Nonsuicidal self-injury (NSSI), which is defined as the direct, deliberate destruction of one’s own body tissue to inflict harm or pain without an underlying suicidal intent, is common among adolescents in both the community and the clinical setting. Although NSSI does not always progress to or predict future suicidal behaviors, there is believed to be a link between the two, which makes this an important patient safety concern. We queried the Pennsylvania Patient Safety Reporting System (PA-PSRS) and identified 640 patient safety events involving NSSI among children and adolescents in the inpatient psychiatric setting that occurred in 2019. Most patients were female (71%; 457 of 640), and they ranged in age from 5 to 17 years. The most common methods of NSSI were hitting, punching, kicking, or body slamming a surface; scratching or cutting self with fingernails or an object; and head banging. Most patients sustained only minor injuries as a result of NSSI. Interpersonal interactions, including family, peer, and healthcare provider interactions, were among the most common contributors to NSSI. Few event reports (n=47) explicitly stated that the patient had a diagnosis of autism spectrum disorder (ASD), but we did conduct a subgroup analysis of these patients to identify relevant trends and found that they most often were male (64%: 30 of 47) and that head banging and hitting self were the most common methods of self-harm. In order to keep patients safe during inpatient stays in psychiatric facilities or units, future research should focus on prevention strategies that reduce risk of NSSI among children and adolescents, as well as the potential for immediate harm and future mortality.

Keywords: nonsuicidal self-injury, self-injurious behavior, patient safety, inpatient, children, adolescents, autism spectrum disorder

Disclosure: The author declares that they have no relevant or material financial interests.

Elizabeth Kukielka, PharmD, MA, RPh

DOI: 10.33940/data/2020.9.3
onsuicidal self-injury (NSSI) is defined as the direct, deliberate destruction of one’s own body tissue to inflict harm or pain without an underlying suicidal intent. NSSI may include such behaviors as cutting, scratching, biting, hitting, and head banging, and excludes suicidal gestures, accidental injuries, indirect self-harm behaviors (e.g., eating disorders or drug abuse), and socially accepted forms of body modification (e.g., piercing or tattooing). NSSI typically begins in adolescents around 13 or 14 years of age, and lifetime prevalence in the adolescent and young adult population is estimated to be 15% to 20%. Although NSSI does not always progress to or predict future suicidal behaviors, there is believed to be a link between the two, which makes this an important patient safety concern.

NSSI has been observed in both the community and the clinical setting, although rates of NSSI are higher within the psychiatric population. NSSI may present as a symptom of numerous psychiatric conditions, including anxiety disorders; mood disorders; substance abuse; eating disorders; and personality disorders, such as borderline personality disorder (BPD). Although clinicians once considered NSSI primarily in the context of BPD, NSSI was added as a distinct condition in the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5) in 2013.

In 2019, analysts at the Patient Safety Authority (PSA) conducted and published a study of events submitted to the Pennsylvania Patient Safety Reporting System (PA-PSRS) involving patient self-harm in the nonpsychiatric setting. However, an analysis of events in PA-PSRS involving self-harm, and more specifically NSSI, in the psychiatric setting had yet to be undertaken. In this study, we conducted an in-depth review and analysis of patient safety events involving NSSI among children and adolescents in the inpatient psychiatric setting that took place in 2019. The purpose of this study was to examine patient-specific factors, such as age and gender, as well as other contributing circumstances, such as interpersonal interactions, that may precipitate NSSI in this patient population.

Methods

Patient-self harm was added to PA-PSRS as a distinct event type in April 2015. Event subtypes within this category include suicide (resulting in injury or death), self-mutilation, ingestion of a foreign body, eating disorders, and other types of self-harm specified by the reporting facility. A preliminary search of PA-PSRS for events that comprise NSSI (i.e., self-mutilation, ingestion of foreign object or substance, and other self-harm) in inpatient psychiatric care areas returned thousands of events from 2015 to present.

