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Patterns of Utilization and Outcomes of Inpatient Psychiatric Treatment in Asian Americans

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Abstract

Most of the knowledge of racial/ethnic disparities in mental health treatment utilization comes from studies examining outpatient services, and less is known about these disparities in inpatient services. This empirical gap may limit our understanding of these disparities since inpatient treatment is the most intensive form of specialty mental health care for patients with psychological disorders. We conducted a systematic chart review of 129 Asian American and 198 White American psychiatric inpatients to examine patterns of inpatient psychiatric treatment utilization. Demographic and clinical data were extracted from admission and discharge records during a two-year timeframe. Patterns of diagnoses revealed that Asian American patients utilized inpatient services for more severe psychiatric diagnoses compared to White American patients. Despite this, there were no racial/ethnic differences in levels of functional impairment at admission, and there were no racial/ethnic differences in length of treatment stay. For Asian American patients, level of psychosocial functioning at admission predicted length of stay. A better understanding of patterns of inpatient treatment use is needed to meet the clinical needs of Asian Americans with psychiatric disorders.

Keywords

inpatient treatment; utilization; Asian Americans; length of stay; outcomes

Mental illness is a devastating condition that constitutes the greatest illness related cause of disability in the United States (AHRQ, 2009). The 2010 National Survey on Drug Use and Health (SAMHSA, 2012) estimated that 45.9 million Americans met criteria for a mental illness in the past year, with 11.8 million meeting criteria for a serious mental illness.

Despite these alarmingly high prevalence rates, less than one-half of adults who struggle with a mental illness receive needed treatment. Among them, racial/ethnic minorities, such as Asian Americans, are the least likely to seek and receive appropriate services, and tend to delay treatment until problems are extremely severe (Sue, Cheng, Saad, & Chu, 2012).

These racial/ethnic disparities in mental health treatment utilization have been longstanding

and well documented, highlighting the uneven burden of illness for members of these groups (Snowden & Yamada, 2005). Given the rapid growth of racial/ethnic minority populations, it is critical to address disparities to meet the mental health needs of all Americans.

Much of the current evidence of racial/ethnic disparities is derived from studies examining outpatient mental health services. This is not surprising given that the majority of those who seek psychological treatment utilize outpatient services (SAMHSA, 2012). However, this has left a dearth of knowledge on disparities in inpatient services. Inpatient services is a form of specialty mental health treatment involving around-the-clock care in a secured environment and are indicated for individuals with serious mental illness who are experiencing significant psychiatric distress. Inpatient services constitute the smallest segment of the mental health system, but it is the costliest form of specialty mental health care (Tulloch, Fearon, & David, 2011). It is therefore essential to better understand how individuals with services needs, especially those from known disparity populations, engage with the inpatient treatment system to ultimately promote the use of appropriate mental health services and reduce the burden of illness.

Earlier studies have reported differential utilization patterns of inpatient treatment by racial/ethnic minorities, as measured by likelihood of being admitted and length of treatment stay (Leong, 1994; Snowden & Cheung, 1990). Several studies have also documented differential rates of psychiatric diagnoses, such as higher rates of schizophrenia and psychotic disorders among racial/ethnic minority patients compared to White American patients (Flaskerud & Hu, 1992; Snowden & Cheung, 1990). More recent evidence on inpatient treatment has been relatively sparse, but our current understanding reveals that as a group, racial/ethnic minorities have higher rates of inpatient treatment use compared to their overall representation in the population (Barker et al., 2004). Compared to White Americans, racial/ethnic minorities are more likely to present to emergency services for mental health reasons (Shin, 2009), tend to be more clinically impaired at admission (Snowden, Hastings, & Alvidrez, 2009), and have a longer duration of treatment stay (Snowden, 2007). Additional evidence points to worse long-term outcomes following inpatient treatment for racial/ethnic minority patients compared to White American patients (Eack & Newhill, 2012; Li, Eack, Montrose, Miewald, & Keshavan, 2011). These studies collectively provide evidence of poorer inpatient treatment experiences for racial/ethnic minorities. However, studies in this area have primarily focused on African American and Hispanic/Latino/a patients, and the inpatient treatment experiences of Asian American patients remain relatively unknown.

The few recent studies on Asian Americans' utilization of inpatient psychiatric services suggest some similarities and differences compared to other racial/ethnic minorities. Whereas racial/ethnic minorities as a whole overutilize inpatient psychiatric services relative to their representation in the population (Barker et al., 2004), Asian Americans underutilize inpatient services relative to their representation in the population (Leong, 1994; Unick et al., 2011). A study of administrative records on inpatient stays for patients with psychiatric diagnoses in New York City found that Asian Americans were less likely to utilize inpatient services compared to non-Asian Americans, but when they did utilize, they had a longer length of hospitalization (Shin, 2009). In another study using hospital admission records of

psychiatric emergency services for a San Francisco public hospital, across all racial/ethnic groups, Asian Americans had the highest rate of psychiatric admissions via hospital emergency departments (Unick et al., 2011), which are generally considered to be an adverse pathway to care as it is often associated with greater likelihood of compulsory admissions (Snowden, Catalano, & Shumway, 2009).

