7-10-2024

Restraint Reduction Using the Brøset Violence Checklist

DeAnna Kappelmann
University of Missouri-St. Louis, dmbpc7@umsystem.edu

Restraint Reduction Using the Brøset Violence Checklist

DeAnna M. Kappelmann

B.S. Nursing, Maryville University, 2018

A Dissertation Submitted to The Graduate School at The University of Missouri- St. Louis

In partial fulfillment for the requirements for the degree

Doctor of Nursing Practice with an emphasis in Psychiatric Mental Health Nurse Practitioner

August 2024

Advisory Committee

Brittania Phillips, DNP, APRN, PMHNP-BC

Chairperson

Kimberly Werner, Ph.D.

Michelle Waller, MSN, RN

Abstract

Problem: Patient aggression, restraint usage and assaults against healthcare workers have numerous negative health outcomes. Patient aggression and restraint usage on inpatient psychiatric units can be identified early with imminent violence predicative tools such as the Brøset Violence Checklist (BVC), where patient de-escalation interventions can subsequently occur.

Methods: This quality improvement project was conducted using a cohort design with a retrospective and prospective chart review. The IHI PDSA model was used for this project. The BVC was administered to male and female patients ages 18 to 64 years old on the adult inpatient psychiatric unit during the implementation period. Data collection included the patient demographics, BVC scores, number of interventions, and restraint type, patient restraint injuries, patient to patient assaults, and staff assault injuries.

Results: During the pre-implementation period, a total of 329 patients were admitted, 12 patients were restrained, and 40 restraint episodes occurred. Post-implementation 317 patients were admitted, 18 restrained and 55 restraint episodes occurred. Total restraints increased by 2%, chemical restraints increased by 6%, manual holds increased by 2%, lock seclusion increased by 7% and 4-point restraints decreased by 17%. Patient-restraint injuries decreased by 6%, patient-to-patient assaults decreased by 1% and staff injuries increased by 2%.

Implications for Practice: Patients at-risk for aggression were identified by the BVC. Further research is needed into the use of the BVC and restraint reduction.

Restraint Reduction Using the Brøset Violence Checklist

Patient aggression and assaults in healthcare has become a sensationalized movement across the nursing community worldwide, leading to the "#EndNurseAbuse" movement initiated by the American Nurses Association (American Nurses Association, 2023). According to the World Health Organization (2022), up to 38% of healthcare workers will experience violence in their careers. The American Nurses Association (2023) reports one in four nurses have been assaulted and two nurses are assaulted every hour in the acute care setting; however, 20 to 60% of assaults against nurses go unreported. According to Hilton et al. (2021), psychiatric units have the highest rates of patient aggression, making psychiatric nurses more likely to experience workplace violence than other healthcare professionals. The use of restraints in patients can range from 3.8% to 51.3% in mental health settings worldwide; however, there has been a noted increase in restraint usage in mental healthcare in the last decade (Ye et al., 2019). Mortality rises to 13.3% and falls increase to 22.5% in patients who are restrained (Spennato et al., 2023).

Violent restraints, which include 4-point mechanical restraints, physical restraint holds and seclusion, are frequently used in acute inpatient psychiatric adult units to manage self-harming and aggressive behaviors. Mechanical restraints are defined as a method of physically restraining or restricting movement of the arms, legs, body or head with a device, equipment, or material. A physical restraint is classified as a restraint where a patient is immobilized while being placed in physical holds by staff, which is also called a therapeutic hold or manual hold. Seclusion is also described as the involuntary confinement of a person into an enclosed room where the individual is unable

to physically leave. Additionally, chemical restraints are defined as any drug or medication administered with the intention of restricting an individual's movement and manage behaviors and is not a standard treatment or dosage for the individual's condition (American Psychiatric Nurses Association, 2022). Nurses utilize restraints on patients when a patient is at risk for self-harm or harm to others; however, there is always a possibility for unpredictable harmful outcomes to patients with the use of restraints (Ye et al., 2019). These outcomes include increased length of hospital stay, patient injuries, emotional trauma, and possible death (Brathovde, 2021; Hirsch & Steinert, 2019). Staff injuries and emotional trauma or PTSD may also occur during restraint episodes (Hilton et al., 2021). Patient aggression and the use of restraints in the healthcare setting have detrimental effects on healthcare workers and patients.

Current literature recommends implementation of violence risk assessment tools for early identification of aggression indicators in patients on psychiatric units. Once these indicators are identified, nursing staff are then able to implement nursing interventions to de-escalate agitation thus reducing the use of restraint and chance of negative patient outcomes. The American Psychiatric Nurses Association (2022) states the need to use violence predicative tools to reduce the use of restraint and recommends the Brøset Violence Checklist (BVC) as a tool to be used. Restraint usage is a known health risk for patients. Implementing the Brøset Violence Checklist (BVC) reduces staff coercion and negative patient outcomes, while improving therapeutic intervention (Nijman, 2018).

The purpose of this quality improvement project is to evaluate the effectiveness of a violence risk assessment tool to identify patients at risk for imminent violence, allowing

for earlier staff intervention. The aim of this study is to implement the Brøset Violence Checklist (BVC) in female and male patients ages 18 to 64 years old on an acute inpatient psychiatric unit to reduce restraint use by 10% over a two-month period. The Institute of Healthcare Improvement's (IHI) Model for Improvement was used to guide this project using the Plan-Do-Study-Act (PDSA) Cycle framework to test change. The primary outcome measure for this quality improvement project study is the rate of restraints after implementation of the BVC. The secondary outcome measures for this project include the rate of patient injuries from patient restraints, the rate of staff injuries, and the rate of patient-to-patient assaults.

