Education to Reduce Use of Mechanical Restraints in an Inpatient Psychiatric Hospital

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Abstract

Background: Evidence suggests that there is extensive use of mechanical restraints in inpatient psychiatric hospitals in the United States. This practice has adverse implications on patients, nurses and mental health professionals, and the overall organization. Reliance on other strategies apart from mechanical restraints is plausible and can increase the quality of treatment. Diverse interventions such as capitalizing on service user-centered crisis resolution tools or plans, relying on debriefings following mechanical restraint experiences, imparting knowledge to staff in de-escalation techniques, improving data sharing and quality reporting, and creating a crisis response team have been suggested.

Purpose: This quality improvement project was designed to explore the effectiveness of education and training in enhancing the knowledge and awareness of healthcare professionals in an inpatient psychiatric hospital in reducing the use of mechanical restraints.

Methods: Fulltime and per diem registered nurses, mental health technicians (MHTs), ARNPs, and the MDs working in two acute psychiatric units in an impatient psychiatric hospital took part in an educational session on risk assessment, critical thinking, and decision-making skills in mechanical restraint use. A pre-test was administered to participants prior to educational sessions to measure their knowledge and awareness of restraint use reduction and a post-test was administered four to six weeks later to evaluate the impact of the intervention provided.

Results: Education and training can significantly improve healthcare professionals' knowledge and awareness in reducing the use of mechanical restraints. The average pre-test score of 1.81 increased to an average post-test score of 4.47, indicating a substantial improvement in knowledge and awareness.

Conclusion: The findings of this quality improvement project demonstrate the effectiveness of education and training of healthcare professionals in helping increase their knowledge and awareness of strategies for reducing the use of mechanical restraints in the inpatient psychiatric hospital. These findings are consistent with earlier research and highlight the importance of ongoing education, evaluation, and monitoring in improving patient care and reducing the use of mechanical restraints.

Keywords: Mechanical restraints, psychiatry, and psychiatric hospitals.

Introduction

There is widespread reliance on mechanical restraints in inpatient psychiatric hospitals (Thomann et al., 2021; Ye et al., 2019). Mechanical restraints use has been associated with harmful outcomes as they heighten patient violence and aggressiveness and hinder the creation of therapeutics relationship between patients and nursing professionals (De Berardis et al., 2020). These restraints are also associated with feelings of abandonment, rejection, isolation, and frustration among psychiatric patients, and efforts should be made to reduce their use (Hawsawi et al., 2020). Alternatives to restraints must offer safe, quality care outcomes, improve nurse-client relationships, and enhance patient satisfaction (Adekanmi, 2021). The purpose of this project is to explore the effectiveness of education and training in enhancing knowledge and awareness of healthcare professionals in an inpatient psychiatric hospital in reducing the use of mechanical restraints.

Background

Restraint procedures are used in diverse environments when delivering care patients who show clinical manifestations of serious emotional and behavioral dysregulation and psychopathology. Health professionals mainly rely on physical intervention in cases where there are risks of danger to patient or other individuals who the patient can access. Restraints have been used in inpatient units and other treatment centers dedicated to the provision of quality treatment to patients (Väkiparta et al., 2019). However, policymakers have not created standardized guidelines on restraint use. The implementation of restraints tends to differ based on the subjective viewpoints of health practitioners involved in the treatment process (Muir-Cochrane et al., 2018).

Some initiatives that capitalize on mechanical restraints assert their importance in ensuring patient and staff safety during the management of mental health crises. However, extant evidence continues to challenge these views (Al-Maraira & Hayajneh, 2019). In particular, scholars and practitioners assert that these interventions can have detrimental impacts on the safety of patients and staff and might even be responsible for injury.

A strong debate also prevails regarding the function of these devices and their need. For instance, nursing professionals often express feelings of intense dislike for these devices and discomfort relying on them to manage patient behavior (Gerace et al., 2019; Muir-Cochrane et al., 2018). Nonetheless, these practitioners still use them to ensure safety in the facility and to fulfill their professional duties. Relatively few scholars assert the need to use mechanical restraints and mainly suggest the need to rely on them as an expedient adopted only in desperation (Hvidhjelm et al., 2022).

Even though there is a strong debate about the necessity and efficacy of mechanical restraints, health facilities continue to use this intervention. According to Newton-Howes and colleagues (2020), about 0.72 restraints are performed per day per 1 million United States citizens. However, there is a paucity of information on the use of tools in inpatient psychiatric hospitals to help nurses, mental health technicians, and providers decide when to restrain a patient (Perers et al., 2021). In many inpatient psychiatric hospitals, patients are often restrained for their safety and that of others. Oftentimes, physical and psychological complications arise for the patient.

This project introduced evidence-based strategies that reduce the use of mechanical restraints in inpatient psychiatric hospitals by educating hospital staff on risk assessment, critical-thinking, and decision-making skills in physical restraint use. It is significant to nursing,

patients, healthcare staff, and the organization. Specifically, patients might benefit since increased knowledge could decrease the likelihood of using mechanical restraints, thereby addressing the risk of adverse outcomes associated with this intervention (Muir-Cochrane et al., 2018; Reitan et al., 2018).

Mechanical restraints can contribute to multiple harmful psychological impacts. For instance, they often increase patients' violence and aggressiveness and act as a barrier to the creation of therapeutic relationship between patients and healthcare professionals (Fernández-Costa et al., 2020). The use of mechanical restraints is associated with feelings of abandonment, rejection, isolation, and frustration among psychiatric patients (Hawsawi et al., 2020). Furthermore, these interventions can cause significant physical and (sometimes) psychological implications on clients and health professionals (Vedana et al., 2018).

Some scholars have explored the short-term impacts of restraint use on staff. Evidence suggests that staff usually show strong emotional and psychological reactions to the use of these tools, as manifested by conflicted feeling, fear, psychological suffering, anxious feelings, frustration, and anger (Hawsawi et al., 2020; Tingleff et al., 2019). There is a paucity of knowledge about the long-term impacts of these reactions. Nonetheless, it is particularly important to introduce proper measures to address the needs of clients, health facilities, and members of the workforce by striving to minimize restraint use and introducing appropriate policies and processes to promote the wellbeing and safety of all those involved.

Psychiatric hospitals can experience negative outcomes when they rely heavily on restraints. Thus, insight into this subject, the impact on staff, and the most effective means of reducing restraint use has a potential to contribute to positive outcomes for health professionals, clients, and psychiatric hospitals (Manzano-Bort et al., 2021). Investigating the mental health

impact and possible interventions of mechanical restraint use, similar to dangerous dimensions of police, military, and first responders, on mental health staff would, would help improve mitigating interventions (Arble et al., 2018). Nonetheless, educational interventions are some of the strategies that may be used to reduce the use of mechanical restraints.

Problem Statement

Lack of clinician (registered nurses, technician, behavioral specialists) education on the risk assessment and prevention of escalating or violent behaviors for patients result in unnecessary and potentially harmful mechanical restraint use.

