Presence and influence of trauma in inpatient psychiatric care

Rachel B. Nowlin, Sarah K. Brown, Jessica R. Ingram, Amanda R. Drake, Johan R. Smith

Universal Health Services, Inc., King of Prussia, PA, USA

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ABSTRACT

Background: Previous research indicates traumatic exposure and posttraumatic stress disorder (PTSD) occur at a higher rate in people with severe mental illness (SMI) than in the general population, and co-occurring PTSD symptoms can worsen outcomes for patients with SMI.

Objective: This study assessed the presence and influence of PTSD symptoms in individuals with SMI in an inpatient psychiatric setting, and rates of PTSD diagnoses in this population.

Methods: Retrospective analysis of demographic information and behavioral health outcomes, using a representative sample of adult and geriatric inpatient psychiatric patients (N = 4,126).

Results: This study found elevated PTSD symptoms in over 65% of patients, and significant positive correlations between PTSD symptomatology and behavioral and emotional dysfunction. This study also explored differences in patients with PTSD symptoms who did and did not receive a PTSD diagnosis, finding associations for admission severity, race, and gender.

Conclusions: Traumatization and PTSD symptoms were prevalent in psychiatric inpatient settings, and had an impact on behavioral health outcomes. Recommendations include the use of PTSD screening in behavioral healthcare admission processes, and the furtherance of trauma-informed care for inpatient psychiatric patients with SMI, due to the volume of traumatization and PTSD symptoms in the population.

Key Words: Posttraumatic stress disorder, Severe mental illness, Inpatient psychiatry, Trauma screening, Trauma informed care

1. INTRODUCTION

When compared with the general population, individuals with severe mental illness (SMI) are more likely to report experiencing a traumatic event and to meet criteria for a diagnosis of post-traumatic stress disorder (PTSD), both across their lifetime and within the last 12 months, resulting in greater impairment in general functioning and increased usage of healthcare services. In a review of studies from 1980 to 2010, SMI populations reported a mean lifetime prevalence rate of 47% for physical abuse, 37% for sexual abuse, and 30% for PTSD as assessed by validated tools. These prevalence rates vastly exceeded those seen in the general population (21% physical abuse, 23% sexual abuse, and 7% PTSD). While exposure to trauma does not guarantee the development of PTSD symptoms, individuals with SMI also have a higher number of overall trauma exposures than individuals without SMI, and amount of cumulative trauma exposure relates to the presence and severity of PTSD symptoms in patients with SMI.

Patients with both SMI and PTSD symptoms report greater severity of psychological distress and slower recovery than
Both patients with SMI alone\textsuperscript{[2,7]} and patients with SMI and trauma exposure but no PTSD symptoms.\textsuperscript{[8]} Research has supported models which propose PTSD symptoms interact with SMI and increase the severity of SMI symptoms in patients who have experienced trauma.\textsuperscript{[8–10]} Yet in many treatment settings, recognition and treatment of PTSD is secondary to management of SMI symptoms.\textsuperscript{[12]}

The need for trauma-informed care – including trauma and PTSD symptoms as facets in treatment planning – is clear for patients with SMI.\textsuperscript{[11]} However, such treatment requires trauma to first be identified. In previous investigations, trauma assessments were not consistently performed during intake processes in public mental healthcare settings.\textsuperscript{[12]}

Even when trauma assessments were performed, detecting trauma symptoms did not consistently lead to a trauma-informed treatment plan.\textsuperscript{[3]} Diagnosis rates of PTSD in psychiatric treatment settings are also consistently lower than expected given the prevalence of trauma in the SMI population.\textsuperscript{[13,14]} Thus, it is difficult to know how under-identified and/or under-treated PTSD may be in an inpatient psychiatric setting.

This analysis used data from psychiatric inpatient programs to examine the presence of PTSD symptoms and diagnoses in a large sample of patients with SMI. Of interest were how PTSD symptoms relate to broader psychological and behavioral functioning at admission, and what presentations and characteristics may influence whether patients with elevated PTSD symptomatology receive a PTSD diagnosis. Findings are presented to support the need for trauma-informed care in mental health settings, and to highlight the use of routine trauma screening as a tool for distinguishing patient needs and developing treatment plans.