This study will focus on the following question: In male and female patients ages 18 to 64-years-old presenting to an inpatient adult psychiatric unit, how does implementing the Brøset Violence Checklist (BVC) compared to using no violence risk assessment, reduce the use of restraints over an 8-week period?

Review of Literature

Four databases were used for the literature search: Medline, APA PsycINFO, EBSCOhost, and PubMed. The search terms included *Brøset Violence Checklist, BVC, violence risk assessment, intervention, restraint, aggression, psych*, psychiatric nursing, workplace violence, patient assault, emergency department, forensic, and adult*, while utilizing the Boolean operators AND, NOT and OR. The initial search yielded 377 publications. Inclusion criteria were studies published between 2018 and 2023, published in the English language, studies that are peer reviewed, Brøset Violence Checklists (BVC) that are set in acute inpatient psychiatric units or forensic units, and populations involving adult patients ages 18 to 64 in age. Exclusion criteria include studies published

prior to 2018, studies published not in English, studies that are not peer-reviewed, studies not pertinent to inpatient acute psychiatric or forensic units, and patients who are pediatric or geriatric. There were 74 articles generated in the refined literature search. 12 articles were selected for this review. Duplicate articles and articles not meeting inclusion criteria were eliminated during the search.

The literature review revealed several common themes. These include internal and external factors contributing to aggression, the need for restraint reduction and frequency of patient aggression. There are several internal and external factors contributing to patient aggression, including patient age, gender, psychiatric diagnosis, history of violence, staff education and training for de-escalation, nursing relationship, unit rule rigidity and unit organization. Additionally, restraint reduction is imperative for optimal health outcomes for patients. The literature review also identified that most aggression occurs in the first 72 hours of a patient's admission. The BVC is a recommended imminent violence screening tool to reduce aggression and restraint use when paired with therapeutic interventions. The BVC is a valid and reliable tool that has been shown to reduce restraint and seclusion use.

Patient aggression is a common occurrence in healthcare settings. Nurses are at the greatest risk of experiencing workplace violence in healthcare, with psychiatric nurses at the highest risk of violence (American Nurses Association, 2023; Hilton et al., 2021; World Health Organization, 2022). According to Hilton et al. (2021), psychiatric nurses experience frequent verbal abuse and assaults from patients that are often unreported due to feeling the workplace violence report will not be taken seriously. Additionally, these verbal and physical assaults place psychiatric nurses at risk for developing PTSD.

There are several internal risk factors of aggression for patients nursing staff do not have control over. Internal risk factors are personal risk factors of an individual which places an individual at risk for violence, such as age, gender, diagnosis, or a history of violence. Internal risk factors are risk factors staff are not able to change to reduce aggression in patients (Giarelli et al., 2018). Patients have an increased risk for violence if they were violent prior to admission, are of the male gender, or have a diagnosis of schizophrenia, schizoaffective disorder, bipolar disorder, MDD, substance abuse or a personality disorder (Giarelli et al., 2018; Sarver et al., 2019; Yuniati et al., 2020). It is important for nurses to be aware of internal risk factors of their patients so preventative measures can be implemented early for effective management.

Nurses also identified several external risk factors for aggression contributing to patient escalation. External risk factors are environmental risk factors which may contribute an individual's potential for violence, such as staff rapport, unit rule rigidity and de-escalation training; external risk factors are factors staff are able to manage in the reduction of aggression (Giarelli et al., 2018). According to Oritz-Sandoval et al. (2022), patients and nurses reported lack of training as a key factor in patient escalation and aggression; specifically, a lack of training in de-escalation, education on involuntary admissions, lack of team communication, lack of information on the patients and a lack of specialized staff were noted as contributing factors to escalation. Additionally, institution organization, unit routine, nursing relationships, and the specialization of staff may affect patient agitation. Giarelli et al. (2018) reports situational factors for aggression include the time of day (aggression occurring more in afternoon and evening) and location on the unit, which is commonly in hallway.

Non-therapeutic nursing culture and behavior also contribute to patient escalation. According to Price et al. (2018), patients' reported nursing staff used restrictive measures as first-line treatment as opposed to de-escalation techniques. Restraints were also seen as punishment and were often used when patients did not comply with instruction. Patients report staff-initiated medications were given regardless of if a patient agreed to self-regulate or if there were changes in patient behaviors. Patients report feeling disrespected by nurses, including inappropriate staff verbal responses, invading personal space, standing over patients, and responding to patients with angry demeanor. Price et al. (2018) also noted nursing culture may contribute to patient escalation, such as rigid unit rules, lack of therapeutic touch on psychiatric units, and nurses spending most of the shift in the nurses' station and not interacting with patients, which was perceived as hindering patient rapport. According to Ortiz-Sandoval et al. (2018), the lack of specialized training on mental health units is an identifiable factor for aggression. Additionally, nursing staff reported there is a need for further education for health professionals for patient triggers, risk factors and the use of risk assessments, such as the BVC, and interventions to reduce aggression and restraint usage.

Poor patient outcomes may occur when using restraints; therefore, it is recommended to use violence risk assessment tools to mitigate aggression on inpatient units. Negative patient outcomes from restraints and seclusion include emotional trauma, physical injuries, or death (Hirsch & Steinert, 2019). Brathovde (2021), discusses the risk of restrictive measure use including increased hospital length of stay for patients, staff injury, patient injury, decreased productivity, and loss of work time. Additionally, there may be legal consequences from sentinel events from restrictive measures, including

penalties with Medicare reimbursement. The Joint Commission (2023) defines a sentinel event as a patient care event were compromised safety results in death, permanent harm or severe, but temporary harm to a patient. There are times restraint usage is unavoidable for the safety of the patient and staff, however, measures should be taken to reduce the risk. Sarver et al. (2019) reports introducing the BVC to identify early identification of aggression for patients can help reduce the risk of injury in patients and staff while also reducing the hospital length of stay for patients.