Organizational "Gap" Analysis of Project Site

Two wards at the project site have the most mechanical restraints use in the hospital. Extensive reliance on mechanical restraints to foster patient safety poses negative impacts on patients and staff (Gerace et al., 2019; Muir-Cochrane et al., 2018; Vedana et al., 2018). To compound matters, the institution has not implemented consistent measures to decide the need for mechanical restraints. Furthermore, a protocol has not been introduced to establish evidence-based alternatives to this intervention. Based on these concerns, it is important to consider educating healthcare professionals to enhance their knowledge and awareness since this may reduce the use of restraints. It was expected that increased knowledge of the alternatives to mechanical restraints would decrease their use, thereby helping address the risks of injuries, lessening the demand for many safety assistants, improving treatment outcomes, strengthening staff-client relationships, and enhancing patient satisfaction.

Review of the Literature

Search

The literature review was conducted to help identify peer-reviewed research studies on the identified issues. The search for research articles was done using the Health Database, Cochrane Library, PsycInfo, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Medline, and Web of Science databases. The key terms used, in different combinations, were “mechanical restraints”, “psychiatry”, and “psychiatric hospitals”. Furthermore, a manual search was performed on the reference lists of the articles retrieved from the selected databases to identify additional articles relevant to the review purpose. Eleven articles were retrieved from Health Database, four from Cochrane Library, nine from PsycInfo, eight from CINAHL, 11 from Medline, and seven from Web of Science databases.

Inclusion criteria considered articles published between 2014 and 2021, specifically, only articles in English and in peer-reviewed journals were included in this review. Studies that focused on interventions or programs that could lessen the reliance on mechanical restraints were included. However, articles characterized by low scientific evidence, case series, and opinion studies were excluded. No restrictions were made concerning the type of mental illnesses affecting the patients considered in the included studies due to the dearth of research on the phenomenon of interest.

The initial screening led to the retrieval of 99 articles. After considering titles and abstracts, articles that did not focus on the review purpose were excluded. Fifty-five studies were retained after excluding duplicate research. After careful assessment, 17 studies that fulfilled the previously created inclusion criteria were chosen. Two articles were not included since they exhibited low quality of evidence. Subsequently, 15 articles that fulfilled the quality criteria were

included in this literature review. The articles included in this review were conducted in different parts of the world, including the United States, the United Kingdom, China, Switzerland, Norway, Sweden, Italy, Denmark, Australia, and Austria and included both men and women participants.

Results of literature search

All sources included in this review provided valuable information about alternatives to mechanical restraints in inpatient psychiatric health facilities. The central purposes of the articles included exploring the views of participants concerning mechanical restraint use (De Berardis et al., 2020; Kinner et al., 2017; Lanthén et al., 2015; Thomann et al., 2021; Walker & Tulloch, 2021; Ye et al., 2019); to reduce reliance on mechanical restraints (Adekanmi, 2021; Allen et al., 2019; Newton-Howes et al., 2020; Perers et al., 2021; Stewart et al., 2020), and to investigate factors that influence the reliance on seclusion and mechanical and pharmacological restraints (Allen et al., 2019; Barnett, 2018; Reitan et al., 2018). The goals of two studies included in this review were unique. Specifically, Visaggio and colleagues (2018) investigated the efficacy and safety of the restraint chair, whereas Danielsen and colleagues (2019) assessed whether it was plausible to predict the use of mechanical restraints within three days of hospitalization by relying on health data obtained at admission.

Three longitudinal studies were identified (Barnett, 2018; Reitan et al., 2018; Thomann et al., 2021) and one quality improvement project that was based on data from three hospitals in the northeastern United States (Visaggio et al., 2018). The participants in 14 studies were adults, while the subjects in the study conducted by Perers and colleagues (2021) were children and adolescents. Barnett (2018) and Visaggio (2018) shared information about the units under

consideration (25 and 98 beds, respectively), whereas Lanthén (2015) described the number of persons benefitting from care on each unit during their study.

Diverse alternatives to mechanical restraints were reported in all selected studies. Six studies capitalized on service user-centered crisis resolution tools or plans (Allen et al., 2019; Perers et al., 2021; Reitan et al., 2018; Stewart et al., 2020; Walker & Tulloch, 2021; Ye et al., 2019), 4 on debriefings following mechanical restraint experiences (Allen et al., 2019; De Berardis et al., 2020; Lanthén et al., 2015; Perers et al., 2021), 13 on imparting knowledge and skills to staff in de-escalation techniques (Adekanmi, 2021; Allen et al., 2019; Barnett, 2018; Danielsen et al., 2019; De Berardis et al., 2020; Kinner et al., 2017; Lanthén et al., 2015; Newton-Howes et al., 2020; Perers et al., 2021; Stewart et al., 2020; Thomann et al., 2021; Walker & Tulloch, 2021; Ye et al., 2019), and 3 focused on enhancing data sharing and quality reporting (Adekanmi, 2021; Perers et al., 2021; Stewart et al., 2020).

Researchers found the most effective interventions to prevent restraint included behavioral treatment, professional training, and modification of antecedent conditions (Barnett, 2018 & Perers et al., 2021). Professional training involves imparting skills and knowledge to institutional staff as a means of lessening the use of mechanical restraint, a rather effective technique based on the research conducted by several scholars (Adekanmi, 2021 & Allen et al., 2019).

Assessing the behavioral competencies of practitioners offering care is another evidence-based alternative for mechanical restraints (Lanthén et al., 2015 & Stewart et al., 2020). The importance of behavioral observations cannot be over-emphasized since it provides pertinent information to the licensed medical practitioners and ward staff about the factors that contribute to violence (Walker & Tulloch, 2021). Gaining insight into patient triggers offers an invaluable

opportunity to manage violence or aggression (Kinner et al., 2017). Evidence shows that mutual regard, verbal dialogue, and multi-practitioner agreements involving people seeking care and nursing professionals are effective strategies (Lanthén et al., 2015).

The strength of the people offering care to psychiatric patients and the presence of or interactions with licensed medical practitioners, senior nursing professionals, and other persons in authority play a critical role in lessening the violence without using mechanical restraint (Perers et al., 2021). Additionally, multi-practitioner agreements that involve patients in the delivery of care foster collaboration and reduce violence. These practice agreements often explain the rationale for mechanical restraint, challenges in psychiatric facilities, and provide medication education (Kinner et al., 2017 & Thomann et al., 2021). More importantly, nursing interventions such as the availability of adequate 24-hour nurse staffing and regular discussions with the patients help address the risk of frequent acts of aggression and strengthen their engagement (Perers et al., 2021).

Evidence also suggests that improved leadership can help reduce the need for mechanical restraints (Ye et al., 2019). For instance, it is important to cultivate practices that are appropriate for establishing safe environments, such as offering relevant patient care and establishing meaningful interactions with them, considering the flow of activities within the inpatient care units, and understanding patient behaviors (Barnett, 2018 & Stewart et al., 2020). Furthermore, it is essential to create professional development programs designed to promote a safe environment for de-escalation, establish the appropriate time to intervene, and foster engagement with persons benefitting from care (Allen et al., 2019).