Though prior studies demonstrate disparities for Asian Americans in inpatient psychiatric service utilization, the majority of these studies have been limited to the use of data from administrative records or data regarding outpatient and public mental health treatment. This has left critical gaps in our in-depth understanding of inpatient psychiatric treatment among Asian Americans. Such research is needed to better address existing mental health disparities for individuals for whom timely and effective mental health treatment is critical.

The Present Study

In the current study, we examined whether the patterns of disparities found in outpatient settings extended to inpatient settings. We conducted a chart review of Asian American and White American patients who were admitted for inpatient psychiatric treatment. To understand *what types* of Asian American patients utilize inpatient treatment, we initially examined characteristics of Asian American patients, as compared to White American patients, using broad demographic categories (i.e., age, gender, marital status, education level, employment status, and living situation). To understand *how* Asian American patients utilize inpatient treatment, we conducted a group comparison of key variables related to utilization (i.e., prior hospitalizations, involvement with outpatient treatment, referral source, admission via emergency room, and involuntary hospitalization). To understand *why* Asian American patients utilize inpatient services, we conducted a group comparison of primary psychiatric diagnoses.

Drawing upon both the broader literature on disparities and prior findings on inpatient treatment use among Asian Americans, we hypothesized that Asian American patients will utilize inpatient services for more severe psychiatric diagnoses (e.g., schizophrenia) compared to White American patients (Hypothesis 1). Due to the overall tendency to delay treatment, we hypothesized that Asian American patients will have greater impairment in psychosocial functioning at admission compared to White American patients (Hypothesis 2). Assuming length of stay to be an important proxy marker for clinical need and severity (Thompson, Neighbors, Munday, & Treierweiler, 2003), we hypothesized that Asian American patients will have a longer length of stay (Hypothesis 3). Although we were interested in examining treatment outcome, we did not make specific predictions regarding psychosocial functioning at discharge as we could not sufficiently justify a hypothesis with prior research. For example, one study found that Asian Americans in outpatient services tend to experience worse short-term treatment outcomes compared to White Americans (Zane, Enomoto, & Chun, 1994), whereas another study found no racial/ethnic differences (Kim, Zane, & Blozis, 2012). As termination from outpatient and inpatient settings greatly differ, we explored whether there may be racial/ethnic differences in psychosocial functioning at discharge from inpatient treatment. If racial/ethnic differences were found, we determined if there were race/ethnicity differences in treatment stay and functioning after

controlling for the effects of other important demographic and clinical variables. If racial/ethnic differences were not found, we were interested in determining whether there were differential predictors of stay and functioning among Asian American and White American patients.

Method

Source of Data

Data were collected from a large, non-profit psychiatric hospital located in the Greater Boston area of Massachusetts. The hospital is a university-based clinical, teaching, and research hospital with multiple secured inpatient and residential units staffed by a multidisciplinary team of physicians (psychiatrists, primary care physicians, and neurologists), psychologists, clinical social workers, nurses, and mental health specialists. The primary goal of inpatient admission is for acute crisis intervention. In fiscal year 2010, the hospital had a total of 6,008 inpatient admissions with an average of 177 inpatient beds in service. The average length of stay across patients utilizing inpatient services was 9.6 days (*SD* was not available).

Method of Chart Review

Following approval of the study by the hospital's institutional review board, we obtained a patient log (i.e., chronological admissions list) through the hospital medical records department. This log contained a list of admissions and discharges (i.e., inpatient treatment episodes) that were made between March 2009 and March 2011 of all patients who indicated their race as being Asian/Asian American or Caucasian/White American. Additional variables included in the log were patient gender, age at admission, date of admission, date of discharge, and discharge diagnoses in accordance with the diagnostic codes of the *International Classification of Diseases, Ninth Revision* (ICD-9; National Center for Health Statistics, 2006).

We systematically reviewed the records of all the Asian American patients who were listed in the log. Given the large number of White American admissions (i.e., 10,211 treatment episodes), we used a random number generator to select a sample of 200 White American patients to serve as the comparison group. An *a priori* power analysis based on prior research (e.g., Gamst et al., 2003) indicated that 200 would be sufficient to detect differences in the outcome variables of interest (e.g., scores of levels of functioning). All of the Asian American admissions and the randomly selected White American admissions were manually searched in the hospital electronic medical records system to ensure that the treatment episode met study eligibility criteria. Records eligible for chart review were those of patients who were 18 years or older and had a complete set of admission and discharge notes for that treatment episode. The primary sources of data, aside from the patient log, were clinician-dictated admission notes from intake and summary notes from discharge. Admission notes were dictated and signed by admitting clinicians, and the discharge notes were dictated and signed by unit-specific attending psychiatrists who served as the patient's primary psychiatrist during the treatment episode.

