# Improving Sensory-Based Care for Autistic Adults on the Inpatient Psychiatric Unit: A Quality Improvement Project

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## Author Note

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**Abstract**

This quality improvement project addressed the challenge of providing sensory-based care to Autistic[1] adults in an urban psychiatric hospital. Autistics often face difficulties in processing sensory information, affecting behavior and social interactions. Existing literature on sensory-based interventions in psychiatric units is limited, necessitating targeted interventions for Autistic adults. Educational sessions were conducted with nursing staff, with pre-intervention and post-intervention surveys assessing staff perceptions. Results demonstrated a medium effect size (0.382) and a twenty percent improvement ($p = 0.001$) in survey scores, indicating enhanced knowledge and comfort in sensory-based care. Qualitative analysis highlighted barriers, including a lack of education, bureaucratic challenges in obtaining tools, and concerns about increased workload. The project demonstrated the positive impact of the intervention, emphasizing the need for widespread, specialized training and standardized toolkits to support sensory-based care. Further research is warranted to deepen understanding and promote sustained improvements in providing quality care for Autistics in psychiatric settings.

*Keywords:* autism spectrum disorder, sensory processing dysfunction, psychiatric hospital, nursing education, quality improvement

[1] Words are powerful tools that influence the assumptions toward the subject of discussion. We acknowledge the controversy in using identity-first language (i.e. Autistic person) rather than person-first language (i.e. person with autism). Autistic people often use this language as reclamation of a historically negative term and as an expression of their cultural pride (APA, 2020). We recognize autism as an inherent part of identity, affirming and validating an Autistic person's identity; therefore, we use identity-first language throughout this paper when referring to Autistic people.

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## Problem Description

Psychiatric institutions have provided care to a wide array of challenging psychological disorders, operating under the foremost psychosocial framework of mental illness at the time; however, this has historically resulted in mistreatment towards the very patients it cares for. Many hospitalized psychiatric patients have limited autonomy and control, becoming subjected to involuntary treatment and restrictive interventions to maintain their safety (Askew et al., 2019; Oostermeijer et al., 2021; Staniszewska et al., 2019). The physical environment of the hospital has also contributed to mistreatment and distress for patients (Weltens et al., 2021). Psychiatric hospitals are designed to maintain the safety of patients and staff across a spectrum of acute behavioral health concerns; these environments often restrict patients to a locked unit, are continuously monitored by nurses and other staff members, and prohibit personal items to mitigate patients harming themselves or others. Notably, psychiatric hospitals are substantially challenging for Autistic individuals (DuBois et al., 2017).

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder that affects communication, social interaction, and behavior (American Psychiatric Association, 2013). Recent population studies performed by the Centers for Disease Control and Prevention estimate a prevalence rate of 2.76 per 100 children diagnosed with ASD (CDC, 2020). ASD is more often diagnosed in males than females at a ratio of 3:1; however, this has consistently been cited as a profound gender bias in diagnosis (Loomes et al., 2017). ASD is also found in all ethnic, racial, and socioeconomic populations (CDC, 2020). With ASD, most individuals also experience comorbid psychiatric illness at rates higher than the general population (Lugo-Marín et al., 2019; Nahar et al., 2019; Varcin et al., 2022). Attention deficit hyperactivity disorder is the most prevalent, followed by mood and anxiety disorders (Lugo-Marín et al., 2019).

**Available Knowledge**

Sensory processing dysfunction is a common feature of ASD and refers to difficulties in processing and responding to sensory information in the environment (DuBois et al., 2017). Sensory processing dysfunction can manifest in multiple ways. Some experience hypersensitivity to certain sensory stimuli, such as loud noises, bright lights, strong smells, and certain textures; others experience hyposensitivity, requiring more intense sensory input to register a response and a preference for higher-intensity sensory input. Some also have difficulty processing sensory input in an organized manner, leading to problems with motor planning and coordination (DuBois et al., 2017). Many Autistics are unable to integrate multiple sensory inputs, leading to sensory overload or sensory under-responsiveness. These states can be distressing for those affected, can impede their ability to navigate the world around them, and present as atypical behaviors or affective responses to the observer (DuBois et al., 2017; Hens et al., 2017). These challenges result in various behavioral symptoms, including avoidance of specific environments or activities, performing repetitive behaviors, difficulties with social interaction, anxiety, and aggression (DuBois et al., 2017).

Autistic patients in psychiatric hospitals have endorsed isolation, recurrent distress, and relationship issues with caregivers (Murphy & Mullens, 2017). This is further aggravated by the uncertainty, volatility, and frequent aggression present in inpatient psychiatric units (Weltens et al., 2021; Finfgeld-Connett, 2009). Additionally, population-based studies have demonstrated that Autistic people experience poorer health outcomes and more prolonged hospital admissions compared to their neurotypical counterparts (Rydzewska et al., 2019; Murphy & Mullens, 2017). The literature is severely limited in the available knowledge for improving sensory-based interventions for Autistic adults in the inpatient psychiatric unit. The most relevant work found includes sensory-based interventions for the psychiatric unit without regard to a specific patient population, sensory-based interventions for Autistic children, and approaches to reducing sensory stimulation in the psychiatric milieu.