The BVC is a 6-item assessment for imminent violence (Appendix A). The items include confusion, irritability, boisterousness, verbal threats, physical threats, and attacks on objects. Each item is marked as present (1 point) or not present (0 points) for a scale of 0-6 points (Lockersten et al., 2021; Moursel et al., 2019; Sarver et al., 2019;). Recommended scoring is as follows: 0 points= no risk; 1-3 points= moderate risk; 4-6 points= high risk (Lockersten et al., 2021; Yuniati et al., 2020). The BVC scores are valid for up to 24 hours; however, the BVC is most beneficial when incorporated into the daily assessments for each nursing shift and upon admission (Brathovde, 2021; Lockerten et al., 2021, Sarver et al., 2019). Patients' risk for aggression is highest the first 72 hours of their admission (Brathovde, 2021; Giarelli et al., 2018; Sarver et al., 2019). The BVC has also been reported by nurses to be a quick and easy-to-use tool (Moursel et al., 2019). However, nurses report lack of training on use of the BVC, lack of confidence, and lack of understanding of early warning signs of violence and causes of violence as reasons for non-compliance when using the BVC (Yuniati et al., 2020).

The BVC was found to be a highly beneficial imminent violence risk assessment tool on inpatient psychiatric units (Brathovde, 2021; Hirsch & Steinert, 2019; Sarver et

al., 2019, Ortiz-Sandoval et al., 2022; Väkiparta et al., 2019). The BVC reduced restraint use by 6.5%, while also reducing patient to staff assaults (Brathovde, 2021). According to a study by Hirsch & Steinert (2019), the BVC reduces the use of staff coercion, restraint and seclusion use in patients. The tool has a high specificity (0.997) and sensitivity (0.656) when the cut-off score for being identified as "high-risk" for violence was 3 (Yuniati et al., 2020). The BVC has been found to have validity and reliability as an imminent violence risk assessment tool (Moursel et al., 2019; Sarver et al., 2019). Additionally, a patient is three times more likely to become violent with every one point added to their BVC score; patients are also at risk for increased lengths of hospital stays with higher BVC scores upon admission (Sarver et al., 2019).

The BVC is most effective in restraint reduction when nursing interventions are started with early identification of aggression risk to mitigate violence. Interventions recommended to reduce restraint utilization for high-risk patients included: sensory modulation (such as music, puzzles, or coloring), verbal de-escalation, patient and family involvement in care, other therapeutic activities, providing personal space, offering choices, avoiding provocation, time-out, one-to-one nursing, setting limits, identifying wants and needs, and offering PRN medications for the psychiatric condition (Appendix A). The least restrictive interventions should always be performed before resorting to the most restrictive, such as restraints (Brathovde, 2021; Fernández-Costa et al., 2020; Price et al, 2018; Sarver et al., 2019; Väkiparta et al., 2019). Väkiparta et al. (2019), found using the BVC and utilizing multiple interventions were effective to reduce restraint risk, use, and duration.

Some limitations are shared amongst the studies in this literature review. This review included retrospective cohort chart reviews (Brathovde, 2021; Sarver et al., 2019). Cohort studies are lower levels of evidence; however, due to increased risk of violence several studies chose chart review design. Some studies where systematic reviews are level 1 evidence, but they are known to potentially show bias during literature review and selection (Fernández-Costa et al, 2020; Hirsch & Steinert, 2019). Some studies had a smaller sample size which could have affected results (Giarelli et al., 2018; Moursel et al, 2019). Some studies lacked generalization due to convenience sampling or limiting the study to one site (Lockertsen et al., 2020; Moursel et al., 2019; Sarver et al, 2019).

A major theme found during the review was that most aggression occurs the first 72 hours of admission. Most studies monitoring the effectiveness of the BVC focus only on BVC scores upon admission and during the patients first 72 hours of admission. Patterns noted are violence typically decreases over the first 72 hours (Moursel et al., 2019). However, the studies identify a common limitation, which BVC scores were only tracked in patients for 72 hours for their admission, causing a gap in literature due to limited studies monitoring BVC scores for the entire duration of patient admissions (Brathovde, 2021; Moursel et al., 2019; Sarver 2019).

The framework selected for this project is the Institute for Healthcare Improvement's (IHI) Model for Improvement. The Model of Improvement involves asking three introspective questions and implementing the Plan-Do-Study-Act (PDSA) cycle to test for change. The three introspective questions are: 1. What are we trying to accomplish? 2. How will we know that the change is an improvement? 3. What change can we make will result in result in improvement? There are four steps in the Plan-Do-

Study-Act (PDSA) cycle. In step 1 (Plan), planning occurs to gather data for quality improvement. Step two (Do) testing will occur on a small scale. In step three (Study) the results from testing will be reviewed and analyzed. Then the final step, step four (Act) change can be refined, and testing can be repeated. This model is a common healthcare improvement framework where testing change occurs through repetitive testing cycles for quality improvement (IHI, 2021). The PDSA was selected to build evidence using this cycle to enhance evaluation for the applicability and sustainability of practice change for the BVC. Additionally, the PDSA cycle allows for repeated testing to allow for future testing to expand upon this project.

In summary, mechanical restraints are frequently used on inpatient psychiatric unit and can lead to staff assaults, emotional trauma, patient injury, and patient death. However, early identification of aggression in patients using the Brøset Violence Checklist so nursing interventions can be implemented can help reduce the risk of restraint usage and negative patient outcomes. Patients are notably aggressive the first 72 hours of their admission (Brathovde, 2021; Moursel et al., 2019; Sarver 2019). Little is known about patient aggression past 72 hours of admission and studies included in this review recommend future research to focus on patient aggression for the duration of admission. The Institute for Healthcare Improvement model's PDSA cycle will be used in this project to determine if the BVC is effective for the duration of patient admissions.