Leaders should also respect patients and involve them as the beneficiaries of care and capitalize on data on restraint events for leadership, training, and clinical goals (Kinner et al.,

2017; Stewart et al., 2020). Another important strategy is to rely on progress charts or other assessment tools to help identify factors that elicit stress and to document early clinical manifestations of trauma (Stewart et al., 2020). The analysis can be leveraged to inform conversations during multidisciplinary staff meetings because of its potential to lessen the use of mechanical restraint without increasing the acts of aggression in psychiatric units.

Scholars also identify policy as an important strategy for minimizing the reliance on mechanical restraint in psychiatric hospitals. For instance, implementing policy change to discourage dependence on mechanical restraint strengthens support and promotes dedication to the initiative (Walker & Tulloch, 2021). The patients' loved ones and staff can engage in discussions intended to assess the circumstances associated with the use of mechanical restraint and the strategies for reducing their use. Leveraging such committees plays a significant role in lessening the need for mechanical restraint (Kinner et al., 2017). Additionally, a policy framework that requires nursing staff to possess knowledge and skills concerning de-escalation and crisis resolution is necessary (De Berardis et al., 2020; Perers et al., 2021; Ye et al., 2019).

A Discussion of the Findings

The studies included in this review provide a strong rationale for adopting alternatives to mechanical restraint. Mechanical restraints are mainly leveraged to lessen physical mobility. Many scholars and practitioners concur on the indications of capitalizing on mechanical restraints (Adekanmi, 2021; De Berardis et al., 2020; Newton-Howes et al., 2020; Reitan et al., 2018 & Thomann et al., 2021). However, mechanical restraint use poses clinical, legal, and ethical problems (Allen et al., 2019; Newton-Howes et al., 2020; Reitan et al., 2018; Ye et al., 2019). The studies reviewed provided alternative practices that are appropriate in psychiatric

hospitals. Some alternative considerations include the need to individualize treatment, minimize pain, and regularize activities (Adekanmi, 2021; Perers et al., 2021; Stewart et al., 2020).

Articles included in this literature review were based on diverse research methods. The design heterogeneity made it difficult to create a scoring system to establish the quality of the articles associated with this review, representing a key limitation. Additionally, the authors did not necessarily focus on causality. It was challenging to identify the alternatives that were most instrumental in minimizing the reliance on mechanical restraints. Readers should construe the results and conclusions made from this review as trends instead of generalizable findings, based on the variations in the quality of articles and diverse participant attributes (especially in terms of age). Many studies were conducted in Europe, an issue that could also affect the generalizability. The failure to rely on a common definition of restraint might also affect the generalizability of the findings.

A key implication of this literature review for practice is that minimizing the reliance on restraints represents a plausible goal. Thus, healthcare professionals and other relevant stakeholders need to prioritize this goal. Nursing professionals can be actively involved in this goal through the adoption and ongoing study of evidence-based strategies for reduced restraint use.

Several solutions offered by the researchers are ready for translation to clinical practice. For instance, a viable intervention is to introduce verbal de-escalation as a way of preventing aggressive behavior and reducing the need for mechanical restraint (Barnett, 2018; Lanthén et al., 2015; Perers et al., 2021). Health professionals should utilize clear and concise language, maintain verbal binding agreements with service users, and avoid provoking patients during their engagement (Lanthén et al., 2015; Perers et al., 2021). They should also consider the feelings and

needs of service users by being responsive and attentive to the patients' input during conversation and providing them an opportunity to ventilate (Barnett, 2018; Lanthén et al., 2015).

The practitioners should also speak in a calm voice, practice active listening skills, and use appropriate non-verbal communication (Barnett, 2018). It is also essential to define the appropriate and inappropriate conduct and create a conducive environment that is not characterized by threats. It is also particularly critical to enhance crisis management systems, introduce professional development programs, engage in advocacy to address the demand for mechanical restraint, and rely on leadership support to foster reforms (Adekanmi, 2021; Allen et al., 2019; Barnett, 2018; Danielsen et al., 2019; De Berardis et al., 2020; Kinner et al., 2017; Lanthén et al., 2015; Newton-Howes et al., 2020; Perers et al., 2021; Reitan et al., 2018; Stewart et al., 2020; Thomann et al., 2021; Walker & Tulloch, 2021; Ye et al., 2019).

A key finding was that the reliance on other strategies apart from mechanical restraint is plausible and can increase the quality of treatment. Diverse interventions were identified, such as capitalizing on service user-centered crisis resolution tools or plans, relying on debriefings following mechanical restraint experiences, imparting knowledge and skills to staff in de-escalation techniques, improving data sharing and quality reporting, and creating a crisis response team (Adekanmi, 2021; Perers et al., 2021). The alternative modes of care can be particularly effective after introducing other techniques in the wards. One of the evidence-based strategies that was recognized by authors of the studies included in this literature review was the need to impart skills and knowledge to institutional staff as a means of lessening the use of mechanical restraint, a factor that provided a rationale for conducting this DNP project (Stewart et al., 2020). This literature review found that, in order to prioritize patient safety in inpatient

psychiatric treatment settings, minimizing restraint use is paramount, and several evidence-based strategies to meet that goal exist (Adekanmi, 2021; De Berardis et al., 2020; Lanthén et al., 2015; Perers et al., 2021; Reitan et al., 2018; Stewart et al., 2020; Thomann et al., 2021; Walker & Tulloch, 2021; Ye et al., 2019).

Evidence-Based Practice: Verification of Chosen Option

Based on the evidence identified from the existing literature, it was concluded that an educational intervention has promising evidence to enhance nurses' and providers' knowledge about physical restraint and potentially influence behavior related to physical restraint use (Adekanmi, 2021; Allen et al., 2019; De Berardis et al., 2020; Perers et al., 2021; Ye et al., 2019). Despite the identified adverse implications of physical restraint on patients and staff, it is evident that there is relatively little effort to ensure that healthcare professionals have the necessary knowledge to make meaningful decisions about how to reduce the extensive use of physical restraint. Thus, the educational intervention could be useful in addressing this challenge. Training sessions included in the literature encompass lectures, discussions, and video presentations and focus on delivering guideline information (Newton-Howes et al., 2020; Perers et al., 2021). Other scholars have adopted an interactive approach to educational meetings, mainly relying on patient simulation scenarios, practical exercises in small teams, and case study discussions, in which meetings usually differ in terms of frequency and duration, with some involving sessions taking half an hour and others involving multiple educational meetings over time (Cassidy et al., 2021).

Numerous studies suggest that imparting knowledge to healthcare professionals is associated with lower rates of mechanical restraint use (Adekanmi, 2021; Allen et al., 2019; Barnett, 2018; Danielsen et al., 2019; De Berardis et al., 2020; Lanthén et al., 2015; Stewart et

al., 2020; Walker & Tulloch, 2021). Knowledge of the deleterious effects of mechanical restraint is essential for reducing their use. It is believed that educational interventions can improve the appropriate utilization of restraint behaviors, attitudes, and knowledge. Overall, knowledge and awareness about alternatives to mechanical restraints shape health professionals' restraint use (Newton-Howes et al., 2020; Perers et al., 2021).