The implementation of sensory-based rooms within the inpatient psychiatric unit has demonstrated efficacy in reducing patient distress and arousal when implemented by nursing staff (Chalmers et al., 2012). Weighted blankets and vests, designed to apply deep pressure to augment proprioceptive input, have demonstrated a significant reduction in anxiety in inpatient psychiatric units, with recent studies finding a 60% reduction in anxiety symptoms (Champagne et al., 2015). General approaches to reducing sensory stimulation in a high-acuity psychiatric milieu, consisting of noise and sound reduction, are correlated with a reduction in restraint and seclusion (Yakov et al., 2018). Redesigning the psychiatric unit with an emphasis on reducing social density, reducing noise in the milieu, and fostering the patient's sense of control was shown to reduce patient anxiety, aggression, and restrictive interventions; this signifies the impetus for environmental alterations to accommodate the sensory-based needs in psychiatric units (Ulrich et al., 2018; Williams et al., 2023; Finfgeld-Connett, 2009). Overall, sensory processing dysfunction is complex and significantly impacts a person's behaviors, social interactions, and emotions. Recognizing and addressing sensory processing dysfunction is essential in providing quality psychiatric care for Autistic patients (Rydzewska et al., 2019).

**Rationale**

This project utilized the Institute for Healthcare Improvement framework, The Model for Improvement (Langley et al., 2009). This model incorporates a plan-do-study-act cycle repeated several times throughout the project to integrate continuous quality improvement principles into the interventions while simultaneously engaging the stakeholders in the planning and evaluation process. Engaging stakeholders across multiple plan-do-study-act cycles was imperative in improving the hospital's accommodation of sensory processing dysfunction in Autistic patients with co-occurring mental health disorders. Additionally, this project utilized the transformational learning theory, which posits that critical self-reflection and intentional behavior changes affect the learner's perspective of meaning (Tsimane & Downing, 2020). The project's interventions were designed to promote

transformational learning by utilizing engaging materials, active discussion, and intentional reflection (Tsimane & Downing, 2020). The model for improvement, in conjunction with transformational learning theory, were instrumental in reaching this project's aim, as they have demonstrated efficacy in affecting change in healthcare systems (Langley et al., 2009).

The root-cause analysis (see Appendix B) identified a lack of nursing education on sensory processing dysfunction and nursing interventions limited the care for Autistic patients. This project aimed to implement education for nursing staff, improving the nurses' knowledge and provide more equitable care for this population. A review of the literature determined that there is a significantly limited breadth of knowledge on the impact of sensory processing dysfunction for Autistic adults in psychiatric hospitals. The available evidence demonstrates that with sensory-based interventions for Autistic adults, there is an improvement in the subjective quality of care provided, a reduction in more restrictive interventions, and an overall improvement in core psychiatric symptoms.

### Specific Aims

This project aimed to provide a greater knowledge of sensory processing dysfunction, enhance the provision of relevant nursing interventions, and improve the hospital's accommodation of Autistic patients with co-occurring mental health disorders. By February 2024, nursing staff would demonstrate a twenty percent increase in post-intervention survey scores.

## Methods

### Context

This project occurred at an urban 107-bed psychiatric hospital (UPH) associated with an academic university center in Portland, Oregon. UPH provides 24-hour psychiatric and behavioral health care services to roughly 4,400 patients with diverse experiences of mental illness each year. On

retrospective chart review, between July 1, 2022, and June 30, 2023, UPH provided psychiatric and behavioral health care to 98 Autistic patients with a co-occurring mental health disorder, which represented 4% of all inpatient hospitalizations during this timeframe; however, this figure may not be a fair representation due to inconsistently documented diagnoses within the patient's electronic health record. Although the organization provides ongoing education on best practices in psychiatry, UPH does not provide education on the unique needs and behaviors of Autistic patients, which has been shown to lead to communication errors and inappropriate treatment (Calleja et al., 2020). UPH provides no formal training on the sensory processing dysfunction needs of Autistic patients beyond the training received in pre-licensure training programs for clinicians.

**Intervention**

To improve the accommodation of sensory processing dysfunction for Autistic adults on the inpatient units at UPH, in-service education sessions were held for nursing staff, including staff nurses, charge nurses, and behavioral health therapists. The educational sessions took place across multiple dates among the four adult units. They included the following elements: clear learning objectives for the session, an overview of the neurobiological changes in ASD, a review of the clinical outcomes of unmet sensory needs and applicability to UPH, a discussion of relevant sensory-based nursing interventions, and a discussion of the implications of interventions on nursing care for this population. During the implementation of the educational sessions, all nursing staff on the study units were invited to participate in a pre-intervention survey to assess the knowledge and comfort of nursing staff in providing sensory-based interventions. At the end of the study, nursing staff were invited to participate in a follow-up survey to evaluate the effectiveness of the educational sessions and ascertain the changes in their practice since the educational sessions. The distributed surveys were anonymous online surveys (see Appendix A) and included Likert-scale and optional free-text responses, allowing for a mixed-methods data interpretation.

**Study of the Intervention**

The study of the intervention included organizational policy and procedural changes that may impact the sensory-based care delivered to patients at UPH. Flyers describing relevant sensory-based nursing interventions were distributed to the participating units throughout the study. The Mann-Whitney U test was selected to assess the influence of the educational sessions between pre-intervention and post-intervention survey responses. To measure the nursing staff's perceptions of the educational sessions, the impact on their knowledge and practice, and the feasibility of implementing sensory-based care for Autistic patients at UPH, open-ended responses during the education sessions and follow-up survey were analyzed using the standardized procedure of grounded theory.