Methods

Design

This was a Quality Improvement project using a cohort design with a retrospective and prospective chart review. A retrospective chart review took place between January 2, 2024, until February 26, 2024. The BVC was implemented from February 27, 2024, until April 22, 2024. When the BVC was implemented, a prospective chart review then occurred. All data collection was completed.

Setting

This project occurred at a hospital located in an industrial suburban town in the Midwest residing outside a larger Metropolitan area. This hospital is the only hospital in the town and provides emergency services, dialysis, primary healthcare, rehabilitation, and psychiatric services to the community. The hospital has an emergency department, Medical-Surgical unit, ICU and psychiatry units. This hospital has four inpatient psychiatric units consisting of an adult male, adult female, geriatric, and an overflow adult unit. This project presided on the 26-bed female and the 23 male bed unit pre-BVC and 20-bed male unit post-BVC.

Sample

The sample for this project were all adult male and female patients aged 18 to 64 years old admitted to the inpatient psychiatric unit during the pre- and post-implementation period. The sample of patients who were restrained were selected by purposive sampling. Exclusion criteria included patients who were not ages 18 to 64 years old, were not admitted on the inpatient psychiatric male or female adult unit, and patients who were not admitted during the pre- and post- implementation period.

Data Collection and Analysis

All data, including patient demographics (age, sex, race), BVC scores, the number of interventions implemented and restraint type (4-point, seclusion, therapeutic hold, or chemical), was stored on the primary investigator's password protected computer once all patient identifiers was removed from the data. Patients were de-identified and given a participant ID starting at "Participant 1" to organize and track data. An Excel spreadsheet was used to organize all data collected and data was analyzed using SPSS (Appendix A). Data collected included patient demographics (age, sex, race, psychiatric diagnosis), BVC scores, number of interventions, and restraint type, patient restraint injuries, patient to patient assaults, and staff assault injuries. A unit census for all patients who were admitted to the psychiatric unit during pre- and post- implementation was obtained to determine the rate of restraints, restraint injuries, patient-to-patient assaults, and staff injuries in the pre and post BVC implementation period using an independent samples T-test. Data analysis will additionally evaluate patient BVC scores and how many interventions were implemented in patients who were restrained prior to restraint episodes.

Approvals

Approval for this project came from the University of Missouri St. Louis Institutional Review Board (IRB) to determine if this project involves human subjects. The University of Missouri St. Louis IRB approved this project as a quality improvement project. The hospital Chief Nursing Officer approved the project. The hospital does not have an IRB and provided the University of Missouri St. Louis with a signed letter of support for this project at a no IRB hospital. The primary investigator completed IRB training through CITI.

Ethical Considerations

It should be considered that the retrospective chart review occurs during the winter and the prospective chart review will occur in the spring. Therefore, the occurrences of restraints during the winter during pre-implementation may vary and skew the results of the occurrences of restraints after the spring in the post BVC implementation phase. Additionally, this study may see an unintended reduction in restraints due to nursing staff being aware of the units participating in a study with outcome measures of restraint reduction. The primary investigator is employed at the project site, so the potential of bias should be considered.

Procedures

The project stakeholders consist of the Chief Nursing Officer and the Behavioral Health Unit Manager. All stakeholders agreed with the procedures of the project. All nursing staff were educated on the purpose of the project, how to use the BVC, how the BVC will be implemented and why the BVC benefits the outcomes of patients and nurses (Appendix B). Nursing education was given to nurses via handouts in the unit nurses station, where nurses signed an education attestation sheet indicating the nursing education was completed.

A paper model of the BVC was utilized by nursing staff to assess patients each day shift, night shift and upon admission to determine violence risk. After the risk score was assessed, interventions were implemented based upon the score (Appendix A). If at any point the patient demonstrated aggressive behavior towards themselves or someone else, restraints could be required per facility policy.

New paper BVC sheets would be placed in the patient assignment book for nurses to complete to enhance voluntary nursing compliance. Nurses would return the completed BVC sheets to the unit filing box designated for BH nursing administration for collection and filing in the administration office. Paper documentation of restraints was also stored in the behavioral health administration office for review. Restraint audits was performed after each restraint event which evaluated the type of restraint used, the event leading to the use of restraint, if the patient injuries occurred from restraint, if there was a patient-to-patient assault, and if there were staff injuries. Patients who required restraint intervention were identified by incident reporting and restraint documentation in the retrospective and prospective chart review. The behavioral health unit manager assisted with obtaining pre- and post- BVC implementation restraint documentation for review; including an EHR incident reports, patient demographics and further EHR documentation of restraints review on the selected sample.

Results

A total of 12 (n = 12) patients were restrained during the pre-BVC implementation period. The average age was 42 (SD = 10.01). More female patients (n = 9, 75%) were restrained than male (n = 3, 25%). All patients were Caucasian (n = 12, 100%). The patients had various psychiatric disorders which include Bipolar Disorder (n = 3, 25%), Schizoaffective Disorder (n = 2, 16.7%), Major Depressive Disorder (n = 3, 25%), Schizophrenia (n = 3, 25%), and anxiety (n = 1, 8.3%).

A total of 18 (n = 18) patients were restrained during the post-BVC implementation period. The average age was 35.33 (SD = 10.21). More female (n = 12, 66.6%) patients were restrained than male (n = 6, 33.3%) patients. Most patients

restrained were Caucasian (*n* = 11, 61.6%). Restrained patients had a variety of psychiatric disorders including Bipolar Disorder (*n* = 2, 11.1%), Schizoaffective Disorder (*n* = 1, 5.6%), Major Depressive Disorder (*n* = 7, 38.9%), Schizophrenia (*n* = 4, 22.2%), and Psychosis (*n* = 4, 22.2%). A table displaying patient demographics can be seen in Appendix A.