2. METHOD

2.1 Data source

This analysis used anonymous patient-level data collected by behavioral health units as part of routine clinical processes to monitor outcomes. Records came from adult and geriatric psychiatric inpatient stays during 2016-2017 at five distinct facilities. Three of the five units were in freestanding psychiatric hospitals (contributing 86% of the sample), and two units were inpatient units housed in medical-surgical hospitals. Regional location varied and included FL, PA, MO, and NC.

Each participating program was trained on the instruments and the collection process, which calls for administering forms at admission and discharge to all patients. Patients with a completed PTSD screener at admission (N = 4,126) were selected for inclusion. After selection for inclusion in this analysis, the presence of a primary or secondary discharge diagnosis of PTSD was noted in each record.

2.2 Instruments

Data included patient-reported post-traumatic stress disorder symptom severity, measured by the Abbreviated PTSD Checklist (PCL-C-6).\textsuperscript{[15]} The PCL-C-6 is a six-item self-report questionnaire that asks the respondent to indicate how much they have been bothered by problems related to stressful experiences. The version used in this data is appropriate for a civilian population and anchored to “stressful experiences”. Items are presented on a 5-point scale ranging from “not at all” (1) to “extremely” (5) and a total score is calculated by summing all 6 responses. In a general medical setting, patients who score 14 or above are considered to have screened positive for PTSD with further evaluation needed. In this analysis, PCL-C-6 scores below 14 were identified as “low” and scores 14 or higher were considered “high”.

A subset of patients with PCL-C-6 scores also had completed the Behavior and Symptom Identification Scale (BASIS-32\textsuperscript{®}) at admission.\textsuperscript{[16]} The BASIS-32 is a widely-used self-report measure of general functioning useful for monitoring behavioral health outcomes. Patients are asked to rate their level of difficulty in 32 areas of functioning on a 5-point scale ranging from “No difficulty” (0) to “Extreme” (4). These items are used to calculate an overall mean score as well as five subscales: Relation to self/others, daily living/role functioning, depression/anxiety, impulsive/addictive behavior, and psychosis. One-third of patients (1,223) in this study had BASIS-32 scores available for analysis in addition to their PCL-C-6 scores.

2.3 Analysis

Descriptive statistics were calculated as frequencies and percentages for categorical data, and as means and standard deviations for continuous data. Patient admission severity was analyzed using ANOVA and pair-wise comparisons between PCL-C-6 total and item scores and BASIS-32 overall and subscale scores. Correlation was used to explore relationships between the BASIS-32 and the PCL-C-6. Differences in PTSD diagnosis assignment for patients with symptoms of trauma were assessed using regression models, examining the influence of individual PCL-C-6 items. All data were analyzed using IBM SPSS Statistics (version 25; IBM Corp, Armonk, NY).

3. RESULTS

Data were analyzed for 4,126 patients with a PCL-C-6 completed at admission to an inpatient psychiatric treatment program. The majority of patients were admitted to adult inpa-
The majority (65.7%) of patients had high scores on the PCL-C-6, but only 7.6% of these patients also received a PTSD diagnosis (5.3% of the total sample). Further analyses focused only on the high-scoring sub-sample of patients, to explore differences influencing the presence or lack of a PTSD diagnosis. Between the groups with and without a

Table 1. Sample characteristics (N = 4,126)