Coding procedures—The first two authors (JEK and AS) developed coding procedures to uniformly extract the variables of interest from the written text. Each admission and discharge note adhered to a standard format, and extracted variables were based on available information in each major section of the chart. Variables selected for extraction from patients' charts were based on routine information that is collected across all patients. For example, each admission note contained a separate section that specifically included information about prior hospitalizations. This method of selective extraction allowed for a streamlined chart review process, greater accuracy of extracted variables, and minimal missing data. (The coding protocol is available by request from the first author.)

An initial coding team consisting of four trained research assistants (RAs) reviewed all admission and discharge records and recorded the variables of interest onto a de-identified database. The training process involved coding of five complete case examples in which RAs were required to code to 90% accuracy with the primary author (JEK) and the other RAs. When initial coding was completed, 10 percent of these codes were randomly cross-checked by two additional RAs. Discrepancies in codes were relatively infrequent (an estimated average of 3-5% of variables for every chart) and minor (e.g., unclear about patient's employment status at admission). Discrepancies were resolved through consensus discussions during weekly coding meetings and with discussion with the second author (AS).

Data extraction—We first cross-checked patient information as listed in the patient log (i.e., race, sex, age at admission, admission and discharge dates) with the patient's actual admission and discharge notes to ensure accuracy. Extracted demographic variables included patient age, gender, race, ethnicity (when available), nativity, marital status, education level, employment status, and living situation at admission. Extracted clinical and treatment-related variables included prior psychiatric hospitalizations (yes or no), receipt of outpatient psychiatric or psychological services at time of admission (yes or no), initiator of the referral (e.g., self, family/friend), route to care (e.g., emergency room, primary care physician), voluntary or involuntary hospitalization, admitting and discharge diagnoses, length of stay, and admitting and discharge Global Assessment of Functioning (GAF) scores. GAF scores appear on Axis V of the *DSM-IV* and are used to quantify a patient's overall level of psychosocial functioning. Patients are rated between one and 100, with higher scores reflecting better psychosocial functioning.

Diagnoses were grouped by the following four major categories: adjustment-related disorders, mood and anxiety disorders (i.e., depressive disorders, bipolar disorders, anxiety disorders, and mood disorders not otherwise specified [NOS]), schizophrenia spectrum disorders and other psychotic disorders (e.g., schizoaffective disorder, psychosis NOS), and substance-related disorders (i.e., alcohol and/or drug abuse/dependence). Given the limited number of Asian American patients, diagnoses were grouped in this way as a means to best capture the diagnostic variability while creating meaningful diagnostic groups. Furthermore, although patient diagnosis was available through the *ICD-9* codes listed in admission and discharge log records, patient diagnosis for this study was based on the attending psychiatrists' discharge diagnoses as written in the actual discharge summaries, as it likely reflects a more accurate assessment of the patient's clinical status (Ashley et al., 2001).

Data Analysis

To achieve our study goals and to test our hypotheses, we used a series of Pearson's χ^2 tests and *t*-tests to detect significant differences, while applying a setwise Bonferroni correction to our significance level to guard against inflated Type I error rates. With 12 planned tests for our demographic variables and 15 planned tests for our comparison variables, we used a *p*-value of .004 and .003, respectively, to detect significant differences. After examining correlations of our major study variables, we examined predictors of post-treatment variables (i.e., length of stay and psychosocial functioning) through hierarchical multiple regression analyses which were guided by the findings from the group comparisons. For length of stay, regressions were conducted separately for the two racial/ethnic groups to determine any differential predictors. For psychosocial functioning at discharge, regressions were conducted with both groups combined to examine whether race/ethnicity predicted discharge GAF after controlling for the effects of other variables. This process yielded a total of three regressions (i.e., length of stay by racial/ethnic group, discharge GAF for total sample). Statistically, it was important to limit the number of predictors in the model given the sample size (Cohen, Cohen, West, & Aiken, 2003), and conceptually, it was important to account for demographic and clinical variables that may be associated with outcomes. After controlling for GAF at admission, age, and gender in Step 1, we included employment-related variables (i.e., full-time student status, receiving disability income) in Step 2 as these are often associated with functioning. We also included clinical and treatment-related variables (i.e., prior psychiatric hospitalizations, involuntary hospitalization, and police involvement in hospitalization) that may be related to the severity of the patient. In Step 3, we included the four diagnostic categories (i.e., adjustment disorders, mood and anxiety disorders, schizophrenia spectrum and psychotic disorders, and substance-related disorders) to examine their relative contribution to outcomes.

Results

Sample Characteristics

The patient log consisted of 133 Asian American patients with 162 treatment episodes (i.e., some patients had more than one treatment episode during the study timeframe). We excluded four patients for being under 18, not being of Asian background, or not having a complete set of admission and discharge notes. Of the retained 129 patients, there were 154 treatment episodes, indicating an average of 1.2 admissions per patient. The most common Asian ethnicities included Chinese (39.5%), Korean (15.5%), Vietnamese (7%), Japanese (7%), and Filipino (4.7%). The majority (56.5%) of these patients were born foreign born.