During the Pre BVC period, 329 (*n* = 329) patients were admitted to the male and female units with 12 (*n* = 12) patients restrained. The rate of restraints in the pre-BVC was 3%. During the post-BVC period, 317 (*n* = 317) patients were admitted to the male and female units, with 18 (*n* = 18) patients restrained, leading to a restraint rate of 5%. After implementation there was a 2% increase in restraint use with the introduction of the BVC to the units.

Prior to implementation there was a total of 40 (*n* = 40) restraint episodes in the pre-BVC period. There was a total of 55 (*n* = 55) restraint episodes during the post-BVC period. Chemical restraints increased by 6%. The pre- BVC period had a chemical restraint rate of 23% (*n* = 9) and the post-BVC period had a chemical restraint rate of 29% (*n* = 16). Manual holds increased by 2% where the pre-BVC rate of manual hold was 25% (*n* = 10) and the post-BVC rate was 27% (*n* = 15). Locked seclusion use increased by 7%. The pre-BVC period had a locked seclusion rate of 33% (*n* = 13) and post BVC had a rate of 40% (*n* = 22). However, 4-point restraints decreased by 17%, where the pre-BVC rate was 20% (*n* = 8) and the post-BVC period had a 3% (*n* = 2) rate. Patient restraint injuries decreased by 6% where there was a pre-BVC rate of 8% (*n*= 3) and a post-BVC rate of 2% (*n* = 1). Patient-to-patient assaults decreased by 1% where there was a pre-BVC rate of 5% (*n* = 2) and a post-BVC rate of 4% (*n* = 2). However,

staff restraint-related injuries increased by 2%. The pre-BVC rate of staff injuries were 3% (n = 1) and the post-BVC rate was 5% (n = 3). These results can be seen in Appendix A.

An independent samples t-test was conducted to compare the results of the pre-BVC and post-BVC data from two separate samples using the dependent variables. The Levene's test of homogeneity determined 4-point restraints and patient restraint injuries have equal variance that cannot be assumed. The t-test found no statistical significance with the two samples when comparing chemical restraints, t (28) = -.464, p = .646, 95% CI [-.751, .474]. The two samples are not statistically significantly different when comparing manual holds, t (28) = .00, p = 1.00, 95% CI [-.648, .648]. Locked seclusion was not found to be statistically significantly different between the two samples, t (28) = -.291, p = .773, 95% CI [-1.118, .840]. The t-test found the two samples were statistically significantly different when comparing 4-point restraints, t (18.56) = 2.54, p = .020, 95% CI [.098, 1.013]. There was no statistical significance found between the two samples regarding patient restraint injuries, t (15.025) = 1.37, p = .191, 95% CI [-.108, .497]. There was no statistical significance found between the two samples regarding patient-to-patient assaults, t (28) = .425, p = .674, 95% CI [-.212, .323]. The two samples were not found to be statistically significantly different when comparing staff restraint-related injuries, t (28) = -.640, p = .527, 95% CI [-.350, .183].

Discussion

The implementation of the BVC did not meet the aim of reducing total restraint use by 10%. The total use of restraints increased by 2%. Chemical restraint use increased by 6%, manual holds increased by 2%, and locked seclusion increased by 7%. 4-point

restraints decreased by 17% which is the only statistically significant finding from the independent sample t-test. These findings may indicate that nursing staff became more aware of early indicators of aggression and subsequently used the least restrictive restraints before resorting to the most restrictive restraint (*i.e.* 4-point restraint), causing a significant decrease in 4-point restraint use and an increase in use of the least restrictive restraints.

Patient restraint injuries decreased 6%, patient to patient assaults decreased 1% and staff restraint-related injuries increase by 2%. Kersting, Hirsch & Steinert (2019), conducted a systematic review which found patients were more likely to have restraint-related injuries and deaths while in 4-point restraints as opposed to physical restraints (manual holds), seclusions or chemical restraints. It is possible the 6% decrease in patient restraint injuries was related to the 17% decrease in 4-point restraint use, despite the decrease in patient restraint injuries not being statistically significant. Alternatively, patients in locked seclusions were found to cause self-inflicted harm and suicide in restraints (Kersting, Hirsch & Steinert (2019). Therefore, one may also deduce it's possible that more aggressive patients were restrained in the post-BVC period and less patients who were self-harming were restrained post-BVC, which may also explain the increase in least restrictive measures, decrease in 4-point restraint use and restraint injuries, and increase in staff injuries.

The mean BVC score is 2.54 (n = 13) and the mean number of interventions completed was 5.38 (n = 13); however, several patients who were restrained scored 0 points "low risk" or 3-5 points "high risk" prior to their restraint episode. No patients who were restrained were noted to be a moderate risk for violence at the time of

assessment. This indicates the patients who scored a low risk for aggression upon initial assessment escalated later in the shift and had a subsequent restraint episode despite the BVC being a valid assessment tool for up to 12-24 hours. Furthermore, 38% of the completed BVC scores (n = 13) were marked as "low risk" (n = 5). Additionally, it should be noted in the literature review that EBP has not established a preferred BVC cutoff score. Some studies suggest a cut-off score of 3, while others suggest a score of 4 for high risk. Yuniati et al. (2020), supported the BVC with a cut-off score of 3 with a specificity of 0.997 and sensitivity of 0.656; therefore, this project selected a cut-off score of 3.

The literature review largely supported the idea that the BVC decreased locked seclusion use. The results of this project set itself apart from other research because 4-point restraint use significantly decreased with the implementation of the BVC is not widely supported as a standalone result. The clinical implication of this study displays nursing staff reduced 4-point restraints and patient injuries by utilizing lesser restrictive interventions once they were educated on the use of the BVC.