| Characteristics                        | PCL-C-6 Admission Severity < 14 (n = 1,415) | PCL-C-6 Admission Severity ≥ 14 (n = 2,711) | Total Sample (n = 4,126) |
|----------------------------------------|--------------------------------------------|-------------------------------------------|--------------------------|
|                                        | Percent  No. | Percent  No. | Percent  No. | Percent  No. |
| Unit Type                              |                                           |                                           |                          |
| Adult Inpatient                        | 90.4%  1,279 | 94.2%  2,553 | 92.9%  3,832 |
| Geriatric Inpatient                   | 9.6%   136  | 5.8%   158  | 7.1%   294  |
| Sex*                                   |                                           |                                           |                          |
| Male                                   | 66.2%  935  | 61.0%  1,650 | 62.8%  2,585 |
| Female                                 | 33.8%  477  | 39.0%  1,053 | 37.2%  1,530 |
| Race*                                  |                                           |                                           |                          |
| White                                  | 73.3%  1,014 | 78.1%  2,083 | 76.5%  3,097 |
| African American                       | 25.3%  350  | 20.5%  548  | 22.2%  898  |
| Other                                  | 1.4%   20    | 1.3%   36    | 1.4%   56    |
| Hispanic Ethnicity*                    |                                           |                                           |                          |
| Yes                                    | 12.8%  144  | 11.6%  250   | 12.0%  394   |
| No                                     | 87.2%  981  | 88.4%  1,899 | 88.0%  2,880 |
| Primary Diagnosis Category*            |                                           |                                           |                          |
| Mood Disorders                         | 44.6%  627  | 57.2%  1,541 | 52.9%  2,168 |
| Schizophrenia & other Psychotic Disorders | 30.1%  423  | 26.2%  706  | 27.5%  1,129 |
| Psychoactive Substance Use             | 14.6%  205  | 8.4%   227   | 10.5%  432   |
| Anxiety & other Nonpsychotic Disorders | 10.0%  141  | 7.0%   189   | 8.0%   330   |
| Disorders of Personality & Behavior    | 0.8%   11    | 1.2%   31    | 1.0%   42    |
|                                        | Mean  SD | Mean  SD | Mean  SD |
| Age (years)                            | 39.3  14.9 | 39.3  13.0 | 39.3  13.7 |
| Length of stay (days)                  | 8.4   15.5 | 7.7   15.7 | 8.0   15.7 |

Note. * Information not available for all records, therefore n may not sum to 4,126.
PTSD diagnosis, there were significant differences in gender, race, and primary diagnosis category, while age did not differ. The PTSD-diagnosed group had a greater proportion of female patients (64.4% versus 36.9% for no diagnosis). Race distribution for the PTSD-diagnosed group was 84.2% White and 13.3% African American, while the non-PTSD-diagnosed group was 77.6% White and 21.1% African American. Both groups were similar in proportion of mood disorders as a primary diagnosis (both 57%). However, the non-PTSD-diagnosed group had a higher proportion of schizophrenia and psychotic disorders as a primary diagnosis than the PTSD-diagnosed group (27.2% and 14.2% respectively).

Table 2. PCL-C-6 and BASIS-32 admission severity

| PCL-C-6 Admission Severity | Low PCL-C-6 Admission Severity | High PCL-C-6 Admission Severity | p-value pair-wise* | effect size pair-wise* |
|----------------------------|---------------------------------|---------------------------------|-------------------|-----------------------|
|                            | N = 1,415                       | N = 2,504                       | N = 207           |                      |
|                            | Mean    | SD    | Mean    | SD    | Mean    | SD    |                      |                      |
| Total Score                | 8.85    | 2.64  | 21.83   | 4.95  | 24.47   | 4.28  | < .001              | 0.54                 |
| Items                      |        |       |        |       |         |       |                      |                      |
| Disturbing memories, thoughts, or images | 1.47   | 0.71  | 3.57    | 1.20  | 4.24    | 0.89  | < .001              | 0.57                 |
| Feeling upset when reminded| 1.48   | 0.68  | 3.70    | 1.15  | 4.22    | 0.89  | < .001              | 0.46                 |
| Avoiding activities or situations | 1.33   | 0.61  | 3.47    | 1.25  | 4.00    | 1.09  | < .001              | 0.42                 |
| Feeling distant            | 1.58   | 0.85  | 3.89    | 1.10  | 4.25    | 0.98  | < .001              | 0.33                 |
| Feeling irritable          | 1.43   | 0.71  | 3.43    | 1.25  | 3.69    | 1.23  | .003                | 0.21                 |
| Difficulty concentrating   | 1.56   | 0.82  | 3.77    | 1.18  | 4.07    | 1.13  | < .001              | 0.26                 |