For the White American sample, the patient log consisted of 7,483 patients with 10,211 treatment episodes. Of the randomly selected sample of 200 White American patients, we excluded two patients due to incomplete records. We then compared this selected study sample with the full White American sample to detect any major discrepancies that may potentially bias the selected study sample. There were no meaningful differences between the full White American sample and the selected study sample in mean age, gender distribution, mean length of stay, and mean number of admissions. Six patients in the White American study sample were born outside of the U.S., and information regarding specific

ethnic backgrounds was generally not available. Among the 198 White American patients, there were a total of 371 treatment episodes, indicating an average of 1.9 admissions per patient. For all patients with multiple episodes, we selectively examined only the first treatment episode during the study timeframe.

Demographic Characteristics

Table 1 describes the sample demographic characteristics, using a corrected p -value of .004 to detect major differences. Asian American patients were overall younger in age (M age = 31.79 years, SD = 13.37) than the White American patients (M age = 41.22 years, SD = 16.4). For marital status, more White American patients were divorced or separated (18.7%) compared to Asian American patients (7.0%). Moreover, more White American patients were receiving social security disability income at the time of admission (23.7%) than Asian American patients (8.5%). Greater than one-third of the Asian American patients (36.4%) were full-time college students at the time of admission, compared to 11.6% of White American patients.

Clinical and Treatment-Related Characteristics and Hypothesis Testing

Table 2 presents results from comparisons of the Asian American and White American sample for the clinical and treatment-related variables, using a corrected p -value of .003 to assess significance. Relative to Asian American patients, White American patients were more likely to have had a prior psychiatric hospitalization, $\chi^2(1, N = 327) = 23.91, p < .001$, with 75.3% of White American patients having been previously hospitalized, compared to 48.8% of Asian American patients. There were no significant differences in the other categories of variables examined (i.e., outpatient clinician, referral source, admission via emergency room, and involuntary hospitalization).

To test the hypothesis that Asian American patients using inpatient services would have more severe diagnoses than White American patients, we examined differences in discharge diagnoses. As shown on Table 2, a significantly greater proportion of Asian American patients were hospitalized for schizophrenia spectrum and other psychotic disorders, $\chi^2(1, N = 327) = 16.31, p < .001$, as well as adjustment disorders, $\chi^2(1, N = 327) = 11.04, p = .001$, relative to White American patients. A significantly greater proportion of the White American patients were hospitalized for substance-related disorders, $\chi^2(1, N = 327) = 13.59, p < .001$. Hypothesis 1 was partially supported; Asian American patients did in fact have a greater frequency of more severe disorders (i.e., schizophrenia spectrum and other psychotic disorders) in comparison to White American patients, though we also detected diagnostic differences between the two groups that were related to adjustment disorders and substance-related disorders.

To test the hypotheses that Asian American patients would have greater impairment in psychosocial functioning at admission and a longer length of treatment stay compared to White American patients, we examined differences in GAF scores at admission and length of stay, respectively. We found no meaningful differences between the two groups for either indicator; thus, Hypotheses 2 and 3 were not supported. We did not make specific predictions regarding differences in psychosocial functioning at discharge. Discharge GAF

comparisons were based on 272 patients (103 Asian Americans and 169 White Americans) with available discharge GAF scores. As shown on Table 2, Asian American patients had significantly higher level of psychosocial functioning than White American patients, $t(270) = 3.47, p = .001$.

Table 3 displays the correlations of the study variables. As we did not find racial/ethnic differences in length of stay, we conducted hierarchical regression analyses by racial/ethnic group to examine differential predictors of length of stay (Table 4). We entered blocks of variables in each step to determine the relative contribution of each set of variables. For Asian American patients, the only significant predictor of length of stay in Step 3 was psychosocial functioning at admission. That is, higher psychosocial functioning at admission was predictive of a shorter length of stay for Asian American patients ($\beta = -.23, p = .015$), even after entering in diagnostic variables. However, this association was not significant for White American patients ($\beta = -.10, ns$). For White American patients, a history of prior hospitalizations was predictive of a longer length of stay ($\beta = .19, p = .006$), whereas a diagnosis of substance-related disorders was predictive of a shorter length of stay ($\beta = -.39, p = .002$). Both regression models explained 20% of the variance in predicting length of stay.