Nurse beliefs and knowledge could influence the use of physical restraint. Practitioners with adequate comprehension of the subject tend to rely on alternatives to restraints, consistent with the theory of planned behavior (Kinner et al., 2017; Thomann et al., 2021; Ye et al., 2019). The importance of educational interventions on restraint use is affirmed and emphasized by many scholars (Barnett, 2018; Stewart et al., 2020; Walker & Tulloch, 2021). Evidence suggests that appropriate education usually lessens the adoption and duration of physical restraint, supporting the need to implement proactive approaches to minimize reliance on restraint (Danielsen et al., 2019 % De Berardis et al., 2020). Restraint guidelines recognize that sick persons have the right to obtain treatment from trained and competent practitioners. Comprehensive knowledge of the implications of restraints on patients and staff, the need to ensure the dignity of people seeking medical care, and the prevention of adverse impacts of restraints requires training. Thus, it was essential to implement a quality improvement project to minimize the rates of use of physical restraint in psychiatric hospitals by focusing on risk assessment, critical thinking, and decision-making skills.

Theoretical Framework

The Tidal Model was the theoretical framework for this project. Phil Barker, a renowned Professor of Psychiatric Nursing in the UK, is credited with the creation of this theory (de Freitas et al., 2020). Barker established the concepts of this model following many years of scholarly

work on psychiatric nursing and the importance of nursing professionals in empowering patients suffering from mental distress. This model provides multidimensional concepts focusing on the delivery of quality mental health interventions. The biomedical conceptualization of mental issues is widely leveraged in mental health care (Salicru, 2020). Nonetheless, practitioners and scholars are keen on the potential for patient-centric and holistic means of providing psychosocial care (Aye et al., 2020). The Tidal Model is based on the precept that people, their friends, and loved ones require support to understand that the event under consideration (for example, admission) can be attributed to the challenges the patient and significant others have experienced in the past, instead of a mysterious medical issue the individuals requiring care have. Developing care based on this model means that healthcare professionals should respect the experience of patients and their families.

It encompasses four fundamental features. Firstly, nurses should ensure there is active collaboration with patients and their loved ones during the development and provision of medical interventions (Teixeira et al., 2018). Secondly, nursing professionals should empower their clients by focusing on the history and personal accounts of health and mental distress and disorders while creating and implementing care plans. Thirdly, nurses should collaborate with other members of the disciplinary team during the provision of care. Lastly, nursing professionals should address problems of living and advocate for mental health by leveraging narrative-centered care (Ramage et al., 2018). The practitioner plays two distinct functions: delivering care as he or she relates with patients and their significant others and serving as important members of the intervention team. The Tidal Model offers an appropriate lens for nursing to adopt the necessary actions while helping a patient showing symptoms of mental distress and guidance on the actions that can enable the patient to live based on their previous life

course (Turgut & Çam, 2020). An important precept associated with this model is that sick members of society can overcome their experience of psychological suffering and mental breakdown, which constituted the basis for this project.

The Tidal Model is based on three key aspects of care: the world, the self, and the others' dimensions. Firstly, a central tenet of the world dimension is that nurses should understand their patients (Barker, 2001a). It includes the importance of the clients' traumatic experiences, psychological suffering, and health issues validated by others. Nursing professionals can perform the patient-centered nursing assessment to detail the experiences that patients deem significant, using the clients' words. Secondly, the self-dimension is founded on the belief that patients should be provided with emotional and physical security (Teixeira et al., 2018). Nurses can seek to understand the specific help that the patient suffering from mental health issues should receive to achieve physical safety and emotional security. Subsequently, these practitioners can establish patient-centered security or treatment plan intended to ameliorate risk to themselves and others (Vella et al., 2017). Lastly, the others' dimension focuses on the specific support patients should be offered by different agencies and people to enable them to adopt a normal life. An important aspect is the need to consider the required care and job, finance, housing, and leisure.

Some scholars have used the Tidal Model to guide efforts to lessen restraint use. For instance, Barker (2001b) leveraged this theoretical lens in a mental health facility to establish its effectiveness. The scholars effectively implemented the program and professionals began relying on the introduced mechanism of delivering patient care. Gordon and colleagues (2005) found that leveraging the concepts of the Tidal Model within a psychiatric facility contributed to a significant increase in nurse satisfaction and a considerable decline in harassment incidents, acts of aggression, and physical assaults. Based on the improvements in these practices, it can be

concluded that capitalizing on the principles of the Tidal Model has a potential to address the overreliance on restraints (Savaşan & Çam, 2017). Thus, capitalizing on the model could be useful in reducing restraints used. Ensuring that patients and loved ones take a fundamental role in the development of treatment plans and providing an opportunity for these persons to propose methods of minimizing the overreliance on restraints increases the likelihood of a reduction in restraints use, translating to increased safety and high quality of life for persons receiving care and staff.

Table 1

Tidal model competencies

Propositions	Competencies
1. Value the voice of the individual	Competency 1: "The practitioner demonstrates a capacity to listen actively to the person's story"
2. Respect the language of the story	Competency 4: "The practitioner helps the person express her/his understanding of particular experiences through use of personal stories, anecdotes, similes or metaphors"
3. Develop a genuine curiosity by recognizing the value of the person and the power of the story	Competency 5: "The practitioner shows interest in the person's story by asking for clarification of particular points, and asking for further examples or details"
4. Become the apprentice (learn from the individual in care)	Competency 8: "The practitioner helps the person identify specific problems of living and what might need to be done to address them"
5. Use the available toolkit	Competency 9: "The practitioner helps the person develop awareness of what works for or against them, in relation to specific problems of living"
6. Discover the strengths and personal wisdom of the individual	Competency 15: "The practitioner helps the person identify and develop awareness of personal strengths and weaknesses"
7. Work together to craft the step beyond	Competency 11: "The practitioner helps the person identify what kind of change would represent a step in the direction of resolving or moving away from a specific problem of living"
8. Give a gift of time (best use of available time)	Competency 13: "The practitioner helps the person develop their awareness that dedicated time is being given to addressing their specific needs"
9. Help the individual develop awareness of change	Competency 17: "The practitioner helps the person develop awareness of the subtlest of changes, in thoughts, feelings or action"
10. Be transparent about care by keeping the individual informed	Competency 19: "The practitioner aims to ensure that the person is aware, at all times, of the purpose of all processes of care"

Goals and Objectives

The main objective of this quality improvement project is the education of staff on methods to reduce rates of use of mechanical restraint in an adult inpatient psychiatric hospital. It

is expected that at the completion of the quality improvement efforts, the nurses and providers were more knowledgeable on methods to reduce use of restraint in the hospital.