**Measures**

The primary outcome measure for this project was the nursing staff's reported improvement in knowledge and comfort of sensory-based interventions. Data on this outcome was assessed before the intervention, immediately after the intervention, and again one month following the intervention, which allowed us to determine if the intervention resulted in the specific aim of this project. Improvement in knowledge and comfort of sensory-based interventions was defined as a positive increase in subjective self-rating during surveys. The process measures for this project included the percentage of nursing staff who agreed to participate in the study and the availability of sensory-based interventions in the units. Data on these outcomes were assessed at each educational session. Balancing measures considered and monitored included an increased work burden on nursing staff implementing these interventions, the presence of Autistic patients on the units during this timeframe, and the hospital's support of sensory-based nursing interventions. To evaluate these variables, the post-intervention surveys included questions regarding these components. Surveys were de-identified and compared to pre-and-post-intervention responses to assess the completeness and accuracy of data.

**Analysis**

This project was implemented over three months between November 1, 2023, through January 31, 2024, with the first round of data analysis occurring in December 2023. The collected survey data was analyzed within Excel one month and three months after implementation. The Mann-Whitney U test was employed to assess the difference between pre-intervention and post-intervention scores ($\alpha$ = 0.05). Feedback from the participating nursing staff during the educational sessions and feedback included in the survey responses were thematically analyzed using the standard procedure for grounded theory. All responses were coded as they emerged during analysis to determine recurrency, coherency, and meaningfulness.

**Ethical Considerations**

Ethical principles to be considered in this project included justice and nonmaleficence. Justice was understood as providing accommodation to Autistic patients who have demonstrated sensory dysfunction needs and how meeting these needs provides equitable care to this vulnerable population (Hens et al., 2019). Nonmaleficence was understood as reducing the overall sensory stimulus inherent in inpatient psychiatric units and reducing the impact of sensory dysfunction on the patient's recovery from behavioral crises. The participating hospital consented to participate in this project by completing a letter of support. Staff consented to participate in this project during the initial pre-intervention survey. Data collected was de-identified and securely stored on an encrypted file with password protection and two-factor authentication. This project was submitted to the Oregon Health & Science University Investigational Review Board (Study #00026139) and deemed not research, not requiring further review. This project was submitted to the Legacy Health Investigational Review Board (Study #2134) and deemed not research, not requiring further review. The author reports a potential conflict of interest by being employed by UPH since February 2022. The author has received no compensation for this project.

## Results

Thirty-six nursing staff members participated in educational sessions across six dates, resulting in 36 complete pre-intervention surveys and 36 complete post-intervention surveys. All participants were invited to complete the follow-up survey one month following their education session—14 (39%) participants completed the follow-up surveys. Reminder emails were sent to the remaining 22 participants about the opportunity to provide feedback; however, there were no further submissions. Analysis of the surveys demonstrated a positive increase across all eight questions, addressing the domains of knowledge and comfort of sensory-based care (see Table 1). Mean Likert scores between pre-intervention and post-intervention survey scores were 3.29 and 3.94; the distributions in the two groups significantly differed ($U = 360$, $n_1 = n_2 = 36$, $p = 0.001$). The p-value was below the predetermined significance level of 0.05, indicating a statistically significant difference between pre-intervention and post-intervention Likert scores (see Table 1). Additionally, effect size was 0.382, indicating a medium effect according to Pearson's r-effect size classification. The p-value ($p = 0.001$) underscores the robustness of the findings and provides evidence against the null hypothesis, whereas the effect size further emphasizes the practical significance of the observed differences, highlighting the substantive impact of the intervention on the Likert scores. These results collectively support the conclusion that the educational sessions had a meaningful and significant effect on the Likert scores (see Figure 1).

Through the feedback provided by participants, four themes emerged: [1] a notable lack of education among staff regarding sensory processing dysfunction, [2] a desire for a designated specialist for access to sensory tools and consultants, [3] obtaining necessary supplies and tools becomes a bureaucratic struggle, and [4] providing necessary care often places an increased burden on coworkers and other patients (see Table 2). In exploring the experiences of providing sensory-based care by nursing staff at UPH, a narrative emerged from their voices. Nursing staff expressed a lack of education among staff, which extended to underestimating the profound impact that sensory-based care has on their

patients. Through discussion, it became apparent that a deeper understanding of sensory needs is crucial to fostering a supportive environment. Concerns about a consistently loud milieu and removing beneficial tools contributed to the challenges of creating a supportive atmosphere for patients. Even when concerns were expressed, barriers persisted, including apprehensions about the potential unsafe use of sensory-based tools. The staff further acknowledged the usefulness of patient care plans but expressed a lack of knowledge on creating and accessing the plans, creating obstacles in delivering comprehensive care. Nursing staff's perspectives brought to light myriad challenges in implementing sensory-based care, highlighting the dynamic nature of inpatient psychiatric care.

## Discussion

### Summary

Although there was a positive overall impact on nursing staff's responses on post-intervention surveys, the most profound gains were related to familiarity with sensory tools, understanding of variations in sensory preferences, and self-perception of communication with Autistic patients. Through the transformational learning theory, by utilizing engaging materials, having an active discussion, and providing an opportunity for intentional reflection, there were critical gains in the nursing staff's knowledge and comfort of sensory-based care. Furthermore, this project uncovered critical insights into barriers that nursing staff face at UPH in providing sensory-based care. This project is the first quality improvement project at UPH to address sensory-based care for Autistic adults.

### Interpretation

After quality improvement interventions, the nursing staff demonstrated an improvement in their knowledge and comfort in providing sensory-based care to Autistic patients, as evidenced by a 20% increase in overall survey scores in addition to statistically significant improvements in communication, understanding sensory differences, and familiarity with sensory tools. These results corroborate the

findings of Chalmers et al. (2012), who reported that additional education, among other interventions, was associated with improved sensory-based care in the inpatient psychiatric unit. Furthermore, the nursing staff's perspective on the overstimulating nature of the inpatient unit agreed with Williams et al. (2023), who discussed identifying and addressing sensory overstimulation in the inpatient psychiatric unit. The direct involvement of nursing staff allowed us to explore their experiences and support their understanding of sensory processing dysfunction; their input was invaluable, as they are the direct care provider for the hospital's patients.