| BASIS-32 Admission Severity | Low PCL-C-6 Admission Severity | High PCL-C-6 Admission Severity | p-value pair-wise* | effect size pair-wise* |
|----------------------------|---------------------------------|---------------------------------|-------------------|-----------------------|
|                            | N = 411                         | N = 711                         | N = 101           |                      |
|                            | Mean    | SD    | Mean    | SD    | Mean    | SD    |                      |                      |
| Total Score                | 0.79    | 0.62  | 2.14    | 0.90  | 2.41    | 0.98  | .006                | 0.30                 |
| Subscales                  |        |       |        |       |         |       |                      |                      |
| Daily Living               | 0.93    | 0.81  | 2.35    | 0.97  | 2.65    | 1.05  | .007                | 0.31                 |
| Depression and Anxiety     | 1.20    | 0.89  | 2.75    | 0.92  | 3.03    | 0.85  | .01                 | 0.31                 |
| Impulsive/Addictive Behavior | 0.48 | 0.57  | 1.72    | 1.13  | 1.89    | 1.29  | .292                | 0.15                 |
| Psychosis                  | 0.31    | 0.55  | 1.47    | 1.25  | 1.81    | 1.44  | .011                | 0.26                 |
| Relation to Self and Others | 0.93   | 0.84  | 2.34    | 1.00  | 2.64    | 1.02  | .009                | 0.30                 |

Note. * These values represent pair-wise comparisons with a Bonferroni procedure for only the two “high” PCL-C-6 admission score groups (with and without a PTSD diagnosis).

Table 3. Correlations between PCL-C-6 and BASIS-32 total and subscales at admission (N = 1,223)

|          | 1   | 2   | 3   | 4   | 5   | 6   | 7   |
|----------|-----|-----|-----|-----|-----|-----|-----|
| Total Scores |     | 1. PCL-C-6 | –   |     |     |     |     |
| BASIS-32 Subscale Scores | 2. BASIS-32 | .623 | –   |     |     |     |     |
| 3. Daily Living |     | .567 | .813 | –   |     |     |     |
| 4. Depression and Anxiety |     | .602 | .760 | .694 | –   |     |     |
| 5. Impulsive and Addictive Behavior |     | .533 | .677 | .544 | .543 | –   |     |
| 6. Psychosis |     | .515 | .639 | .540 | .506 | .622 | –   |
| 7. Relation to Self and Others |     | .579 | .795 | .724 | .673 | .557 | .524 | –   |

Note. All correlations presented are significant at the p < .001 level.
High-scoring patients with and without a PTSD diagnosis differed in overall functioning and in their presentation of PTSD symptomatology. The PTSD-diagnosed group reported greater severity on the BASIS-32 than non-PTSD diagnosed patients, except on the Impulsive and Addictive Behavior subscale, where the two groups did not differ ($p = .292$). Total and individual item scores on the PCL-C-6 were significantly higher in the PTSD-diagnosed group ($p = .003$ for “feeling irritable”, $p < .001$ for other items) compared to the non-PTSD diagnosed group. Medium effect sizes were seen on the three PCL-C-6 items which refer to a “stressful experience from the past”, while items which correspond to more general PTSD symptoms (e.g., feeling lonely) had small effect sizes (see Table 2).

Logistic regression models were used to elucidate the relationship between individual PCL-C-6 item scores and the presence of a PTSD diagnosis for high-scoring patients. Only one PCL-C-6 item had a significant and positive influence on PTSD diagnosis status. “Repeated, disturbing memories, thoughts, or images of a stressful experience from the past.” (OR = 1.553, $p < .001$). A second model controlled for patient demographics including age, gender, and race, revealing an influence of gender and race, in addition to the “disturbing thoughts” item (OR = 1.517, $p < .001$). Being female was associated with an increased likelihood of PTSD diagnosis (OR = 2.684, $p < .001$) while being African American rather than White was associated with a decreased likelihood (OR = 0.632, $p = .035$).

4. Discussion

In this sample of adult and geriatric psychiatric inpatients, over 65% of assessed patients scored high on a PTSD screener, supporting previous findings that patients with SMI display a higher prevalence of PTSD symptoms than in the general population.[2] Additionally, PTSD symptoms correlated with dysfunction in daily living, depression, anxiety, impulsive behavior, relationships, and psychosis, consistent with research suggesting PTSD compounds difficulties for patients with SMI.[2,7,9]

Though the majority of patients reported elevated PTSD symptoms, only 5.3% of the total sample received a primary or secondary diagnosis of PTSD, supporting previous findings of PTSD’s possible under-diagnosis in this population.[13,14] However, further analyses indicate complexity in the diagnostic landscape of an inpatient setting. Despite both groups passing the cutoff on the PCL-C-6 screener, patients with PTSD symptoms who received a PTSD diagnosis reported greater severity on both the PCL-C-6 and the BASIS-32’s measure of general functioning than patients who had PTSD symptoms but were not diagnosed with PTSD.