We queried PA-PSRS for events that occurred from January 1, 2019, through December 31, 2019. We limited the search to the most recent one-year period because we wanted to do an in-depth analysis of individual event reports, and this would not have been feasible with a data set that included thousands of reports. We searched for events reported by all facility types, including acute care hospitals and psychiatric facilities, that took place in psychiatric care areas. We limited the search to events categorized by reporting facilities as patient self-harm, and retrieved only events specified as self-mutilation, ingestion of a foreign body or substance, and other. Inclusion and exclusion criteria for what constituted NSSI were based on current literature describing the behavior. We reviewed all event reports to ensure they met the definition of NSSI; any event reports that described accidental or unintentional self-harm (e.g., accidental injuries sustained while playing) or suicide gestures (e.g., self-strangulation or intentional overdose following medication hoarding) were excluded. Duplicate event reports and event reports that described a situation in which a healthcare provider or staff member was harmed but the patient was not harmed were also excluded.

Initially, the query was not limited to a specific age range, but after reviewing the dataset and relevant medical literature, we decided to focus the analysis on NSSI among children and adolescents. The search was then refined to limit results to patients under 18 years of age.

A descriptive analysis was performed to identify trends in patient age and gender, facility type, event type and subtype, and harm score. We reviewed and coded free-text fields (i.e., Event Details, Event Comments, and Event Recommendation) for each event for the following: method of self-injury and any objects employed, injury sustained, and any treatments employed by staff. We analyzed events to identify pre-event activities that may have contributed to the self-harm event as well as the emotional state reported by the patient or observed by the staff because these seemed to be important factors in understanding the motivation behind many of self-harm events.

Results

The query returned 702 event reports. A total of 62 events were excluded according to the predetermined criteria for the following reasons: suicide gesture, accidental self-injury, duplicate event, and event describing harm to staff without harm to patient. The final dataset included the remaining 640 events.

Figure 1. Patient Age and Gender, N=640

| Number of Patients | Age (Years) |
|--------------------|-------------|
| **MALE**           | 5 6 7 8 9 10 11 12 13 14 15 16 17 |
| **FEMALE**         | 5 6 7 8 9 10 11 12 13 14 15 16 17 |

Descriptive Analysis

Patients most often were female (71%; 457 of 640). Age and gender of patients are summarized in Figure 1.

Most events were reported by inpatient psychiatric facilities (92%; 587 of 640); the remaining 53 events were reported by acute care hospitals with inpatient psychiatric units. Nearly all events (95%; 611 of 640 events) were classified as incidents by the reporting facilities, and the remaining 29 events were classified as serious events. No events in this analysis resulted in permanent harm to the patient or patient death.

All events were classified by the reporting facility as patient self-harm. Within this event type, events were specified by the reporting facility under the following subtypes: self-mutilation (44%; 279 of 640), ingestion of a foreign body or substance (7%; 45 of 640), or other (49%; 316 of 640).

An “incident” is defined as an event, occurrence, or situation involving the clinical care of a patient in a medical facility which could have injured the patient but did not either cause an unanticipated injury or require the delivery of additional healthcare services to the patient.

“A serious event” is defined as an event, occurrence, or situation involving the clinical care of a patient in a medical facility that results in death or compromises patient safety and results in an unanticipated injury requiring the delivery of additional healthcare services to the patient.
Qualitative Analysis

The method of NSSI was specified in 624 event reports, and these are summarized in Figure 2. Over 10% of event reports (64 of 624) described multiple methods of self-injury in a single event report. The most commonly reported methods of self-injury were hitting, kicking, punching, or body slamming a surface (35%; 216 of 624); scratching or cutting self with an object (23%; 144 of 624); scratching self with fingernails (17%; 107 of 624); head banging (15%; 93 of 624); swallowing a foreign body or substance (9%; 55 of 624); biting self (4%; 22 of 624); and hitting self (3%; 21 of 624). Notably, many occurrences of NSSI were not observed by a health care provider and were only discovered because the patient or a peer reported the event to a health care provider.