It is important to note that there were multiple nursing leadership changes at UPH during this project's implementation, which led to an overall delay in implementation and challenges with clear communication among nursing staff. The educational sessions did not increase the hospital's operating cost but did bring attention to the limited supply of sensory-based tools available for use. In-service educational sessions were provided stewardly and efficiently, meeting with nursing staff present on the unit at the time of the training. Providing quality sensory-based care was cited as a concern for several nursing staff, as it became another variable for them to manage in addition to their current roles, with some stating the burden it would have on their unit with inadequate staffing. Although there were notable improvements, further implementation could be hindered by organizational support; key considerations for leadership include the barriers addressed by nursing staff, the monetary cost of procuring sensory-based tools, and providing resources for ongoing support.

**Limitations**

This project had several limitations. One is the transferability of these findings to settings other than adult inpatient psychiatric units; generalizability is further limited by the sample size and context-specific confounding variables. The policies among psychiatric hospitals vary, specifically regarding the patient population, provision of sensory-based tools, and physical environment layout; these factors

highly influence the degree of sensory-based care provided to patients. Another limitation to this work is the potential conflict of interest of being simultaneously employed by UPH at the same time as this project work. Existing relationships with the nursing staff undoubtedly influenced their engagement in the educational sessions and provided potential bias with survey responses. To mitigate this risk, all staff were informed of the anonymity of the survey and encouraged to give thoughtful feedback as it applies to their role at UPH. Furthermore, as this project utilized qualitative data, there is a potential bias in coding the themes presented by nursing staff. To mitigate this risk, feedback was thematically analyzed using the standardized procedure of grounded theory as it emerged during analysis.

**Conclusions**

This project found a statistically significant association between providing in-service education sessions and the improvement in nursing staff's knowledge and comfort in providing sensory-based care to Autistic patients with co-occurring mental health disorders. As discovered within the professional literature, there is little research on sensory-based care in adult inpatient psychiatric units, and this work contributes to the breadth of knowledge on this topic. These results embolden the need for further research to develop and deepen understanding of providing sensory-based care to Autistic patients in inpatient psychiatric units. The sustainability of sensory-based quality improvement initiatives may depend on the organization's provision of education, supplies, and support. Through this project, the educational sessions unveiled a need for UPH to provide widespread, specialized training on sensory processing dysfunction and how to accommodate the needs of Autistic patients. Additionally, developing a standardized toolkit for nursing staff at UPH, including which tools are accessible, where to access supplies and support, and how to implement patient-centered sensory-based care, would be instrumental in further developing this project.

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**Table 1**

*Educational Sessions on Sensory-Based Care (n = 36)*

| Survey Question* | Group | Mean | Order Mean | Sum | U | Z | P |
|---|---|---|---|---|---|---|---|
| 1 | Pre | 3.67 | 33 | 1188 | 522 | -1.419 | 0.156 |
| | Post | 3.83 | 40 | 1440 | | | |
| 2 | Pre | 3.33 | 32.5 | 1170 | 504 | -1.622 | 0.105 |
| | Post | 3.83 | 40.5 | 1458 | | | |
| 3 | Pre | 3.33 | 34 | 1224 | 558 | -1.014 | 0.311 |
| | Post | 3.50 | 39 | 1404 | | | |
| 4 | Pre | 3.33 | 34.5 | 1242 | 576 | -0.811 | 0.417 |
| | Post | 3.83 | 38.5 | 1386 | | | |
| 5 | Pre | 2.83 | 25.5 | 918 | 252 | -4.460 | < 0.000 |
| | Post | 3.67 | 47.5 | 1710 | | | |
| 6 | Pre | 2.67 | 22.5 | 810 | 144 | -5.676 | < 0.000 |
| | Post | 4.17 | 50.5 | 1818 | | | |
| 7 | Pre | 2.67 | 23 | 828 | 162 | -5.473 | < 0.000 |
| | Post | 4.00 | 50 | 1800 | | | |
| 8 | Pre | 4.50 | 35.5 | 1278 | 612 | -0.405 | 0.685 |
| | Post | 4.67 | 37.5 | 1350 | | | |
| Total | Pre | 3.29 | 28.5 | 1026 | 360 | -3.244 | 0.001 |
| | Post | 3.94 | 44.5 | 1602 | | | |

***Survey Questions:**

1. How comfortable are you with providing care to patients with autism?
2. How familiar are you with sensory processing difficulties commonly experienced by individuals with autism?
3. How often do you currently incorporate sensory-friendly strategies into your patient care routines?
4. How confident are you in your ability to identify signs of sensory overload or sensory-seeking behaviors in patients with autism?
5. How well do you perceive your current communication skills with patients who have difficulty expressing sensory-related issues?
6. How familiar are you with the different sensory tools and techniques used for individuals with autism?
7. How well do you understand the individual variations in sensory preferences and sensitivities among patients with autism?
8. How much do you believe that a sensory-friendly environment can reduce anxiety and challenging behaviors in patients with autism?