Limitations

This Quality Improvement project encountered a few limitations that should be considered while reviewing the results of this project. Nursing compliance with the paper BVC tool was 39%. Nursing staff voiced frustration with the BVC being a paper tool. Additionally, restraint documentation was primarily paper charting, leading to inconsistencies in documentation by the unit staff, which included where the documentation occurred and the components of the documentation. Due to an unforeseen environmental hazard, the men's unit was moved to a smaller unit in the post-BVC

period, which contributed to a smaller admitting census. A smaller unit may change the behavioral dynamics of patients in the post-BVC period with the risk of skewed results. It is important to note, any patient-to-patient assaults that occurred and did not result in restraint events were not accounted for in this project as patient-to-patient assaults were being tracked through restraint documentation. Therefore, the number of patient-to-patient assaults that did not involve restraint episodes may be higher than reported in this project. This project had a small sample size which reduces the power of the results.

Future Recommendations

The reduction of restraints in patients is a highly vital area for patient and staff safety. To continue to improve the use of the BVC to reduce restraints continued research is recommended. It is recommended to incorporate the BVC in the EHR to enhance nursing compliance. A larger sample size will hold more statistical power in results. Future studies may need to explore the frequency of the administration of the BVC as 38% of shift assessments scored patients who were restrained as “low risk”. EBP has conflicting research on whether the BVC cut-off score for “high-risk” should be 3 or 4. This project used a cut-off score of 3; further research is needed to determine a definitive high-risk cut-off score. Future studies would benefit from exploring in the reduction of staff assaults with no injuries; restraint-related staff assaults that resulted in no injuries were not explored in this project but can still hold a psychological impact on staff members.

Conclusion

The BVC did identify patients who were at-risk for unit aggression. Chemical, physical restraint (manual holds), and locked seclusions increased, while 4-point restraints significantly reduced. Restraint-related injuries and patient-to-patient assaults reduced, whereas staff injuries increased. Overall, the total number of restraints used in the post-BVC period increased by 2%. There were identifiable limitations to this project which may have impacted results. Future recommendations are to implement the BVC in the EHR, explore the frequency of the BVC administration and use a larger sample size in future projects. Further research into using the BVC to reduce restraints, patient restraint injuries, patient-to-patient assaults and staff restraint-related assault/injuries are needed to continue to improve patient and staff safety outcomes.

References

American Nurses Association. (2023). Workplace violence/ #EndNurseAbuse. https://www.nursingworld.org/practice-policy/work-environment/end-nurse-abuse/

American Psychiatric Nurses Association. (2022). APNA standards of practice: Seclusion & restraint. https://www.apna.org/standards-of-practice-seclusion-and-restraint/#DefinitionsIntroduction

Brathovde, A. (2021). Improving the standard of care in the management of agitation in the acute psychiatric setting. *Journal of the American Psychiatric Nurses Association, 27*(3), 251-258. 10.1177/1078390320915988

Fernández-Costa, D., Gómez-Salgado, J., Fagundo-Rivera, J., Martín-Pereira, J., Prieto-Callejero, B., & García-Iglesias, J. J. (2020). Alternatives to the use of mechanical restraints in the management of agitation or aggressions of psychiatric patients: A scoping review. *Journal of Clinical Medicine, 9*(9), 2791. 10.3390/jcm9092791

Giarelli, E., Nocera, R., Jobes, M., Boylan, C., Lopez, J., & Knerr, J. (2018). Exploration of aggression/violence among adult patients admitted for short-term, acute-care. *Mental Health Services. Archives of Psychiatric Nursing, 32*(2), 215–223. 10.1016/j.apnu.2017.11.004

Hilton, N. Z., Addison, S., Ham, E., Rodrigues, N., & Seto, M. C. (2021). Workplace violence and risk factors for PTSD among psychiatric nurses: Systematic review and directions for future research and practice. *Journal of Psychiatric and Mental Health Nursing.* 10.1111/jpm.12781

Hirsch, S. & Steinert, T. (2019). Measures to avoid coercion in psychiatry and their efficacy. *Deutsches Arzteblatt International, 116*(19), 336-343. 10.3238/arztebl.2019.0336

Institute for Healthcare Improvement (IHI). (2021). Science of improvement: How to improve. https://www.ihi.org/resources/Pages/HowtoImprove/default.aspx

Kersting, X. A. K., Hirsch, S., & Steinert, T. (2019). Physical harm and death in the context of coercive measures in psychiatric patients: A systemic review. *Frontiers in Psychiatry.* 10.3389/fpsyt.2019.00400

Lockertsen, Ø., Varvin, S., Færden, A., & Vatnar, S. K. B. (2021). Short-term risk assessments in an acute psychiatric inpatient setting: A re-examination of the Brøset Violence Checklist using repeated measurements – Differentiating violence characteristics and gender. *Archives of Psychiatric Nursing, 35*(1), 17–26. 10.1016/j.apnu.2020.11.003

Moursel, G., Çetinkaya Duman, Z., & Almvik, R. (2019). Assessing the risk of violence in a psychiatric clinic: the Brøset Violence Checklist (BVC) Turkish version—validity and reliability study. *Perspectives in Psychiatric Care, 55*(2), 225–232. 10.1111/ppc.12338

Nijman, H. (2018). Causes and prevention of aggression from psychotic inpatients. *Schizophrenia Bulletin.*

Ortiz-Sandoval, I., Martínez-Quiles, M. D., López-Pérez, J., & Simonelli-Muñoz, A. J. (2022). Triggers of agitation in psychiatric hospitalization ward according to professional experience questionnaire. *International Journal of Environmental Research and Public Health, 19*(4). 2014. 10.3390/ijerph19042014