Among 216 event reports in which the patient engaged in hitting, kicking, punching, or body slamming, the most common surfaces mentioned were walls (n=168), doors (n=32), and windows (n=18), and some events involved more than one surface. The most common objects used for scratching or cutting were plastic utensils (n=17); sharps (e.g., blades, safety pins, or staples; n=16); miscellaneous pieces of plastic (e.g., found on the floor or broken off a larger item; n=11); pens (n=10); combs (n=9); miscellaneous pieces of metal (n=8); plastic caps (e.g., belonging to a pen, marker, or bottle; n=8); screws (n=5); paper clips (n=5); and toothbrushes (n=4). Some events involved more than one object; many of these items were broken to create a sharp edge. The most common foreign bodies or substances ingested by a patient were disposable gloves (n=7), liquid soap or cleaner (n=6), paper (n=4), blades (n=3), screws (n=3), and paper clips (n=3). Some events involved more than one foreign body or substance.

Self-injury episodes described in event reports targeted the entire body from head to toe. A total of 585 event reports specified the body part targeted or involved, and body parts mentioned in more than 10 event reports are summarized in Figure 3. In most cases, patients sustained one or more minor or superficial injuries; the most common injuries were scratches (n=191), swellings (n=63), bruises (n=51), cuts (n=40), redness (n=38), and bleeding (n=38). Fifty patients reported pain, either alone or related to other injuries. Minor injuries were often treated with first aid or offered ice, and 41 patients were offered oral analgesics, such as ibuprofen (n=10) and acetaminophen (n=8), although some patients

Figure 3: Body Parts Targeted or Involved in Nonsuicidal Self-Injury, N=585

Note: “Other” includes inserting an object into a body cavity (such as the ear), hair pulling, picking a scab, burning self, pinching self, stabbing self, and stopping circulation.

Figure 4: Most Common Activities That May Have Precipitated an Episode of Self-Injury

About three-fifths (62%; 58 of 93) of event reports in which the patient engaged in head banging included details about the surface involved; the most frequently mentioned were walls (n=40), doors (n=7), windows (n=6), beds (n=5), and floors (n=4), and some events involved more than one surface. The most common methods used for scratching or cutting were plastic utensils (n=17); sharps (e.g., blades, safety pins, or staples; n=16); miscellaneous pieces of plastic (e.g., found on the floor or broken off a larger item; n=11); pens (n=10); combs (n=9); miscellaneous pieces of metal (n=8); plastic caps (e.g., belonging to a pen, marker, or bottle; n=8); screws (n=5); paper clips (n=5); and toothbrushes (n=4). Some events involved more than one object; many of these items were broken to create a sharp edge. The most common foreign bodies or substances ingested by a patient were disposable gloves (n=7), liquid soap or cleaner (n=6), paper (n=4), blades (n=3), screws (n=3), and paper clips (n=3). Some events involved more than one foreign body or substance.

Self-injury episodes described in event reports targeted the entire body from head to toe. A total of 585 event reports specified the body part targeted or involved, and body parts mentioned in more than 10 event reports are summarized in Figure 3. In most cases, patients sustained one or more minor or superficial injuries; the most common injuries were scratches (n=191), swellings (n=63), bruises (n=51), cuts (n=40), redness (n=38), and bleeding (n=38). Fifty patients reported pain, either alone or related to other injuries. Minor injuries were often treated with first aid or offered ice, and 41 patients were offered oral analgesics, such as ibuprofen (n=10) and acetaminophen (n=8), although some patients
(n=14) refused. Patients with potentially serious injuries (e.g., fractures, head injuries, or wounds requiring stitches) were provided additional care; 83 patients (13%; n=640) underwent X-ray studies, and 48 patients (8%; n=640) were transferred to the emergency department for evaluation and treatment. Only 10 patients (2%; n=640) were confirmed to have a fracture resulting from the self-injury event.

Among 250 events that specified activities that may have precipitated an episode of self-injury, the most common were: family interactions (n=44), such as phone calls, meetings, and visits; peer interactions (n=44), such as verbal or physical altercations, discharge or readmission of a peer, room changes, and rejected romantic advances; interaction with healthcare providers and support staff (n=34), including social workers and physicians; group therapy sessions (n=31); mealtime or snack time (n=13); lying in bed or sleeping (n=10); showering or other hygiene activity (n=7); and pacing or running through the unit (n=5) (see Figure 4). In 13 event reports, patients expressed fear or anxiety surrounding post-discharge plans. Some patients verbalized suicidal ideation (n=14) and/or reported auditory or visual hallucinations (n=7). Details about the location or locations on the psychiatric unit where the self-injury occurred were included in 205 event reports; locations mentioned in at least 5 event reports are summarized in Figure 5.