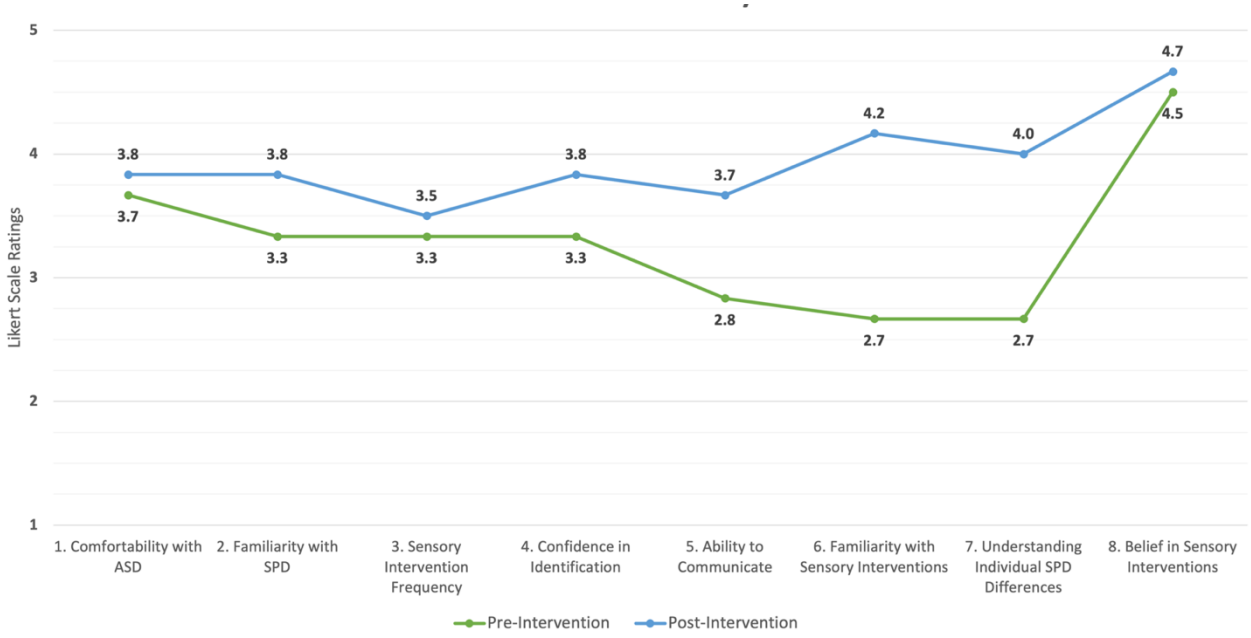
**Table 2**

*Nursing Narrative Voices: Improving Sensory-Based Care*

| Dimension and themes | Example quote |
|---|---|
| A) Notable lack of education among staff regarding sensory processing dysfunction | |
| ○ Lack of nursing education<br>○ Lack of recognition of antecedents<br>○ Lack of awareness of the impact of sensory-based care<br>○ Misinterpretation of behavior | *"It's not just the staff on the unit. There have been several times where security will respond and misinterpret a patient's movements as an aggressive behavior, rather than just stimming or not having the ability to understand normal boundaries."* |
| B) Desire for a designated specialist for access to sensory tools and consultants | |
| ○ Unsure of contact person for support and tools<br>○ Lack of knowledge on creating and accessing milieu plans<br>○ Feeling inadequate with providing sensory-based care<br>○ Desire to contact a specialist | *"I would really like to see the addition of consultants specifically related to sensory processing, autism, and other disabilities. I can provide general psych care for them, but I know that someone specializing in this would catch things I wouldn't."* |
| C) Obtaining necessary supplies and tools becomes a bureaucratic struggle | |
| ○ Desire for sensory tools and sensory rooms<br>○ Environmental design is not supportive<br>○ Unclear communication<br>○ Inflated perception of potentially unsafe items | *"It's always a struggle to get new items approved for the unit. I don't even know where to start because there are so many people involved."* |
| D) Providing necessary care often places an increased burden on coworkers and other patients | |
| ○ Too few staff on the unit to provide care<br>○ Feeling unsupported by coworkers when implementing sensory-based care<br>○ Not enough time on shift to complete a milieu plan | *"It's really hard when there are restrictions placed on certain items like needing to be within line of sight while using an item. We often don't have the staff available to provide that observation for more than just a few minutes. So, people wouldn't really get to use the tools when they need it."* |

**Figure 1**

*Pre & Post-Education Survey Mean Scores*



**Appendix A**

Pre-Intervention & Post-Intervention Survey

## Pre-Training Questions:

*On a scale of 1 to 5...*

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. How comfortable are you with providing care to patients with autism? | | | | | |
| 2. How familiar are you with sensory processing difficulties commonly experienced by individuals with autism? | | | | | |
| 3. How often do you currently incorporate sensory-friendly strategies into your patient care routines? | | | | | |
| 4. How confident are you in your ability to identify signs of sensory overload or sensory-seeking behaviors in patients with autism? | | | | | |
| 5. How well do you perceive your current communication skills with patients who have difficulty expressing sensory-related issues? | | | | | |
| 6. How familiar are you with the different sensory tools and techniques used for individuals with autism? | | | | | |
| 7. How well do you understand the individual variations in sensory preferences and sensitivities among patients with autism? | | | | | |
| 8. How much do you believe that a sensory-friendly environment can reduce anxiety and challenging behaviors in patients with autism? | | | | | |