Price, O., Baker, J., Bee, P., Grundy, A., Scott, A., Butler, D., Cree, L., & Lovell, K. (2018). Patient perspectives on barriers and enablers to the use and effectiveness of de-escalation techniques for the management of violence and aggression in mental health settings. *Journal of Advanced Nursing, 74*(3), 614–625. 10.1111/jan.13488

Sarver, W. S., Radziewics, R., Coyne, G., Colon, K., Mantz., L. (2019). Implementation of the Brøset Violence Checklist on an acute psychiatric unit. *Journal of the American Psychiatric Nurses Association, 25*(6) 476-486. 10.117/1078390318820668

Spennato, U., Lerjen, N., Siegwart, J., Mueller, B., Schuetz, P., Koch, D., & Struja, T. (2023). Prevalence, risk factors and outcomes associated with physical restraint in acute medical inpatients over 4 years—A retrospective cohort study. *Geriatrics (Switzerland), 8*(1). 10.3390/geriatrics8010015

The Joint Commission. (2023). Sentinel events. https://www.jointcommission.org/resources/sentinel-event/

Väkiparta, L., Suominen, T., Paavilainen, E., & Kylmä, J. (2019). Using interventions to reduce seclusion and mechanical restraint use in adult psychiatric units: An integrative review. *Scandinavian Journal of Caring Sciences, 33*(4), 765–778. 10.1111/scs.12701

World Health Organization. (2022). Preventing violence against health workers. https://www.who.int/activities/preventing-violence-against-health-workers

Ye, J., Wang, C., Xiao, A., Xia, Z., Yu, L., Lin, J., Liao, Y., Xu, Y., Zhang, Y. (2019). Physical restraint in mental health nursing: A concept analysis. *International Journal of Nursing Sciences, 6*(3), 343-348. 10.1016/j.ijnss.2019.04.002

Yuniati, W., Putra, K. R., & Widasmara, D. (2020). Factors affecting the success of psychiatric nurses in conducting risk assessment of violent behavior. *International Journal of Nursing Education*, *12*(4), 252–257.

Appendix A

Table A1

The Brøset Violence Checklist

Confused	Appears obviously confused and disoriented. May be unaware of time, place or person.	☐ Yes (1) ☐ No (0)
Irritable	Easily annoyed or angered. Unable to tolerate the presence of others.	☐ Yes (1) ☐ No (0)
Boisterous	Behavior is overtly "loud" or noisy. For example, slams doors, shouts when talking, etc.	☐ Yes (1) ☐ No (0)
Verbally threatening	A verbal outburst which is more than just a raised voice; and where there is a definite intent to intimidate or threaten another person. For example, verbal attacks, abuse, name-calling, verbally neutral comments uttered in a snarling aggressive manner.	☐ Yes (1) ☐ No (0)
Attacking Objects	An attack directed at an object and not an individual. For example, the indiscriminate throwing of an object; banging or smashing windows; kickins, banging or head-butting an object; or smashing of furniture.	☐ Yes (1) ☐ No (0)
Physically threatening	Where there is a definite intent to physically threaten another person. For example, the taking of an aggressive stance; the grabbing of another person's clothing; the raising of an arm, leg, making a fist or modeling of a head-butt directed at another.	☐ Yes (1) ☐ No (0)
Total score	**SCORING (0-6 points)**	

Table A2

BVC Interventions and Scoring

Interventions (Check interventions that has been completed)

- ☐ Verbal de-escalation
- ☐ Time-out offered
- ☐ Redirection
- ☐ 1:1 nursing interaction
- ☐ Reassurance provided
- ☐ Limit setting facilitated
- ☐ Offering choices
- ☐ Empathetic listening
- ☐ Environmental stimuli decreased
- ☐ Contact with support person offered
- ☐ Diversionary activities provided
- ☐ Calming relaxation/mindfulness techniques promoted
- ☐ Individualized coping techniques promoted
- ☐ Providing personal space
- ☐ Identifying wants and needs
- ☐ Avoiding provocation
- ☐ Reflection on causes of agitation
- ☐ PRN medication
- ☐ Restraint
- ☐ Seclusion
- ☐ Other _____

0 points	Low risk for aggression	No current intervention needed.
1-2 points	Moderate risk for aggression	Provide de-escalation interventions as indicated to prevent further escalation.
3-6 points	High risk for aggression	Requires immediate de-escalation interventions to reduce risk of potential impending aggression.

If at any point a patient becomes physically aggressive to themselves or others, restraints may be indicated.

Table A3

Pre/Post Implementation Data Collection Template

Brøset Violence Checklist Pre/Post Implementation Data Collection											
Patient	Pre/post	Sex	Age	Race	Diagnosis	BVC Score	# of Interventions	Restraint Type	Patient injury	Patient/patient assault	Staff Injuries

Table A4

Sample of Restrained Psychiatric Patients (N=30)

	Pre-BVC		*Post-BVC*	
	M	***SD***	***M***	***SD***
Age	42	10.01	35.33	10.21
	N	***%***	***N***	***%***
Gender				
Male	3	25%	6	33.3%
Female	9	75%	12	66.6%
Race				
Caucasian	12	100%	11	61.1%
African American	0	0%	7	38.9%
Psychiatric Diagnosis				
Bipolar Disorder	3	25%	2	11.1%
Schizoaffective Disorder	2	16.7%	1	5.6%
Major Depressive Disorder	3	25%	7	38.9%
Schizophrenia	3	25%	4	22.2%
Anxiety	1	8.3%	0	0%
Psychosis	0	0%	4	22.2%
Total	*N= 12*		*N= 18*	