As we found that Asian American patients had higher levels of functioning at discharge (Table 2), we conducted a regression analysis to determine whether race/ethnicity predicted functioning at discharge when controlling for the effects of other variables. As shown on Table 5, patient ethnicity was not a significant predictor of functioning when controlling for the effects of other variables in the model in Step 3. Significant predictors of post-treatment functioning were involuntary hospitalization ($\beta = -.18, p = .006$), adjustment disorder diagnosis ($\beta = .34, p < .001$), mood or anxiety disorder diagnosis ($\beta = .46, p < .001$), and schizophrenia spectrum or psychotic disorder diagnosis ($\beta = .21, p = .03$). Being involuntarily hospitalized was predictive of lower functioning, whereas diagnoses of adjustment disorder, mood or anxiety disorder, and schizophrenia spectrum and other psychotic disorder predicted higher functioning at discharge. This model accounted for 23% of the variance in predicting discharge GAF.

Discussion

The current study extends our understanding of disparities by examining utilization and outcome characteristics of individuals using the costliest and most intensive form of specialty mental health care—inpatient services. By examining what types of Asian American patients utilize inpatient services, how they come to receive treatment, and reasons why inpatient treatment is sought, our results suggest some important similarities and differences among Asian American and White American inpatients. Asian American patients were overall younger in age in comparison to the White American patients, with a greater proportion being full-time college students at the time of admission. Although more White American patients had been previously hospitalized, there were no differences in referral sources and route to care. As hypothesized, we found that Asian American patients utilized inpatient services for more severe psychiatric diagnoses (i.e., schizophrenia spectrum and other psychotic disorders) relative to White American patients. Despite this,

we found no evidence that Asian American patients were more clinically impaired at the time of admission relative to White American patients. Furthermore, we found no racial/ethnic group differences in length of treatment stay.

A number of prior studies have demonstrated that Asian American patients in inpatient settings tend to be diagnosed with psychotic disorders at higher rates than White American patients (Barreto & Segal, 2005; Flaskerud & Hu, 1992; Shin, 2009; Snowden & Cheung, 1990). Our data provided additional support for this pattern, as we found that 28.7% of Asian American patients had a schizophrenia spectrum or psychotic disorder diagnosis, compared to 11.1% of White American patients. This may be an especially important finding in light of the fact that White American patients appeared to be more chronic users of inpatient treatment (i.e., greater frequency of past hospitalizations) compared to Asian American patients, most of whom had never been hospitalized in the past. It still remains relatively unclear why Asian American patients had higher rates of severe psychiatric diagnoses compared to White American patients. Some have suggested that these diagnostic differences may be partly due to the tendency of Asian Americans to refrain from seeking help until a problem is no longer manageable without professional treatment (Lin & Cheung, 1999), resulting in overrepresentation of more severe psychiatric disorders in treatment settings. Others have suggested that a patient-clinician cultural mismatch might contribute to differential rates of psychiatric diagnoses, particularly resulting in higher rates of severe psychiatric diagnoses for ethnic minority patients (Mathews et al., 2002; Whaley & Geller, 2007). Investigating these possibilities was beyond the scope of the current chart review study, though notably, we did not find any racial/ethnic differences in clinical severity at admission, as measured by clinician-rated GAF scores.

Scholars have often discussed that Asian Americans have a general tendency to delay seeking help, and this delay may contribute to greater symptom severity when treatment is ultimately sought (Durvasula & Sue, 1996). It may seem puzzling that despite higher rates of severe psychiatric disorders among Asian American patients, Asian American patients were not more clinically impaired than White American patients. One possible explanation is that differences in symptom severity or functional impairment may be most marked at the *initial* mental health treatment encounter. For the majority of specialty mental health consumers, the use of inpatient services is not the first or only point of contact with the mental health treatment system (SAMHSA, 2012). Nearly half (48.8%) of Asian American patients had been previously hospitalized, and more than half (55.8%) had an established outpatient clinician at the time of admission. Any worsening of clinical severity resulting from treatment delay may be less applicable for those patients who already have had some contact with the mental health treatment system—whether inpatient or outpatient—as did a sizable proportion of patients in our study sample. Moreover, the level of functioning at admission for both groups was equally low. There may be a point at which symptoms and/or impairment become so severe, which warrants inpatient treatment, regardless of any prior delay in seeking help. The various referral sources may also indirectly attest to this possible explanation, as for the majority of patients, others (e.g., friends and family, outpatient clinician) were involved in the hospitalization. By the time inpatient services become

necessary, severity of illness is likely to have reached a certain clinical threshold, and these factors may attenuate racial/ethnic differences in severity at admission.

The current study also found no racial/ethnic differences in length of treatment stay. Assuming length of stay to be an important proxy marker for clinical need and severity (Thompson et al., 2003), the lack of racial/ethnic difference is conceivable given that Asian American and White American patients did not differ in clinical severity at admission. We did find that differential factors predicted length of stay for Asian American and White American patients. Higher levels of psychosocial functioning at admission predicted a shorter length of stay for Asian American patients. Even after accounting for diagnosis, Asian American patients who were less functionally impaired at admission spent a shorter amount of time in treatment than those who were more impaired. For White American patients, a history of prior hospitalization predicted a longer length of stay, and a diagnosis of substance-related disorders predicted a shorter length of stay. Again we note that our regression models explained a modest 20% of the variance in predicting length of stay. With the exception of substance-related disorders among White American patients, psychiatric diagnoses did not have a predictive relation to length of stay.