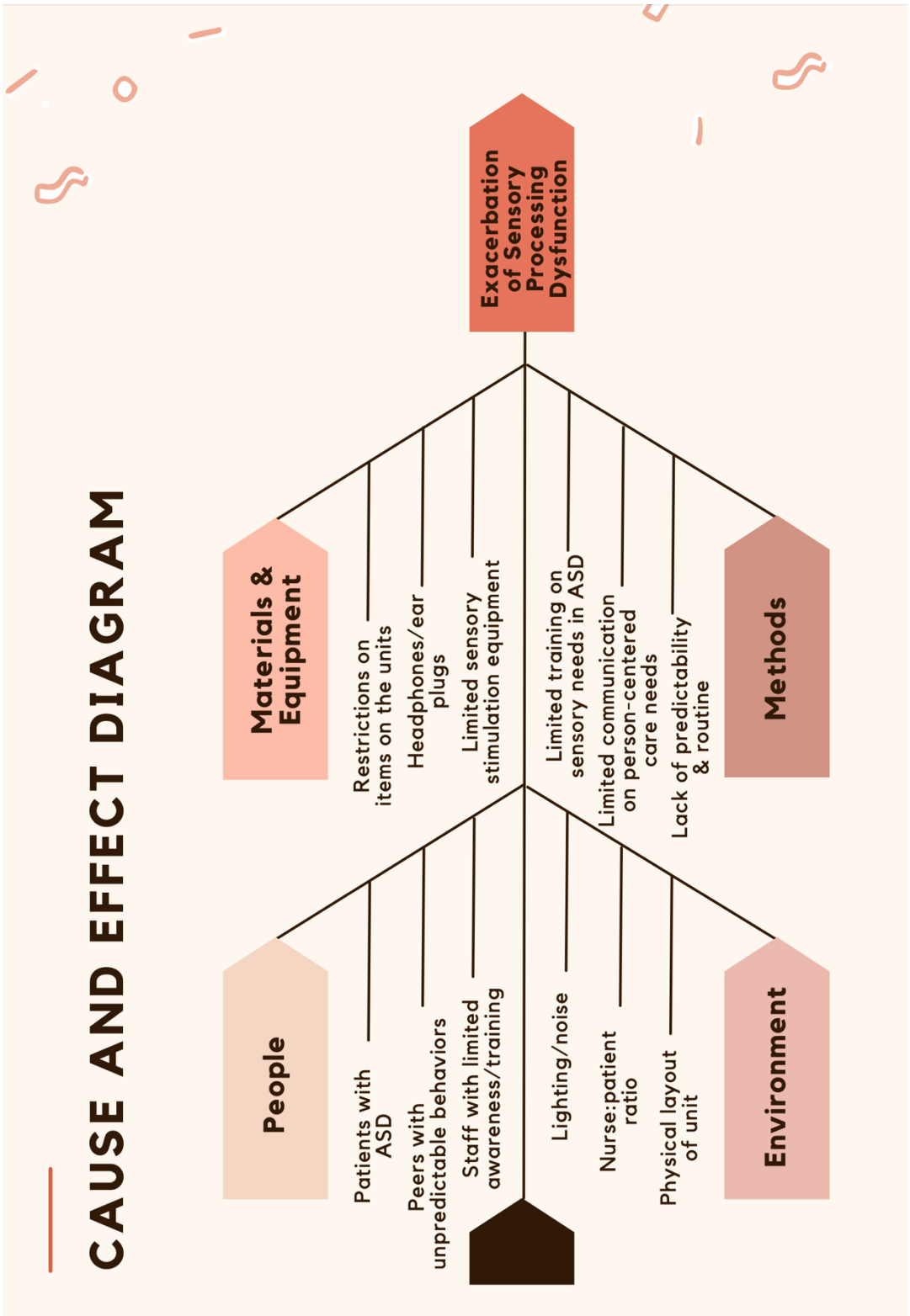
## Post-Training Questions:

*On a scale of 1 to 5...*

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. How comfortable are you with providing care to patients with autism? | | | | | |
| 2. How familiar are you with sensory processing difficulties commonly experienced by individuals with autism? | | | | | |
| 3. How often do you currently incorporate sensory-friendly strategies into your patient care routines? | | | | | |
| 4. How confident are you in your ability to identify signs of sensory overload or sensory-seeking behaviors in patients with autism? | | | | | |
| 5. How well do you perceive your current communication skills with patients who have difficulty expressing sensory-related issues? | | | | | |
| 6. How familiar are you with the different sensory tools and techniques used for individuals with autism? | | | | | |
| 7. How well do you understand the individual variations in sensory preferences and sensitivities among patients with autism? | | | | | |
| 8. How much do you believe that a sensory-friendly environment can reduce anxiety and challenging behaviors in patients with autism? | | | | | |