Table 2

Project objectives and expected outcomes

Purpose	***Objective(s)***	***Outcome(s)***
-To educate nurses and providers on risk assessment, critical thinking and decision-making skills in physical restraint use.	*- Present ix (6) thirty-minute PowerPoint educational presentations during the month of October 2022 to nurses, Mental Health Technicians (MHT) and provider to educate them on risk assessment, critical-thinking and decision-making skills in physical restraint use.* *-Compare pre and post-test results to assess staffs' knowledge in risk assessment, critical-thinking and decision-making skills in physical restraint use.*	*-At least 80% of the targeted staff will attend one of the educational presentations.* *- At least 80% of the staff will demonstrate an improvement in knowledge (as evidenced by the posttest).*

Methods

Project Site and Population

This quality improvement project was implemented in two wards of an inpatient psychiatric hospital located near Olympia, the capital of the State of Washington. The U.S Census Bureau estimates that there were 53,526 people living in in the area as of April 1, 2021. According to the estimates, 53% (28,369) were females, 22.6% were persons under the age of 18 years, and 16.5% were people 65 years and over.

The inpatient psychiatric hospital, the site of this quality improvement project, is a 94-bed capacity facility that provides specialized psychiatric inpatient and intensive outpatient treatment for adolescents and adults. The hospital has 9 wards: one ward (14 beds) is reserved for adolescents (13-17 years), two wards for patients undergoing substance withdrawal management, one ward for female psychiatric patients only, and the rest for general adult psychiatric patients.

The setting of this project (Ward 2AE and 2AW) was ideal because of the nature of the patients admitted here and the frequency of seclusion and mechanical restraints use carried out in these wards. In addition, the wards have more permanent staff including one psychiatrist (MD), two fulltime nurse practitioners (PMHNPs), eight fulltime and several per diem registered nurses (RN), eight fulltime and several per diem mental health technicians (MHTs), and two fulltime and two per diem therapists. Like the rest of the hospital, the wards operate 24 hours a day and are staffed with one RN and two MHTs who work 12-hour shifts that start at 7 am and end at 7.30 pm.

Patients admitted to the two wards are mostly acute (psychiatric ICU) and are either discharged within 1-2 weeks (7-14 days) or transition to long term care (90-180 days), depending

on the progression of their illness. Most of the patients are admitted for psychotic disorders such as schizophrenia, schizoaffective disorder, schizophreniform disorder, brief psychotic disorder, delusional disorder, substance-induced psychotic disorder, and psychotic disorder due to a medical condition. A small number of the patients are admitted due to depression, anxiety, substance use, alcohol induced neurocognitive disorders among a host of others. The patient population is made up of people from various cultural backgrounds and beliefs. Services provided in this site include medication management, psychiatric evaluation, psychotherapy, educational groups, and crisis intervention. Staff, specifically social workers, and discharge planners, also coordinate patient discharge and referrals for specialized care including residential services and extended alcohol use treatment.

Recruitment of Participants

To recruit potential participants, posters were placed in the staff breakroom, in the cafeteria, and on the main noticeboard where staff clock-in. In additions, fliers were distributed to staff with details of the intervention, approximately one month prior to the intervention. The DNP student was available in the morning and evening shift huddles, during the same week, and met with staff to support, inform, and answer questions about the project.

Providers (APRNs and MDs) were approached individually in their offices. During the recruitment session, potential participants were informed about the respect for their privacy, and that participation in the educational exercise was voluntary. To this end, the project was introduced to potential participants in such a way that it allowed adequate time and the ability to freely consider whether or not to take part. The DNP student made sure that there was no undue pressure emanating from the timing of the request, who made the request, or any inducements to participate in the project. The DNP student ensured that the information presented to the

potential participants during the recruitment session was accurate, clearly described the project, and was devoid of any misleading emphasis that would have made it excessively attractive.

Educational Intervention

A pretest was administered before the start of an educational presentation about proper use of restraints, alternatives, and the use of a restraint decision tool. Appendix B provides an outline of PowerPoint educational module. The education intervention involved six (6) thirty-minute PowerPoint educational presentations that were conducted in the hospital cafeteria on three days during 2nd week of the month of October 2022 in an inpatient psychiatric hospital. Participants who included an NP, nurses (RNs), and mental health technicians were provided with information on risk assessment, critical-thinking, and decision-making skills in physical restraint use. During the sessions, the DNP student explained to participants some of the adverse implications of restraint use such as physical harm during the application of restraints, increased patient violence and aggression, and that use of restraints often hinders the creation of a therapeutic relationship between patients and nursing professionals. Restraints have also been shown to lead to conflicted feeling, fear, psychological suffering, anxiety, frustration, and anger among staff. Performance of risk assessment before the application of restraints was also discussed as was decision-making skills.

Participants were encouraged to ensure that in the application of restraints, the rights of patients are not compromised, and where this cannot be avoided, restraints are employed while observing the ethical and legal requirements. Participating staff were introduced to Restraint Decision Wheel (Appendix D), a decision support tool that has been shown to help healthcare personnel decrease their use of restraints while maintaining patient's safety. The wheel is an evidenced-based decision-making tool in the form of a wheel made up of four concentric circles

(levels) and divided into three sections (Hevener et al., 2016; Hurlock-Chorosteckii & Kielb, 2006). The innermost circle represents the behavior level, the second inner circle is the device level, the third inner circle represents the independence level, and the outermost circle represents the restraint level. The three sections of the wheel represent levels of restraints which are: no restraint, the alternatives, and restraint. This tool is evidence-based and is based on the results of research and its validity, reliability and user friendliness have been tested (Hevener et al., 2016; Hurlock-Chorosteckii & Kielb, 2006).

Regarding critical thinking, the DNP student elaborated on the importance of considering the desires and values of the patient when making decisions related to the use of restraints. Participants were reminded the importance of sharing information about other alternatives to foster shared and meaningful decision-making. They must also describe the risks and benefits when planning to use restraints, while considering each patient's heterogeneity.

A post-test was administered between the fourth and the sixth weeks following the educational session. The assessment was designed to evaluate the influence of the educational session on staff's knowledge and awareness on use of strategies to reduce the use of restraints in the wards**.**

Measurement Instrument

In order to measure the outcomes of this DNP Project, the following measures were used: a pre-intervention test was administered to participants before the start of the educational intervention; and a post-intervention test was administered to the participating staff 4-6 weeks after the completion of the educational session. The pre-test and posttest were designed in the form of a self-report Likert survey questionnaire (see appendix A) which was administered to the

participants before the start of the educational sessions to collect baseline data on their knowledge and awareness on strategies to reduce use of restraints in the wards.