In prior studies, psychiatric diagnoses have explained about 10-12% of the variance in length of stay (Phelan & McCrone, 1995), and actual psychopathological symptoms only contributed a small amount of additional variance (Warnke, Rossler, & Herwig, 2011). The relative difficulty in explaining additional variance may be indicative of the numerous clinical and psychosocial aspects that clinicians must consider when admitting and discharging a patient. For example, rapid detoxification is likely the primary goal of inpatient treatment for patients who are presenting with substance-related problems, as with a proportion of the White American sample, warranting a shorter length of stay. On the other hand, patients whose symptoms have improved during treatment but are without sufficient outside supports may remain in the hospital until there is an adequate discharge disposition in place (Warnke et al., 2011).

The lack of racial/ethnic differences in length of stay is contrary to prior studies (e.g., Chen et al., 2003; Shin, 2009), and it is important to note the unique treatment setting, patient characteristics, and data source of the current study. Most prior studies that have found differences in length of stay have examined aggregated county or state mental health data. Our data are derived from a particular hospital specializing in acute short-stay treatment, in which the primary goal of inpatient admission is for crisis stabilization and immediate harm reduction. In such a case, important differences may emerge only once patients are discharged from the hospital and are placed in aftercare settings that are meant to provide a more ongoing source of care. It is also unclear if our results are generalizable to Asian American populations in other geographical regions or other types of inpatient care settings (e.g., public, managed care consortium). Of all discharged inpatients from this hospital in fiscal year 2010, Asian American patients represented only 1.4% of the inpatient population. This may be evidence of underrepresentation as well as evidence that Asian Americans in need of inpatient care may seek care through other avenues. Over a third of the Asian American sample were full-time college students at the time of admission, which is likely related to this particular hospital's provider relationship with numerous surrounding

universities. There were also greater than expected rates of adjustment disorders in the Asian American sample, which are relatively uncommon diagnoses in inpatient settings. Although the primary focus of the current study was in extending our understanding of disparities in inpatient settings, our results have highlighted additional important areas of future investigation.

Outpatient treatment studies have shown that Asian Americans tend to have worse treatment outcomes than their White American counterparts using indicators such as post-treatment psychiatric symptomatology and client satisfaction with treatment (e.g., Zane et al., 1994). Keeping in mind that the current study was limited to a single, proxy measure of outcome (i.e., GAF scores), our findings showed that Asian American patients comparatively did not experience more negative inpatient treatment outcomes. While we did find that Asian American patients had higher psychosocial functioning at discharge than White American patients, race/ethnicity was not a significant predictor of functioning when controlling for the effects of other variables. Three of the four diagnostic groups (i.e., adjustment disorders, mood or anxiety disorders, and schizophrenia spectrum and other psychotic disorders) predicted higher psychosocial functioning, which may indicate the relative level of effectiveness of inpatient treatment for those patients. Patients with adjustment disorders appeared to have the greatest improvement through treatment, followed by those with mood or anxiety disorders, followed by those with schizophrenia spectrum disorders.

One possible limitation of the current study is that two clinicians rated each patient's GAF score at admission and at discharge (i.e., admitting clinician and attending psychiatrist, respectively). Admitting clinicians were of varying occupations (e.g., psychiatrists, psychiatric nurses), and this may have raised questions regarding the reliability of GAF ratings. However, as noted in previous studies, occupation has not been found to impact GAF score reliability (Harel, Smith, & Rowles, 2002; Loevdahl & Friis, 1996). Furthermore, group-level GAF data, as is examined in the current study, has been found to be an adequate measure of pre- and post-treatment comparisons (Soderberg, Tungstrom, & Armelius, 2005). However, it would be important for future studies to utilize additional assessments of outcome.

Our findings must be interpreted with additional limitations in mind. The large number of comparison variables led us to utilize a stringent significance level, possibly resulting in Type II error. We could not examine inter-ethnic differences within the Asian American patients due to insufficient sample sizes, and we did not have information regarding patients' acculturation levels or socioeconomic status, which are clearly important factors related to treatment utilization. Although health insurance coverage may sometimes serve as a proxy indicator for socioeconomic status, our particular sample was somewhat unique in that the state of Massachusetts mandates health insurance coverage for all residents. Therefore, while every patient in our sample had health insurance coverage, it is possible that length of stay may have been partially driven by demands placed by certain insurance companies, some of whom have strict policies on the number of psychiatric inpatient days allowed per admission.

Addressing racial/ethnic disparities in mental health treatment continues to be a major challenge. This study confirmed prior findings that Asian American patients tend to utilize inpatient services for more severe psychiatric diagnoses compared to White American patients; however, we did not find any differences in level of severity nor length of stay. Asian Americans have been a known disparity population in mental health settings, and inpatient treatment serves those individuals with the greatest need for mental health care. Yet the state of the knowledge in inpatient services among Asian Americans with psychiatric disorders is severely lacking. Moreover, our current understanding of utilization and outcomes in these settings has been unable to adequately address issues of mental health disparities and clinical effectiveness. The current study has identified important areas of investigation, as we are in need of better research and clinical practices that can aid in our understanding of timely and effective mental health treatment utilization.