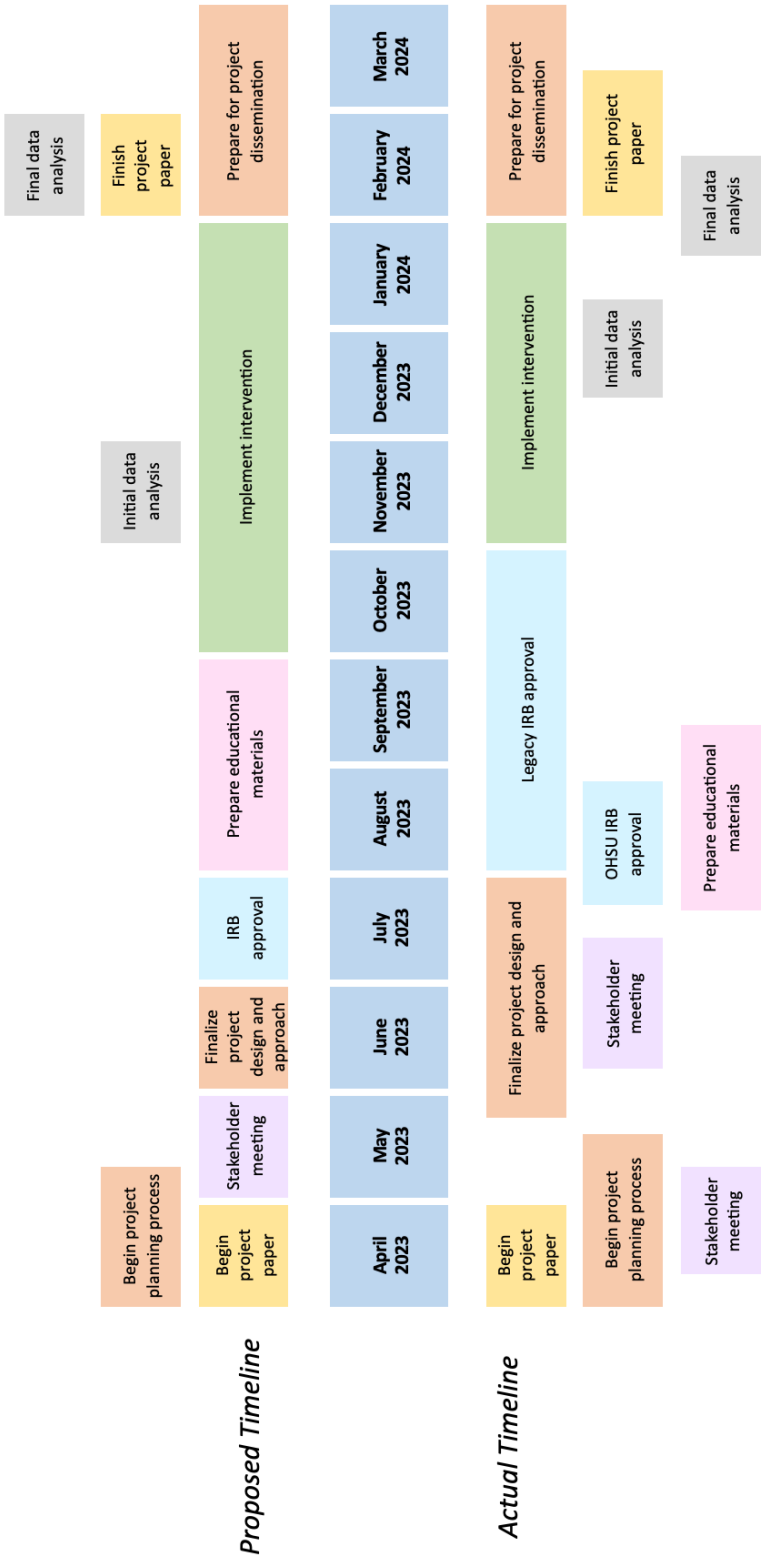
**Appendix B**

Cause and Effect Diagram



**Appendix C**

Proposed vs. Actual Project Timeline



**Appendix D**

OHSU IRB Determination

OREGON HEALTH & SCIENCE UNIVERSITY

IRB MEMO

Research Integrity Office
3181 SW Sam Jackson Park Road - L106RI
Portland, OR 97239-3098
(503)494-7887 irb@ohsu.edu

NOT HUMAN RESEARCH

August 9, 2023

Dear Investigator:

On 8/9/2023, the IRB reviewed the following submission:

| | |
|---|---|
| Title of Study: | Improving Sensory-Based Care for Adults with Autism on the Inpatient Psychiatric Unit: A Quality Improvement Project |
| Investigator: | Andrea Hughes |
| IRB ID: | STUDY00026139 |
| Funding: | None |

The IRB determined that the proposed activity is not research involving human subjects. IRB review and approval is not required.

Certain changes to the research plan may affect this determination. Contact the IRB Office if your project changes and you have questions regarding the need for IRB oversight.

If this project involves the collection, use, or disclosure of Protected Health Information (PHI), you must comply with all applicable requirements under HIPAA. See the HIPAA and Research website and the Information Privacy and Security website for more information.

Sincerely,

The OHSU IRB Office

**Appendix E**

Legacy IRB Determination

LEGACY HEALTH | LEGACY RESEARCH INSTITUTE

Legacy Research Institute
1225 N.E. Second Ave.
Portland, OR 97232
503.413.2491 *phone*
503.413.4942 *fax*

# LEGACY HEALTH INSTITUTIONAL REVIEW BOARD

## NOTICE OF IRB ACTION

| | |
|---|---|
| Protocol: *Improving Sensory-Based Care for Adults with Autism on the Inpatient Psychiatric Unit* | |
| Principal Investigator: James Gray, DNP | Board Action: NOT HUMAN SUBJECT RESEARCH DETERMINATION |
| Submission type/date: New QI Study at Unity 10/12/23 | Date of Board Action: 10-17-23 |
| Sponsor: None | Study Risk Level: Minimal Risk |
| Site(s): Unity | Jurisdiction: OHRP/OCR |
| IRB Tracking Number: 2134<br><br>Reviewing IRB: Administrative/Exempt | |

## SUBMITTED DOCUMENTS REVIEWED

- ✓ Legacy IRB Form QI:
  - Graduate Student Project Guidelines
  - LHS IRB Form
- ✓ Investigator's CV:
  - Gray.James Resume
- ✓ Study Staff Training Information: CITI:
  - CITI (GCP)
  - CITI (HSR)
  - CITI (RCR)
- ✓ Subject Materials:
  - Pre-Post Questions
- ✓ Other:
  - DNP Project Proposal
  - DNP Project
  - IRB Determination

## REVIEW

| REVIEW TYPE | IRB ACTION |
|---|---|
| ✓ Initial Review<br>✓ Exemption Review<br>✓ QI Review | ✓ Exempt QI - Not Human Subject Research Determination |

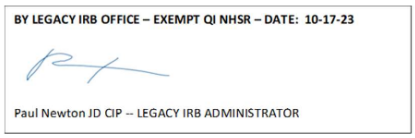
## ADDITIONAL FINDINGS AND REQUIREMENTS FOR THIS STUDY

- ✓ The study is minimal risk Exempt QI.
- ✓ Legacy site management must be apprised of the study and the Board's action.

