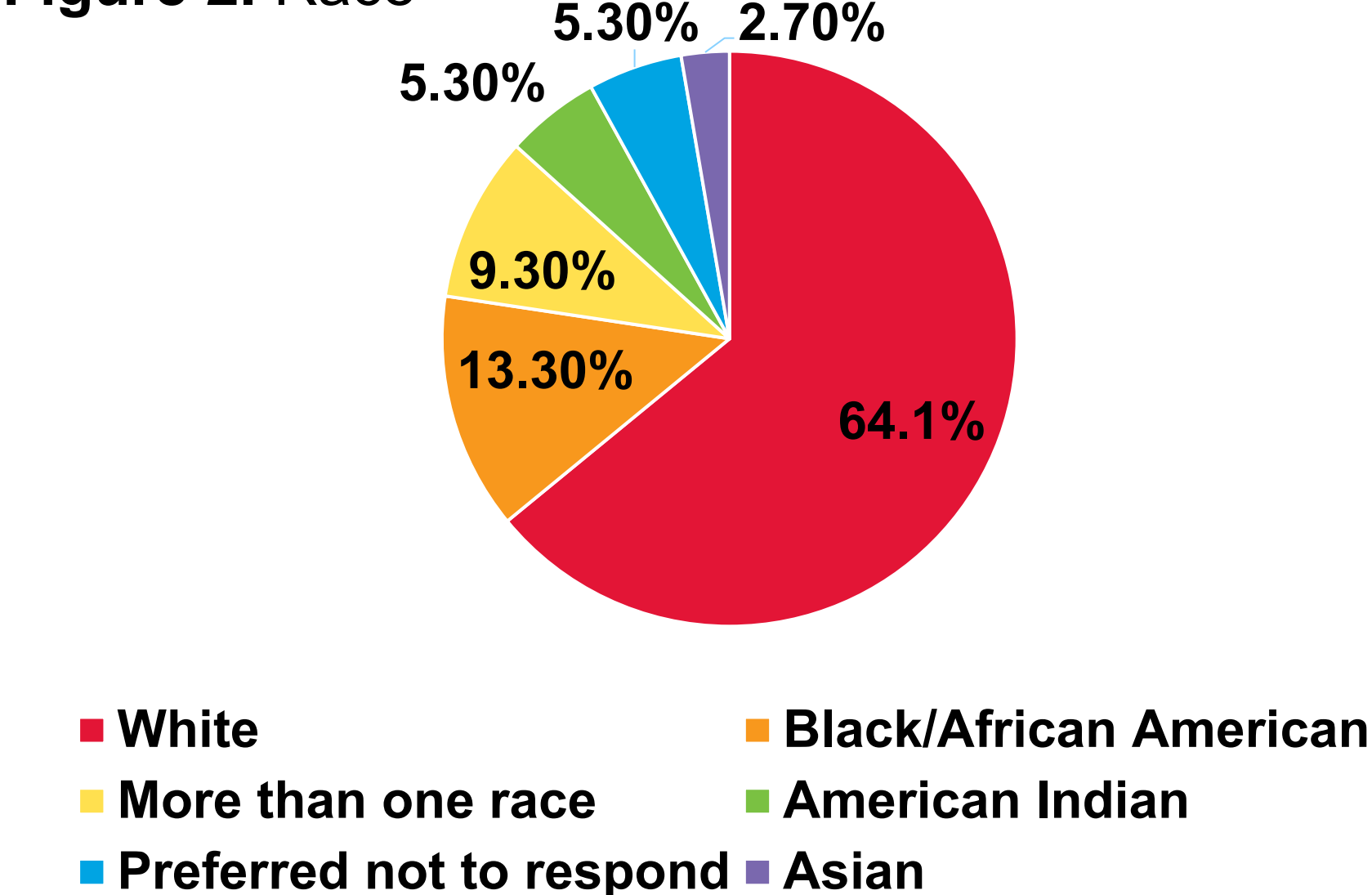
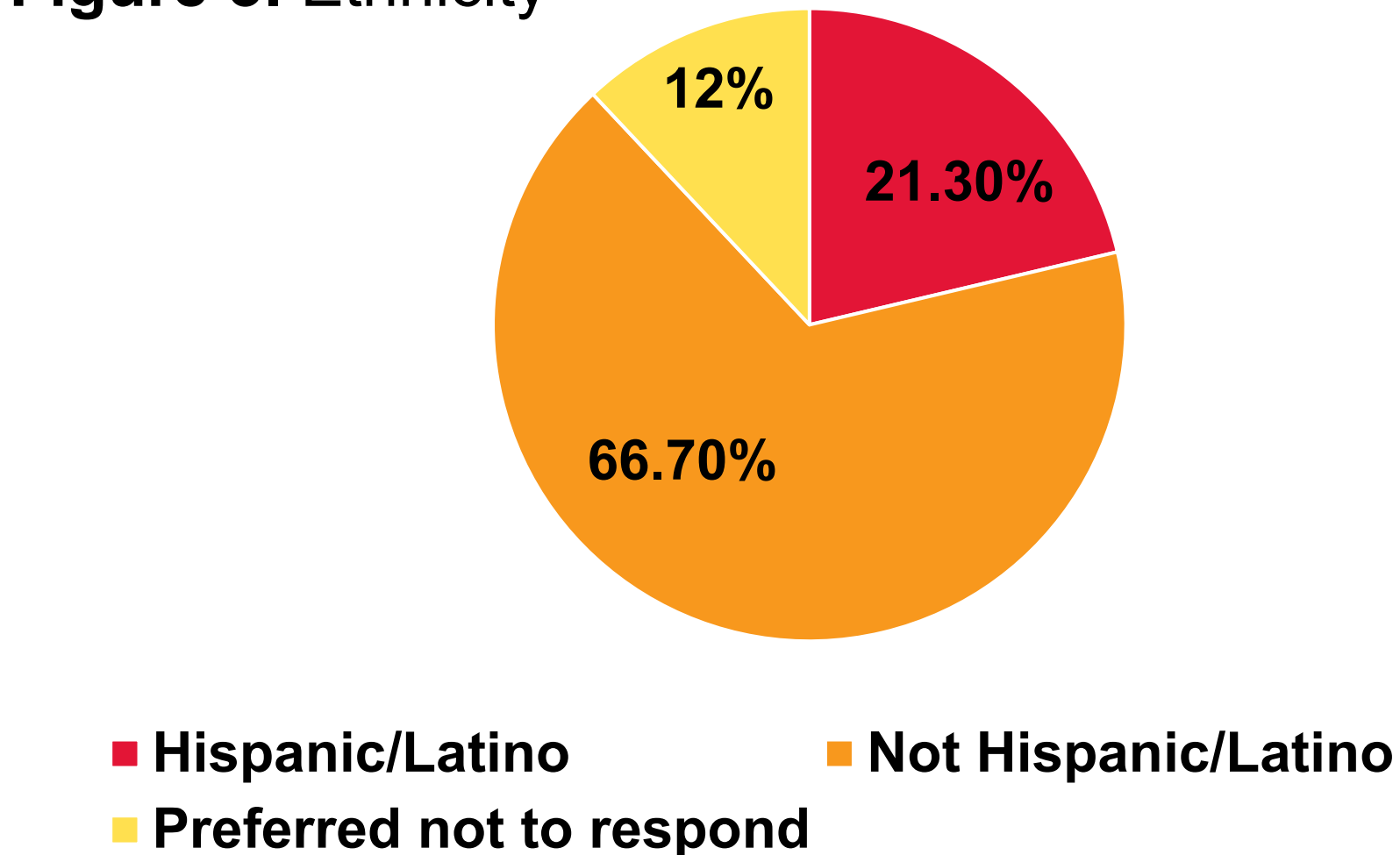


Figure 3. Ethnicity



## Discussion

- From the mBRACHA, 6 of the 9 items predicted aggressive behavior and three of these six items had OR values greater than 10.0.
- Certain items in this study could theoretically be used to control the acuity of psychiatric inpatient programs. However, we recommend the results of this tool be used in conjunction with clinical judgement to evaluate patient admission to inpatient programs.
- These data can also be used to identify potentially aggressive patients and a process for identifying specific topography of aggression to inform the use of protective equipment by staff.<sup>4,5</sup>

### Limitations and Future Directions

- Only 75 patients were analyzed as part of this pilot investigation. Thus, an area for future research is collecting a larger sample size to continue evaluating the effectiveness of the mBRACHA.
- Another area for future investigation could be consolidating the mBRACHA to include only the items that were significant predictors of aggressive behavior. This may create a more efficient and user-friendly survey.

## References

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