Data Collection Procedure and Analysis

This project was conducted between September 12, 2022, and November 11, 2022. Appendix C provides a summary of the project costs associated with the completion of this project. The DNP student was responsible for data collection, management, data entry, and the storage of data. The data collected were coded and keyed into SPSS software Version 29, which was also used for statistical analysis (International Business Machines Corporation, 2022). To protect the participants' privacy, the data were stored in a password encrypted laptop computer that was kept under key and lock while not in use. A pre-intervention survey was issued to fulltime and part-time registered nurses, mental health technicians, therapists, PMHNPs, and MDs working in unit 2AE and 2AW. Participants self-reported their awareness and knowledge on the use of a restraints. Six weeks after the completion of the education sessions, a post-intervention survey to assess the participants' self-reported gains was administered. It was expected that 80% of participants would complete the survey. Project participants were only identified through codes kept in a locked desk on both the pre-and post-intervention questionnaires.

Data obtained from the pre-test and the post-test was examined using a quantitative approach. Descriptive statistics were used evaluate participants' change in knowledge and awareness of restraint reduction by comparing their pre-and post- means and the percent change.

Ethical Consideration/Protection of Human Subjects

This DNP project was conducted after an ethical approval was obtained from the University of Massachusetts, Amherst. The DNP student conducted this project in such a way

that policies and standards of practice of the site were followed. Project participants were provided with adequate informed consent and their privacy and confidentiality were strictly protected. Electronic records, physical documents, and other participant data obtained were stored in password-protected, secured, and locked room and were retrievable by the DNP student.

Results

This section provides a detailed presentation of the project outcomes. This project targeted healthcare professionals who were offered pretests, training sessions, and posttests, respectively, with the central goal being identifying whether the education intervention would improve participants knowledge and awareness of mechanical restraint use reduction. The years of experience of the study subjects ranged from three year to ten years, and their ages fell between 24 and 62 years. There were twelve (12) healthcare professionals who participated in the study. All subjects who participated in the educational sessions took the post-test. They included five registered nurses (RNs), six mental health technicians (MHTs), and one nurse practitioner (PMHNP). This represented 80% participation level, thus met one of the project participation goals (Table 3).

Table 3

Participant roles

Role	Expected	Intervention group (N=12)
Registered Nurse	6	5
MHT	6	6
NP	2	1
MD	1	0
Total	15	12 (80%)

There were seven female and five male participants of which six were white non-Hispanic, four Black/African American, and two Asians (Table 4). The staff mix provided an opportunity to obtain diverse views from healthcare professionals based on the variations in the level of experience and education, thereby enhancing the reliability of the research.

Table 4

Demographic breakdown of participants

Demographic Variable		Intervention Group (N=12)
Gender	Male	5
	Female	7
Race	White non-Hispanic	6
	Black/African American	4
	Asian	2

Note: Demographic data of the intervention participants (n=12) including their races

Survey questions were presented in the form of a Likert scale and were scored according to the following criteria: Strongly agree - 5, Agree - 4, neither agree nor disagree (neutral) – 3, Disagree – 2, strongly disagree – 1. Pre- and post-intervention mean scores and their percent changes are presented below (table %) and graphed as shown (in figure 1). These results indicate that after the training, there was a significant change in the participants' knowledge and awareness of strategies to reduce restraints use.

Table 5

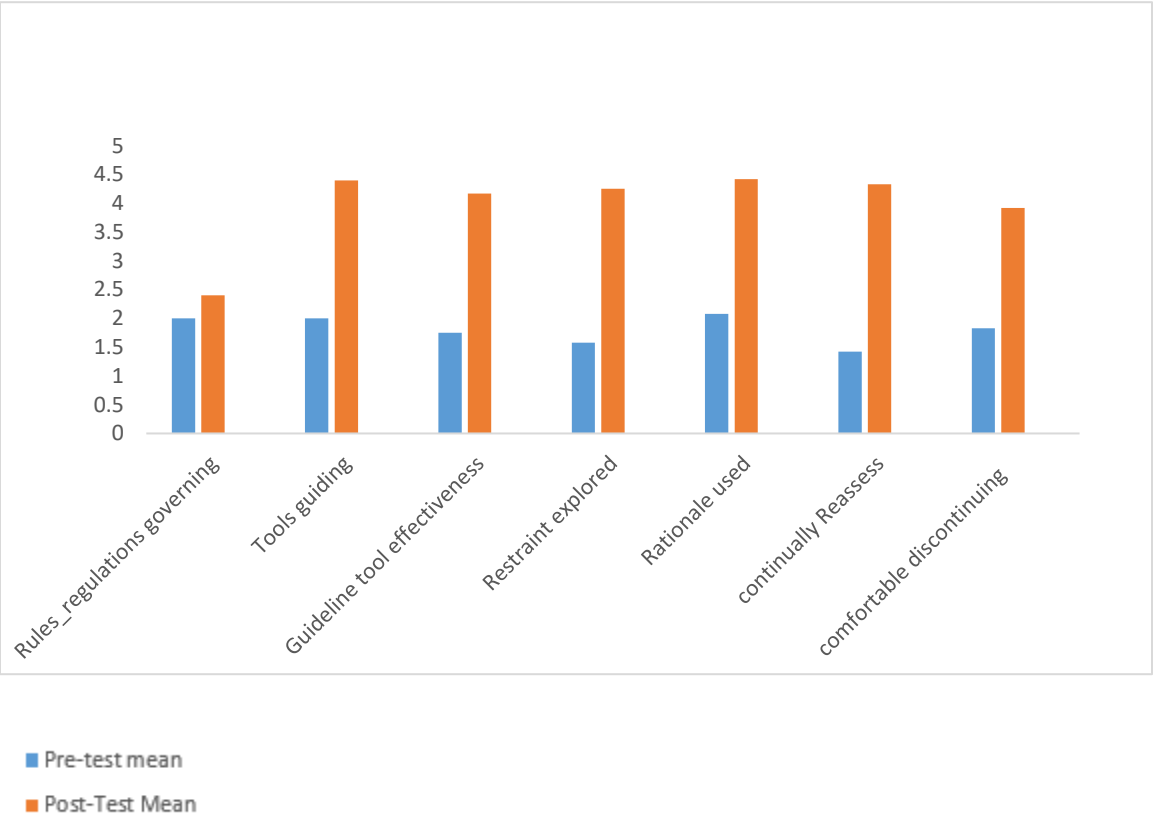
*Survey questions with pre and post test results and percent change**

	Survey Questions	Pre-score	Post Score	% change
1	There are rules and regulations governing mechanical restraints use in the hospital.	2.00	4.17	108.5%
2	There are tools that guide the use mechanical restraint on the unit	2.00	4.25	112.5%
3	The use of a guideline tool would be effective for clients in your unit.	1.75	4.33	147.4%
4	Alternatives to mechanical restraint use are explored before restraining clients in my unit.	1.58	4.42	179.7%
5	The rationale for use of mechanical restraints is explored before restraints are used.	2.08	4.92	136.5%
6	During my shift, I continually reassess my patients for trial of removal of mechanical restraints.	1.83	4.33	136.6%
7	I am comfortable discontinuing restraints from my clients without a provider's order.	1.43	4.92	244%

*5 point Likert scale, strongly agree - 5, Agree - 4, neither agree nor disagree (Neutral) – 3, Disagree – 2, strongly disagree – 1

Figure 1

Comparison of pre-and post-test results.