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Table 1

Patient demographic characteristics

Variable [n (%)]	Asian American patients (n = 129)	White American patients (n = 198)	Combined (N = 327)	χ^2	t	p
M Age (SD)	31.79 (13.37)	41.22 (16.4)	37.50 (16.0)		5.45	< .001
Female gender	79 (61.2%)	106 (53.5%)	185 (56.6%)	1.89		.17
Marital status						
Single/never married	84 (65.1%)	99 (50.8%)	183 (56.0%)	7.24		.007
Married/partnered	35 (27.1%)	53 (26.8%)	88 (26.9%)	.0		.94
Divorced/separated	9 (7.0%)	37 (18.7%)	46 (14.1%)	8.86		.003
Education level > 12 years	102 (79.1%)	169 (85.4%)	271 (82.9%)	2.17		.14
Employment status						
Full-time employment	37 (28.7%)	56 (28.3%)	93 (28.4%)	.01		.94
Unemployed	22 (17.1%)	42 (21.2%)	64 (19.6%)	.01		.93
Receiving disability income	11 (8.5%)	47 (23.7%)	58 (17.7%)	12.39		< .001
Student	47 (36.4%)	23 (11.6%)	70 (21.4%)	28.60		< .001
Living situation						
With family or relatives	65 (50.4%)	95 (48.0%)	160 (48.9%)	.18		.67
Alone or with non-relatives	48 (37.2%)	78 (39.4%)	126 (38.5%)	.19		.72

Note. To avoid Type I error, a Bonferroni-corrected *p*-value of .004 was used to detect significance.

Table 2
Racial/ethnic group differences in clinical and treatment-related variables

Variable	Asian American patients (n = 129)	White American patients (n = 198)	χ^2	t	p
Prior psychiatric hospitalizations	63 (48.8%)	149 (75.3%)	23.91		< .001
Has outpatient clinician at time of admission	72 (55.8%)	124 (62.6%)	1.51		.22
Initiator of help for current episode					
Family or friend	44 (34.1%)	49 (24.8%)	3.36		.07
Outpatient clinician	39 (30.2%)	49 (24.8%)	1.20		.27
Self	22 (17.1%)	55 (27.8%)	4.99		.03
Police involvement	14 (10.9%)	9 (4.5%)	4.75		.03
Admission via emergency room	82 (63.6%)	117 (59.1%)	.66		.42
Involuntary hospitalization	22 (17.1%)	19 (9.6%)	3.69		.06
Primary discharge diagnosis					
Adjustment disorders	9 (7.0%)	1 (0.5%)	11.04		.001
Mood or anxiety disorders	67 (51.9%)	115 (58.1%)	1.19		.27
Schizophrenia spectrum or other psychotic disorders	37 (28.7%)	22 (11.1%)	16.31		< .001
Substance-related disorders	8 (6.2%)	42 (21.2%)	13.59		< .001
M GAF score at admission (SD)	31.79 (5.83)	31.13 (6.39)		.60	.55
M GAF score at discharge (SD), N = 272	54.34 (8.18)	50.81 (8.10)		3.47	.001
M Length of stay in days (SD)	11.57 (15.2)	9.60 (9.7)		1.42	.16

Note. To avoid Type I error, a Bonferroni-corrected *p*-value of .003 was used to detect significance.

Table 3

Intercorrelations of study variables (N = 327)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Asian American	--														
2. Age	-.29**	--													
3. Female	.08	.07	--												
4. Student	.30**	-.44**	.01	--											
5. Receiving disability income	-.20**	.14**	-.08	-.24**	--										
6. Prior hospitalization	-.27**	.20**	-.01	-.24**	.24**	--									
7. Involuntary hospitalization	.11	.18**	-.02	.03	-.06	-.01	--								
8. Police involvement in admission	.12*	.03	-.15**	.01	-.01	-.10	.18**	--							
9. Adjustment disorder diagnosis	-.07	-.11	-.03	.12*	-.08	-.20**	.20**	.09	--						
10. Mood or anxiety disorder diagnosis	-.06	-.03	.21**	.03	-.02	.01	-.28**	-.09	-.20**	--					
11. Substance-related diagnosis	-.20**	-.03	-.18**	-.08	-.02	.05	-.14*	-.08	-.08	-.48**	--				
12. Schizophrenia spectrum diagnosis	.22**	-.04	-.07	.03	.16*	.11*	.21**	.12*	-.08	-.53**	-.29**	--			
13. GAF at admission	-.07	-.02	-.01	-.01	.05	.03	-.21**	-.04	.05	-.01	.26**	-.24**	--		
14. GAF at discharge	.21**	.14*	.14*	.18**	-.12	-.07	-.15*	.01	.24**	.30**	-.26**	-.08	-.01	--	
15. Length of stay	.02	.18**	-.01	-.09	.08	.20**	.14*	.06	-.15**	.03	-.29**	.23**	-.25**	-.01	--