Details about the emotional state of the patient prior to or during a self-injury event, as assessed by the reporter or stated directly by the patient, were included in 253 event reports, and some patients displayed or reported multiple emotions. Patients were most often agitated (n=109), upset (n=72), aggressive (n=30), angry (n=24), anxious (n=23), screaming (n=18), and crying or tearful (n=15).

Ninety-two event reports included details about the patient being offered an as-needed medication for anxiety or agitation in order to calm the patient and prevent further acts of self-injury. Specific medications that were mentioned were chlorpromazine (Thorazine), diphenhydramine (Benadryl), hydroxyzine (Atarax, Vistaril), lorazepam (Ativan), and olanzapine (Zyprexa), as well as the supplement melatonin. Some medications were offered orally while others were offered or administered as an intramuscular injection. Nine patients refused the offer of as-needed

Figure 5: Most Common Locations on Psychiatric Units Where Nonsuicidal Self-Injury Occurred, N=205

| Location          | Frequency |
|-------------------|-----------|
| Bedroom           | 76        |
| Quiet Room        | 26        |
| Hallway           | 33        |
| Classroom         | 5         |
| Nurses Station    | 13        |
| Bathroom          | 23        |

Over half of the patients in our study that engaged in NSSI were high school-aged females—a finding supported by the literature.
Self-Harm Among Patients With Autism Spectrum Disorder

The only notable diagnosis mentioned with any frequency was autism spectrum disorder (ASD), which was specified in 47 event reports. Self-harm events among patients with ASD are summarized in Figure 6. The majority of patients with ASD were male (64%: 30 of 47), and patients with ASD ranged in age from 8 to 17 years. There were no events among patients with ASD that were classified by the reporting facility as serious events. Among 43 reports that specified one or more self-harm behaviors performed by a patient with ASD, the most common were head banging (63%; 27 of 43) and hitting self (28%; 12 of 43). Among 29 reports that included details about a patient’s emotional state, patients were most often described as aggressive (59%; 17 of 29) and/or agitated (44%; 14 of 29), and these were not mutually exclusive. A few patients were noted to be crying and/or screaming.

Thirteen event reports included details about location on the unit where the self-harm behavior took place, and the most common were the patient’s bedroom (n=7) and the quiet room (n=3). Details about one or more activities that preceded a self-harm behavior were included in 25 event reports; the most common activities were group therapy (40%; 10 of 25), sleeping or lying in bed (20%; 5 of 25 events), staff interaction (16%; 4 of 25 events), and mealtime or snack time (16%; 4 of 25). Nearly half (49%; 23 of 47) of event reports involving patients with ASD specified that physical restraints had been applied to prevent harm; no event reports mentioned the use of a mechanical restraint or locked seclusion.

Discussion

Current Research on NSSI

Past research on NSSI in the adolescent population is extensive and continuously evolving. Much of the recent medical literature focuses on NSSI behaviors among children and adolescents in the community rather than in the inpatient setting. In a study of 665 students in third, sixth, and ninth grades recruited via school, researchers specifically identified ninth-grade females as being at the greatest risk of NSSI. Similarly, half (51%; 329 of 642) of the event reports in our analysis involved a high school-aged (14 to 17 years) female.

Interpersonal interactions, including family, peer, and healthcare provider interactions, were among the most common contributors to self-injury in our analysis. Current research points to dysfunctional relationships, including bullying, as a significant risk factor for NSSI among adolescents. Several studies have highlighted the impact that peer interaction may have on self-injury among adolescents. In a study of 3,748 students across six middle schools, investigators found that risk factors for NSSI in this age group included female gender, suicidal tendencies, substance use, exposure to peer self-injury, and negative perception of life possibilities. Protective factors identified in this study included lack of substance use and not being a victim of bullying. An analysis of questionnaire responses from 640 high school students that specifically examined the relationship between NSSI and peer interactions found that both involvement in bullying and peer rejection increased the likelihood of NSSI among study respondents.