Discussion

Discussion of results

The findings of this quality improvement project suggest that training increases staffs' knowledge and awareness on strategies to reduce mechanical restraint use. This quality improvement project's findings offer valuable insights into the effect of education and training on the potential to foster knowledge and awareness acquisition. By imparting knowledge and awareness, the project helped professionals understand the detrimental effects of using mechanical restraints and how to avoid them. This, in turn, can enhance patient safety and well-

being, promote a better quality of care, and contribute to the overall improvement of the healthcare system.

One of the two goals of this study was for 80% of the fulltime and part-time clinical staff to complete the educational session. This goal was met as exactly 80% (n=12) of staff in the two wards attended educational session and completed post-intervention survey.

The other goal was for participants to demonstrate an improvement in knowledge and awareness in strategies to reduce the use of mechanical restraints in the inpatient psychiatric hospital. This goal was fully met as evidenced by the posttest mean scores which demonstrated an overall increase in knowledge and awareness of strategies to reduce mechanical restraint use. As demonstrated by the results (Table 5 and Figure 1), there was a notable increase in participants' knowledge and awareness. With regard to rules and regulations governing mechanical restraints use in the hospital, there was a 108.5% improvement; 'tools that guide the use mechanical restraints' saw a 112.5% increase;' and a "guideline tool would be effective for clients in your unit' saw a 147.4% increase. Other areas also recorded improvement with 'alternatives to mechanical restraint use are explored before restraining clients in my unit', 179.7%, 'rationale for use of mechanical restraints is explored before restraints are used' 136.5%, 'continually reassess my patients for trial of removal of mechanical restraints", 136.6%, and finally, 'comfortable discontinuing restraints from my clients without a provider's order', recorded the largest improvement with a 244% change.

The findings of this study are consistent with previous research studies that have demonstrated the effectiveness of education in improving knowledge in decreasing restraint use. For example, evidence from extant literature suggests that staff education and training programs were associated with a significant reduction in restraint use in psychiatric hospitals (Adekanmi,

2021; De Berardis et al., 2020; Newton-Howes et al., 2020; Reitan et al., 2018 & Thomann et al., 2021). Studies that evaluated the impact of an educational program on the use of restraints found that staff knowledge improved significantly, leading to a reduction in restraint use (Newton-Howes et al., 2020; Perers et al., 2021). The Restraint Decision Wheel used in this study is a decision-making tool that provides healthcare professionals with a structured approach to assessing the need for mechanical restraint use and identifying alternative strategies. The use of decision-making tools has been shown to be effective in reducing restraint use in psychiatric hospitals (Kinner et al., 2017; Thomann et al., 2021; Ye et al., 2019). It is important to note that reducing restraint use requires a multifaceted approach that includes not only education and training but also changes to organizational policies and practices (De Berardis et al., 2020; Perers et al., 2021; Ye et al., 2019). The findings suggest that ongoing evaluation and monitoring of restraint use, as well as the implementation of alternative strategies, are necessary to ensure sustained reductions in restraint use.

Based on the results of this quality improvement project, it is recommended that psychiatric hospitals consider training healthcare professionals on de-escalation techniques, crisis resolution, and crisis response, which can ultimately reduce the need for mechanical restraints. In addition, it is recommended that psychiatric hospitals improve data sharing and quality reporting to monitor the use of mechanical restraints and the effectiveness of alternative interventions. This practice can help to identify areas for improvement and guide the implementation of evidence-based interventions to reduce the use of mechanical restraints.

Facilitators and Barriers

Several facilitators and barriers related to this quality improvement project were identified, reflecting the complexity and multidimensionality of the implementation process. For

instance, a key strength of the project was the reliance on pretests to establish the staff's baseline knowledge on risk assessment, critical-thinking, and decision-making skills in mechanical restraint use, which not only allowed for the identification of knowledge gaps but also shaped the design and delivery of the educational sessions (Aykal et al., 2018). The pretests served as a crucial tool to assess the learning needs of staff, foster a more targeted and structured presentation of training, and enable continuous evaluation and feedback. In addition, conducting the quality improvement project within the scheduled timeframe promoted the recruitment of research subjects, which was critical to the success of the project. The project was able to tap into the motivation and enthusiasm of participants, who were keen to enhance their knowledge and involve other stakeholders in achieving the desired outcomes as a team.

However, the implementation of the project also faced several barriers and challenges that required careful consideration and strategic planning. For instance, the project relied on a small convenience sample of fulltime and per diem registered nurses, MHTs, ARNPs, and the MD working on two units, which may limit the generalizability and external validity of the study findings (Simpson et al., 2022). The study may have benefited from a more diverse and representative sample of staff from different wards and roles, which would have enhanced the generalizability and applicability of the results to a broader context. Moreover, the reliance on a finite number of educational modules affected the scope and depth of the initiative, as leveraging multiple modules would have led to a more comprehensive and robust evaluation of the study subjects' knowledge. A key challenge associated with this initiative encompassed limited resources and time to promote the evidence-based quality improvement project effectively, which highlights the need for sustained investment and support to ensure the long-term success and sustainability of the project.

Despite these challenges, the cost-benefit analysis of this quality improvement project shows a positive benefit-cost ratio, indicating that the project added value to the facility by increasing education, improving outcomes, and decreasing length of stay and costs (Gerace et al., 2019; Muir-Cochrane et al., 2018; Vedana et al., 2018). The project was able use existing resources and infrastructure, such as the employee training department that is already equipped with network ready PC's supporting software, servers, printers, cabling, and installation. Furthermore, the educational intervention program involved five nurses, six MHTs, and one provider over two days, and the costs for the project included the use of training department projectors, IT support personnel, and training materials (brochures and pamphlets), as shown in Appendix C.

Implication for practice and future recommendation

It is difficult to assign a monetary value to a health care outcome, but the desired outcome for this initiative was cost-effectiveness, which was achieved by increasing staff's knowledge and awareness in reducing the use of mechanical restraints in two wards. This initiative has multiple possible benefits, such as reducing the risks of injuries to patients and staff, lessening the demand for many safety needs as many staff usually respond to code grey (psychiatric emergency), improving treatment outcomes, strengthening staff-client relationships, and enhancing patient satisfaction (Adekanmi, 2021).

Future scholarly works can explore the use of other alternative interventions to reduce the use of mechanical restraints, such as crisis response teams, peer support programs, and patient-centered care approaches. Comparative studies can be conducted to determine the most effective and feasible interventions for reducing the use of mechanical restraints in psychiatric hospitals.