Our findings also suggest high scores on the PCL-C-6 may originate from non-trauma-driven distress for some patients: Patients who received a PTSD diagnosis had higher scores on trauma-specific items of the PCL-C-6 than patients who did not, and differential diagnosis patterns were seen specifically on the “Repeated, disturbing memories, thoughts, or images of a stressful experience from the past” item. For patients not experiencing trauma-specific distress, perhaps high scores on the PCL-C-6 are picking up “noise” from other symptoms of SMI. This is supported by our sample, where patients with psychotic disorders scored high on the PCL-C-6 but were less likely to have a PTSD diagnosis.

There were also differences in diagnostic patterns based on patient characteristics. All other factors held constant, women with PTSD symptoms were more likely to be diagnosed with PTSD than similar men, while African American patients with PTSD symptoms were less likely to be diagnosed than their White counterparts. Literature offers support that women are more likely to develop PTSD in response to traumatic exposure than men,[17] indicating some difference may be expected. However, mental health concerns in men and African Americans often go undetected in medical care settings,[18] and African Americans with PTSD are reported to be under-diagnosed due, in part, to a lack of access to mental healthcare.[19,20] This study describes a large real-world sample of individuals in acute psychiatric settings, and demonstrates patterns of diagnosis similar to previous research in medical settings. The continuing differences in diagnosis patterns in a psychiatric setting suggest further research may be needed to identify potential bias in behavioral health settings.

Complicating the evaluation of diagnostic patterns, a significant portion of patients with SMI may have trauma exposure and PTSD symptoms but not meet criteria for diagnosis, having “subthreshold PTSD”. In mental healthcare settings, patients with subthreshold PTSD experience more dysfunction than trauma-exposed patients with no PTSD symptoms,[21] and our results support this: Scores on the PCL-C-6 correlated positively with BASIS-32 overall and subscale scores, regardless of PTSD diagnosis. This pattern indicates a need for trauma-informed care in inpatient psychiatric settings, and literature supports patients with PTSD symptoms and SMI respond when trauma is included as a component of their treatment.[22,23]

4.1 Limitations

Data used in these analyses were collected from real-world inpatient units, rather than controlled laboratory environments. Facilities were trained to administer measures to all patients at admission, so while selection bias in which tools
a patient completed was possible, it is not assumed. These data included patient-reported functioning and PTSD symptoms, but no externally-verified records of trauma history. These data also did not include information about diagnostic practices or assessments used beyond the PCL-C-6 and BASIS-32, so we cannot estimate how many patients with PTSD symptomatology met criteria for diagnosis. However, the purpose of this analysis was not to assess the PCL-C-6 as a diagnostic tool, but to explore the hypotheses that inpatient psychiatric units may serve a large group of patients who present with PTSD symptoms, and that the presence of PTSD symptoms may influence overall patient severity and presentation.

Another concern is the high relatedness of scores on the PCL-C-6 and the BASIS-32, which may indicate the measures are capturing similar domains of psychological distress, rather than PTSD symptoms influencing functioning in unique ways. This may be compounded by the fact that the PCL-C-6 is comprised of 3 items that specifically refer to a traumatic incident, and 3 items that refer to more broad functioning. In our analyses, we noted a difference in response patterns on the “specific” items versus the “general” items, particularly between high-scoring patients with and without a PTSD diagnosis. Though symptoms of SMI and PTSD may interrelate, PTSD symptoms did appear to carry unique weight among PTSD-diagnosed patients in this sample.

4.2 Recommendations

While PTSD can be a recurrent and lifelong disorder that may not be fully treated in one inpatient stay, co-occurring PTSD and SMI are likely best treated in conjunction. These authors believe there is a need for trauma-informed care for patients with SMI, which will require providers to assess, acknowledge, and treat the trauma in patients within their programs. Our findings also suggest more information is needed about the rates of PTSD and subthreshold PTSD in inpatient psychiatric settings, data which could be similarly gathered through the implementation of consistent and applied trauma screening and patient outcomes tracking.

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CONFLICTS OF INTEREST

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