## APPROVAL IS GRANTED SUBJECT TO THE FOLLOWING

1. Conduct the research in accordance with the protocol, applicable laws and regulations, Legacy policies, and the principles of research ethics as set forth in the Belmont Report.
2. Unless consent has been waived, conduct the informed consent process without coercion or undue influence, and provide the potential subject sufficient opportunity to consider whether or not to participate.
3. Use only the most current consent form bearing the Legacy Health IRB "APPROVED" stamp.
4. Provide non-English speaking subjects with a certified translation of the approved consent form in the subject's first language. The translation must be approved by Legacy Health IRB.
5. Obtain pre-approval from Legacy IRB for changes in research.
6. Obtain pre-approval from Legacy IRB for planned deviations and changes in research activity.
7. Report all deviations, violations, adverse events in a timely manner and submit corrective actions.
8. Report all unanticipated problems in a timely manner and submit plans to resolve such problems.
9. Provide reports to Legacy IRB concerning the progress of the research, when requested.
10. Ensure that prior to performing study-related duties, each member of the research study team has had training in the protection of human subjects e.g., CITI, appropriate to the processes required in the approved protocol.
11. Retain all IRB documentation at study site.

## IRB ACTION SIGNATURE




**10-17-23**

**Paul Newton JD CIP**
**Legacy IRB Administrator**

**DATE**

## IRB CONTACT

If you have questions or concerns or wish to ask the IRB to reconsider its action, please contact **Paul Newton, JD, CIP, Research Regulatory Specialist Sr.** at

## IRB INFORMATION

Legacy IRB: FWA00001280
REG: #1 (Good Sam): 00000677
REG: #2 (Emanuel): 00000678
LRI IRB (LRI): 00011999

## END OF IRB ACTION DOCUMENT

## Appendix F

Letter of Site Support

### Letter of Support from Clinical Agency

Date: 8/14/2023

Dear James Gray,

This letter confirms that I, Karina Stone allow James Gray (OHSU Doctor of Nursing Practice Student) access to complete his DNP Final Project at our clinical site. The project will take place from approximately October 2023 to March 2024. This letter summarizes the core elements of the project proposal, already reviewed by the DNP Project Preceptor:

**Project Site(s):**
Unity Center for Behavioral Health, 1225 NE 2nd Ave, Portland OR 97232

**Project Plan:**
Psychiatric hospital environments are substantially challenging for individuals with autism spectrum disorder (ASD). Sensory processing dysfunction is a common feature of ASD and refers to difficulties in processing and responding to sensory information in the environment. Many individuals with ASD are unable to integrate multiple sensory inputs, leading to sensory overload or sensory under-responsiveness; these states can be distressing for those affected, can impede their ability to navigate the world around them, and present as atypical behaviors or affective responses to the observer. These challenges result in a variety of behavioral symptoms, including avoidance of certain environments or activities, performing repetitive behaviors, difficulties with social interaction, and even anxiety or aggression. The institute for healthcare improvement model, in conjunction with transformational learning theory, will be successful in reaching our aim, as it has demonstrated efficacy in affecting change in healthcare systems. This project aims to improve the hospital's accommodation of sensory processing dysfunction in patients with ASD and co-occurring mental health disorders. By February 2024, nursing staff will have improved knowledge of sensory processing dysfunction and relevant nursing interventions for patients with ASD and co-occurring mental health disorders. Scores on questionnaires will demonstrate a twenty percent increase in both knowledge and comfort.

To improve the accommodation of sensory processing dysfunction in the adult inpatient psychiatry units at UCBH, we will hold in-service education sessions for nursing staff, including staff nurses, charge nurses, and behavioral health therapists, on multiple dates across the four participating units. The educational sessions will include the following elements: clear learning objectives from the session, an overview of the neurobiological changes in ASD, a review of the clinical outcomes of unmet sensory needs and applicability to UCBH, a discussion of relevant sensory-based nursing interventions, and a discussion of the implications of interventions on nursing care for this population. During the implementation of the educational sessions, all nursing staff on the study units will be invited to participate in a pre-intervention survey to assess the knowledge and comfort of nursing staff in providing sensory-based interventions. At the end of the study, nursing staff will be invited to participate in a post-intervention survey to evaluate the educational sessions' effectiveness and ascertain the changes in their practice because of the education sessions. The surveys will be designed as anonymous, online, Qualtrics surveys and include Likert-scale and multiple-choice questions with optional free-text responses, which will allow for mixed-methods interpretation of the data.

During the project implementation and evaluation, James Gray will provide regular updates and communicate any necessary changes to the DNP Project Preceptor. Our organization looks forward to working with this student to complete their DNP project. If we have any concerns related to this project, we will contact James Gray and Andrea Hughes (student's DNP Project Chairperson).

Regards,

Karina Stone, MD
Adult Inpatient Medical Director
Unity Center for Behavioral Health
karstone@lhs.org