* $p < .05$,
 *** $p < .01$

Table 4
Summary of regression results for length of stay by racial/ethnic group

Variable	Asian Americans (<i>n</i> = 129)				White Americans (<i>n</i> = 197)			
	R ²	B (SE)	β	<i>p</i>	R ²	B (SE)	β	<i>p</i>
Step 1	.13				.07			
GAF at admission		-.40 (.11)	-.31	< .001		-.26 (.09)	-.21	.003
Age		.13 (1.05)	.23	.006		.08 (.03)	.18	.02
Gender – female		.58 (1.27)	.04	.65		-.1.10 (1.06)	-.07	.30
Step 2	.02				.05			
GAF at admission		-.44 (.11)	-.34	< .001		-.23 (.09)	-.18	.009
Age		.09 (.06)	.16	.13		.07 (.04)	.15	.06
Gender – female		.89 (1.38)	.06	.52		-.79 (1.05)	-.05	.45
Student		.11 (1.47)	.01	.94		-.06 (1.74)	-.01	.97
Receiving disability income		-.3.38 (2.66)	-.11	.21		2.01 (1.31)	.11	.13
Prior hospitalization		3.52 (1.42)	.24	.02		2.84 (1.22)	.17	.02
Involuntary hospitalization		-.1.39 (1.75)	-.07	.43		3.75 (1.92)	.14	.05
Police involvement		.32 (2.21)	.01	.89		2.22 (2.50)	.06	.38
Step 3	.05				.08			
GAF at admission		-.30 (.12)	-.23	.015		-.13 (.09)	-.10	.15
Age		.09 (.06)	.16	.12		.05 (.04)	.10	.18
Gender – female		.86 (1.38)	.06	.54		-.1.66 (1.04)	-.11	.11
Student		-.75 (1.46)	-.05	.61		.37 (1.70)	.02	.83
Receiving disability income		-.4.00 (2.6)	-.13	.13		1.64 (1.28)	.09	.20
Prior hospitalization		2.01 (1.50)	.14	.18		3.26 (1.17)	.19	.006
Involuntary hospitalization		-.1.57 (1.85)	-.08	.40		3.6 (2.02)	.14	.08
Police involvement		.33 (2.20)	.01	.88		.54 (2.44)	.02	.82
Adjustment disorders [†]		-.5.48 (3.58)	-.18	.13				
Mood or anxiety disorders		-.1.52 (2.75)	-.10	.58		-.1.71 (2.04)	-.11	.41
Schizophrenia/psychotic		1.69 (2.91)	.10	.56		-.1.36 (2.42)	-.06	.58
Substance-related disorders		-.5.61 (3.49)	-.19	.11		-.7.03 (2.26)	-.39	.002
Total Adj R ²	.20				.20			

Adjustment disorders was not included in the regression model for White Americans.

Note.

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Table 5
Summary of hierarchical multiple regression results predicting discharge GAF scores ($N = 272$)

Variable	R ²	B (SE)	β	p
Step 1	.05			
GAF admit		.004 (.08)	.003	.96
Age		-.05 (.03)	-.09	.13
Gender – female		2.11 (1.01)	.13	.04
Race/ethnicity – Asian American		2.88 (1.06)	.17	.007
Step 2	.03			
GAF admit		-.04 (.08)	-.03	.65
Age		-.01 (.04)	-.02	.75
Gender – female		2.04 (1.02)	.12	.047
Race/ethnicity – Asian American		2.82 (1.12)	.17	.02
Student		2.33 (1.41)	.11	.10
Receiving disability income		-1.53 (1.34)	-.07	.26
Prior hospitalization		.59 (1.12)	.03	.60
Police involvement		1.60 (1.92)	.05	.41
Involuntary hospitalization		-4.63 (1.56)	-.19	.003
Step 3	.15			
GAF admit		.001 (.08)	.001	.99
Age		.003 (.03)	.01	.92
Gender – female		.78 (.97)	.05	.42
Race/ethnicity – Asian American		1.89 (1.08)	.11	.08
Student		1.82 (1.30)	.09	.16
Receiving disability income		-1.91 (1.24)	-.09	.13
Prior hospitalization		.55 (1.06)	.032	.60
Involuntary hospitalization		-4.29 (1.55)	-.18	.006
Police involvement		.93 (1.76)	.03	.60
Adjustment disorders		15.60 (3.00)	.34	< .001
Mood or anxiety disorders		5.57 (1.81)	.46	< .001
Schizophrenia spectrum/psychotic		4.49 (2.01)	.21	.03
Substance-related disorders		1.12 (2.03)	.05	.58
Total Adj R ²	.23			