By its very nature, NSSI is not typically associated with serious harm, and our findings support this, with less than 8% of patients in our study requiring transfer to an emergency department for evaluation and treatment, and less than 2% of patients having a confirmed fracture. There are some patients, however, that inadvertently cause more serious harm than intended, and researchers estimate that in 1 in 5 patients have harmed themselves more seriously than intended during an episode of NSSI. A recent study of 102 college students who had engaged in NSSI during the previous year found that nearly one-third had harmed themselves more seriously than intended. The addictive qualities of NSSI, including tolerance to the effects of NSSI, continue about a quarter of NSSI despite adverse consequences, and the time-consuming nature of NSSI were a significant predictor of future occurrences of unintentionally severe harm, which suggests that clinicians should focus on these addictive qualities of NSSI when conducting a patient assessment.

Although serious harm resulting from NSSI was uncommon in our study, the long-term implications for future mental health may be considerable. A study of NSSI and suicidal behaviors among adolescents demo a relationship between the two behaviors commonly co-occur, and epidemiological research has demonstrated that individuals who engage in NSSI in adolescence have an elevated risk of future risk-taking behaviors and suicidality. These findings emphasize the importance of prevention and intervention for patients who engage in NSSI as adolescents to prevent future mortality.

Focus on ASD and Self-Injurious Behavior

Both in our study and in the literature, NSSI was observed more often among adolescent females, but the majority of patients in our study with ASD were male. This gender difference may be reflective of the fact that males are four times more likely than females to be diagnosed with ASD in the United States. From a clinical perspective, self-injurious behavior (SIB) is generally considered separately from NSSI. One of the most notable differences between SIB and NSSI is that SIB tends to be repetitive; a comparison of the clinical presentation and features of SIB and NSSI is presented in Table 1.

In an analysis of patients with ASD and other developmental disorders hospitalized in specialized psychiatric facilities in the United States, aggression and SIB were the most common reasons for hospitalization. Similarly, patients with ASD who engaged in self-harm in our study were most often described as aggressive. To estimate the rate of SIB among patients with ASD, researchers conducted a meta-analysis of 37 primary studies that included 14,379 patients; 42% of patients with ASD engaged in SIB, compared to 8% of children and adolescents in the general population. A study of children and adolescents with ASD admitted to inpatient units in specialized psychiatric facilities identified potential predictors for SIB; aggression, as a significant risk factor for SIB among this patient population. Treatment of SIB in patients with ASD can be challenging because these behaviors are believed to be shaped, strengthened, and maintained through both positive and negative reinforcement, and at times may even be self-reinforcing. Empiric research suggests the use of behavioral treatments for SIB in patients with ASD, which are intended to increase...
positive, adaptive behavior or decrease undesirable behavior. Treatment for SIB in patients with ASD relies on the principles of reinforcement, extinction, punishment, and skill building, and these are typically used in combination to achieve the desired effect. Pharmacologic treatments may be beneficial in treating SIB in patients with ASD, especially in combination with behavioral treatments when they have failed as monotherapy; the most commonly used classes of medications are selective serotonin reuptake inhibitors (SSRIs), such as fluoxetine (Prozac), fluvoxamine (Lavon), and sertraline (Zoloft); atypical antipsychotics, such as risperidone (Risperdal) and clozapine (Clozaril); and opioid antagonists, such as naltrexone.

Limitations

Despite mandatory event-reporting laws in Pennsylvania, our data are subject to the limitations of self-reporting. Because the details included in each event report are left up to the discretion of the reporter, information that may have provided more insight into NSSI was sometimes missing, including each patient’s admitting diagnosis. Occurrences of NSSI may go undetected if the site of injury is hidden and the patient is not undergoing regular body checks. The applicability of our findings may be limited to the inpatient psychiatric setting because PA-PSRS does not collect reports from physicians of patients staying in the outpatient setting; however, our findings may still provide a greater awareness of NSSI in other clinical settings.