Table A5

Post-BVC Implementation Outcomes

Variable	*Pre-BVC (%)*	*Post-BVC (%)*	*Outcome (%)*
Chemical Restraints	23% (n= 9)	29% (n= 16)	⬆6%
Manual Holds	25% (n= 10)	27% (n= 15)	⬆2%
Locked Seclusion	33% (n= 13)	40% (n= 22)	⬆ 7%
4-point Restraints	20% (n= 8)	3% (n=2)	⬇17%
Patient Restraint Injuries	8% (n= 3)	2% (n=1)	⬇6%
Patient-to-Patient Assaults	5% (n= 2)	4% (n=2)	⬇1%
Staff Restraint-related Injuries	3% (n=1)	5% (n=3)	⬆ 2%
Total Restraint Incidents	*N= 40*	*N= 55*	
Total Patient Restraints	3% (n=12)	5% (n=18)	⬆2%
Total admitted patients	*N= 329*	*N= 317*	

Table A6

Levene's Test for Equality of Variances

Variable	*F*	*Sig.*	*Equal Variances*
Chemical Restraints	1.149	.293	Assumed
Manual Holds	.194	.663	Assumed
Locked Seclusion	1.284	.267	Assumed
4-point Restraint	6.102	.020	Not Assumed
Patient Restraint Injuries	11.235	.002	Not Assumed
Patient-to-Patient Assaults	.715	.405	Assumed
Staff Restraint-related Injuries	1.802	.190	Assumed

Table A7

T-test for Equality of Means

Variable	*t CV(2.048)*	*df*	Significance *Two-sided p*	*95% CI Lower*	95% CI *Upper*
Chemical Restraints	-.464	28	.646	-.751	.474
Manual Hold	.000	28	1.00	-.648	.648
Locked Seclusion	-.291	28	.773	-1.118	.840
4-point restraint	2.544	18.559	.020	.098	1.013
Patient Restraint Injuries	1.370	15.025	.191	-.108	.497
Patient-to-Patient Assaults	.425	28	.674	-.212	.323
Staff Restraint-related Injuries	-.640	28	.527	-.350	.183

Appendix B

Image B1

Introducing the BVC Nursing Education Handout

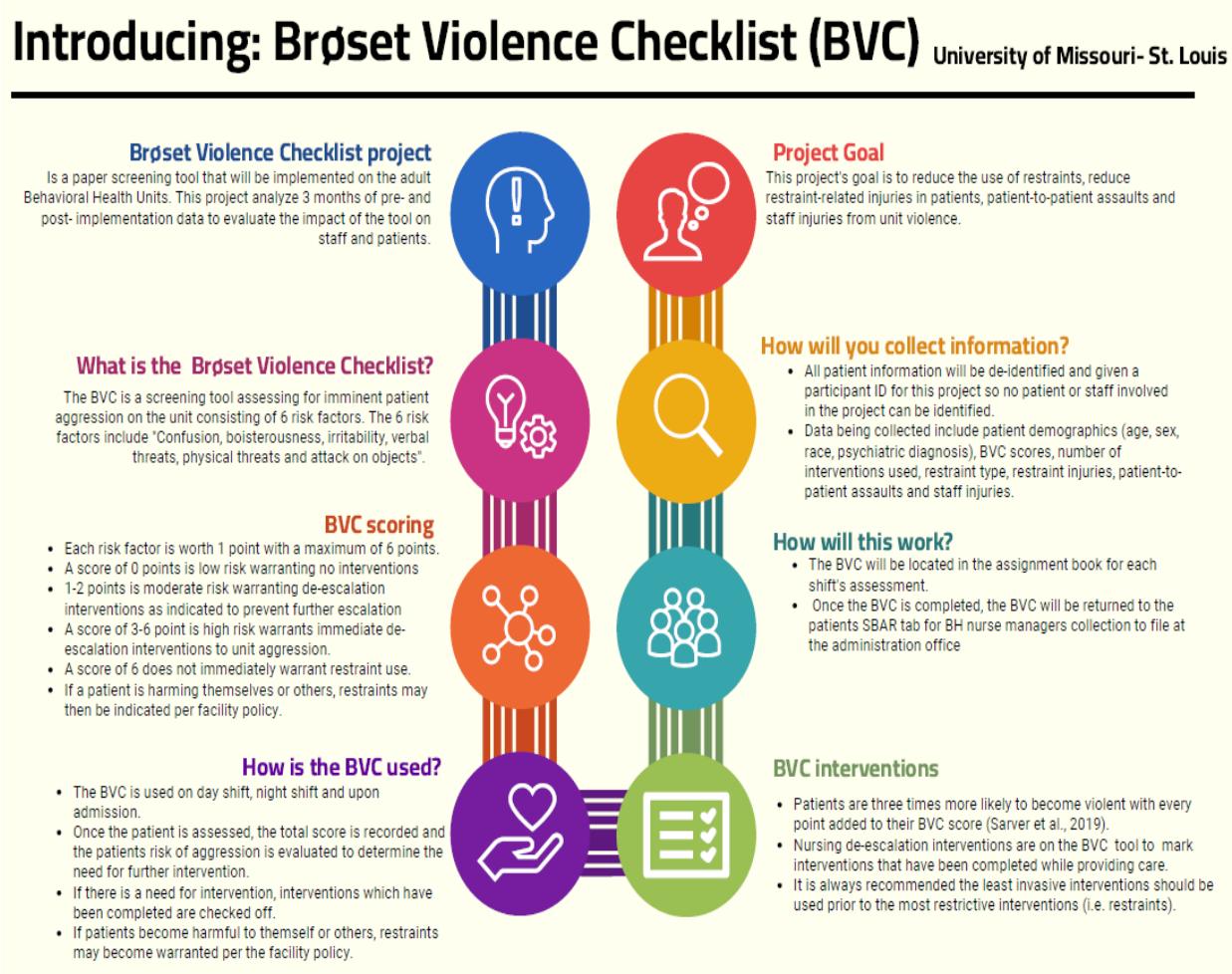

Image B2

Benefits of the BVC Nursing Education Handout