Conclusion

The safety of persons receiving medical care in psychiatric health facilities is paramount, especially based on the widespread reliance on mechanical restraints irrespective of their negative physical and psychological impacts. Mechanical restraint use is often responsible for harmful outcomes for patients, health care professionals, and health care organization. Thus, the purpose of this project was to introduce evidence-based strategies to reduce the use of mechanical restraints in inpatient psychiatric hospitals by educating hospital staff on risk assessment, critical-thinking, and decision-making skills in mechanical restraint use. The project was significant to nursing, patients, healthcare staff, and the organization. Indeed, evidence from the literature suggests that the reliance on other strategies besides mechanical restraint (for example, imparting knowledge to institutional staff to minimize the use of mechanical restraint) is plausible and can increase the quality of treatment, which informed the need for this DNP project. Overall, the findings of this quality improvement project demonstrate the effectiveness of education and training on evidence-based strategies in improving clinician knowledge and awareness about reduction of restraint use and alternatives. These findings are supported by previous research that highlights the importance of ongoing education, evaluation, and monitoring in improving patient care and reducing the use of mechanical restraints.

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Appendices

Appendix A: Pretest/Posttest Questions

Please rate the following on a scale from 1 to 5 “strongly disagree” to “strongly agree’

		Strongly disagree (1)	Disagree (2)	Neither Agree nor disagree (3)	Agree (4)	Strongly Agree (5)
1	There are rules and regulations governing mechanical restraints use in the hospital.					
2	There are tools that guide the use mechanical restraint on the unit					
3	The use of a guideline tool would be effective for clients in your unit.					
4	Alternatives to mechanical restraint use are explored before restraining clients in my unit.					
5	The rationale for use of mechanical restraints is explored before restraints are used.					

6	During my shift, I continually reassess my patients for trial of removal of mechanical restraints.					
7	I am comfortable discontinuing restraints from my clients without a provider's order.					

Appendix B: Outline of PowerPoint Educational Module

- Introduction
- Negative impacts of restraints
- Risk assessment
- The Restraint Decision Wheel
- Critical thinking
- Conclusion
- References

Appendix C: Project Costs

Direct Costs

The total direct cost for running the educational intervention is estimated to be zero dollars ($0) as there are facilitator's fees to be paid, no refreshments nor training materials (notebooks and pens) were provided. Additionally, the DNP student prepared the PowerPoint slides from his laptop, print pamphlets from home and borrowed the projector (for free) from the training department

Estimated Total Direct Costs= $0.00

Estimated Indirect Costs

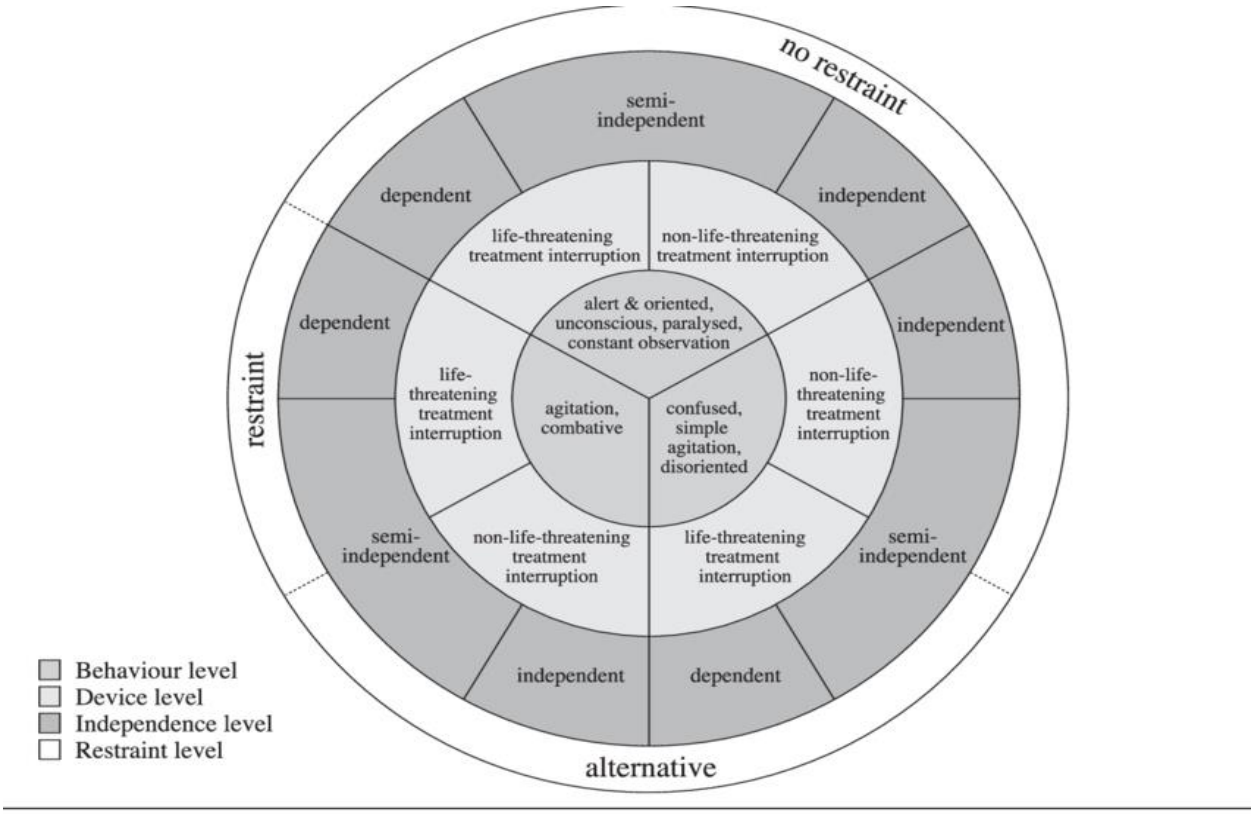
The indirect costs associated with this cost are:

- Lost productivity during the training session= approx. $600
- Other costs (rolling over costs after program, training organizers time away from other work-related activities, evaluation costs) =$1,000 (estimate)

Estimated Total Indirect Costs= $1,600

Estimated Total Expenses (Direct + Indirect) =$1,600

Appendix D: Restraint Decision Wheel



Appendix E: Letter of Support

South Sound
Behavioral Hospital

March 29, 2022

Dear UMass IRB,

The undersigned is thrilled to support Daniel Njuguna's DNP Scholarly Project entitled "The Use of a Decision Wheel to Reduce Use of Mechanical Restraints in an Inpatient Psychiatric Hospital in Southwestern Washington State" at this facility (South Sound Behavioral Hospital). Mr. Njuguna is a student in the DNP Program at the University of Massachusetts-Amherst.

As briefed by this student, the purpose of the project is to create an awareness, knowledge, and skills among nurses and mental health technicians (MHTs) on the use of a decision wheel to reduce the use of restraints in an inpatient psychiatric hospital and will be used for this purposes in this site. This facility does not have its own Institutional Board Review; however, this request has been reviewed by the senior leadership of this hospital. Additionally, this proposal does not need to go through IRB approval at our site because it is a quality improvement intervention.

South Sound Behavioral Hospital will collaborate and support Mr. Njuguna in the implementation of this project with the aim of meeting our high standards of care. I will act as a site supervisor for this project and will work with unit managers to ensure its successful implementation. If you have any questions, please feel free to contact me.

Thank you for this consideration and for your academic support of this student.

Sincerely,

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