Conclusion

NSSI among children and adolescents is reported frequently from psychiatric hospitals and units across Pennsylvania, and our data is likely only a snapshot of what actually occurs. NSSI has been observed more often in females than males in the adolescent population. The most common methods of NSSI among adolescents include hitting, punching, kicking, or body slamming a surface; scratching or cutting with fingernails or an object; and head banging. Although NSSI resulted in only minor injuries to patients in our study, some patients may inadvertently cause more serious harm than intended, especially as self-injurious behaviors escalate. In addition, research has shown that NSSI and suicidal behaviors co-occur in adolescents and that NSSI may be a predictor of suicidality later in life. In any practice of the field, information gathered on females who are at risk for NSSI, such as adolescents who are engaged in or who are the subject of bullying, may provide an opportunity to prevent and treat these behaviors before they escalate to more serious injuries or suicidality later in life. For normative patients with underlying emotional dysregulation, current treatment strategies that rely on cognitive or dialectical behavioral therapy are preferred over other interventions. For SIB in patients with ASD, a combination of behavioral treatments is often first-line, and pharmacologic treatment may be added if behavioral treatments alone have failed. In order to keep patients safe during inpatient stays in psychology, psychiatry, or units, future research should focus on prevention strategies that reduce risk of NSSI among children and adolescents.

Notes

This analysis was exempted from review by the Advarra Institutional Review Board.

References

1. Nock MK, Fawazza AR. Non-suicidal Self-Injury: Definition and Classification. In: Nock MK, editor. Understanding Non-suicidal Self-Injury: Origins, Assessment, and Treatment. Washington, DC: American Psychological Association; 2009. p. 9-18.
2. Brown RC, Plener PL. Non-Suicidal Self-Injury in Adolescence.Curr Psychol Rep. 2017;5(3):20. Epub 2017/02/21. doi: 10.1007/s10421-017-0676-9. PubMed PMID: 28331519; PubMed Central PMCID: PMCPMC5375256.
3. Klonzko ED, Victor SE, Saifer BY. Non-suicidal Self-Injury: What We Know, and What We Need to Know. Can J Psychiatr. 2011;56(1):3-4. Epub 2010/10/20. doi:10.1177/0706743710399901. PubMed PMID: 20565471; PubMed Central PMCID: PMCPMC4244874.
4. Horgan G. Non-Suicidal Self-Injury, J Pediatr Health Care. 2016;30(3):261-7. Epub 2016/04/21. doi: 10.1016/j.pedhc.2015.06.012. PubMed PMID: 27094986.
5. Vaughn MG, Salas-Wright CP, Underwood S, Gochez-Kerr T. Subtypes of Non-Suicidal Self-Injury Based on Childhood Adversity. Psychiatry Q. 2015;86(1):137-51. Epub 2014/08/16. doi: 10.1007/s11026-014-9313-7. PubMed PMID: 25124211.
6. Diagnostic and Statistical Manual of Mental Disorders, Fifth ed. Arlington, VA: American Psychiatric Association; 2013.
7. Medical Care Availability and Reduction of Error (MCARE) Act, Pub. L. No. 154 Stat. 13 (2002).
8. Liberman K, Rose CM. Patient self-harm in the nonsuicidal setting. Psychiatr Serv. 2019;70(5):455-6. Epub 2019/05/09. PubMed PMID: 25689875; PubMed Central PMCID: PMCPMC389216.
9. Barrocas AL, Hankin BL, Young JP, Abela JR. Rates of Non-suicidal Self-Injury in Youth: Age, Sex, and Behavioral Methods in a Community Sample. Pediatrics. 2012;129(1):39-45. Epub 2012/06/13. doi: 10.1542/peds.2011-2094. PubMed PMID: 22689875; PubMed Central PMCID: PMCPMC389216.
10. Alfonso ML, Kaur R. Self-Injury Among Early Adolescents: Identifying Segments Protected and At Risk. J Sch Health. 2012;82(12):537-47. Epub 2012/11/15. doi: 10.1111/j.1746-1561.2012.00734.x. PubMed PMID: 23151155.
11. Esposito G, Bacchini D, Assuf G. Adolescent Non-Suicidal Self-Injury and Its Relationships With School Bullying and Peer Rejection. Psychiatry Res. 2014;217(1):29-34. Epub 2013/02/19. doi: 10.1016/j.psychres.2012.02.018. PubMed PMID: 20776106.
12. Buser TJ, Buser JK, Rutt CC. Predictors of Unintentionally Severe Harm During Non-suicidal Self-Injury. J Child Adolesc Psychopharmacol. 2012;22(5):14-23.
13. Horvath LO, Gyori D, Komáromy D, Mészáros A, Szentiványi D, Balázs J. Nonsuicidal Self-Injury and Suicide: The Role of Life Events in Clinical and Non-Clinical Populations of Adolescents. Front Psychiatry. 2018;9. Epub 2018/05/20. doi:10.3389/fpsyt.2018.00143. PubMed PMID: 29777411.
14. Buser TJ, Buser JK, Rutt CC. Predictors of Unintentionally Severe Harm During Non-suicidal Self-Injury. J Child Adolesc Psychopharmacol. 2012;22(5):14-23.
15. Hornor G. Nonsuoidal Self-Injury, J Pediatr Health Care. 2016;30(3):261-7. Epub 2016/04/21. doi: 10.1016/j.pedhc.2015.06.012. PubMed PMID: 27094986.
16. Bloom CM, Holly S, Miller AM. Self-Injurious Behavior vs. Nonsuicidal Self-Injury: The CNS Stimulant Phenomenon of Self-Destructive Behavior. Crisis. 2012;33(2):106-12. Epub 2012/02/22. doi: 10.1027/1027-5910/a000127. PubMed PMID: 22343062.
17. Huisman S, Mulder P, Kuijik J, Kersholt M, van Eeghen A, Leenders A, et al. Self-Injurious Behavior. Neuropsychobiol. 2014;68:483-91. Epub 2017/07/12. doi: 10.1007/s00788-017-0127-6. PubMed PMID: 28694012.
18. Siegel M, Boyle K, Chemelski B, Payne D, Ellsworth B, Harmon J, et al. Specialized Inpatient Psychiatry Units for Children with Autism and Developmental Disabilities Monitoring Network, 11 Sites, United States, 2016 MMRW Surveill Summ. 2020;69(4):1-12. Epub 2020/03/28. doi:10.15585/mmwr.s6904a1. PubMed PMID: 3214087; PubMed Central PMCID: PMCPMC719644.
19. Bloom CM, Holly S, Miller AM. Self-Injurious Behavior vs. Nonsuicidal Self-Injury: The CNS Stimulant Phenomenon of Self-Destructive Behavior. Crisis. 2012;33(2):106-12. Epub 2012/02/22. doi: 10.1027/1027-5910/a000127. PubMed PMID: 22343062.
20. Huisman S, Mulder P, Kuijik J, Kersholt M, van Eeghen A, Leenders A, et al. Self-Injurious Behavior. Neuropsychobiol. 2014;68:483-91. Epub 2017/07/12. doi: 10.1007/s00788-017-0127-6. PubMed PMID: 28694012.
21. Minshawi NF. Behavioral Assessment and Treatment of Self-Injurious Behavior in Autism. Child Adolesc Psychi Clin N Am. 2008;17(4):875-86. Epub 2008/09/09. doi: 10.1016/j.chc.2008.06.012. PubMed PMID: 18775375.
22. Mahatmya D, Zobel A, Valdivinos MG. Treatment Approaches for Self-Injurious Behavior in Individuals With Autism: Behavioral and Pharmacological Methods. J Early Intensive Behav Interv. 2008;8(1):106.

About the Author

Elizabeth Kukiela (ekukiela@pa.gov) is a patient safety analyst on the Data Science and Research team at the Patient Safety Authority. Before joining the PSA, she was a promotional medical writer for numerous publications, including Pharmacy Times and The American Journal of Managed Care. Kukiela also worked for a decade as a community pharmacist and pharmacy manager, with expertise in immunization delivery, diabetes management, medication therapy management, and pharmacy compounding.

This article is published under the Creative Commons Attribution-NonCommercial license.