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# REDUCING PHYSICAL RESTRAINT RATE: A QUALITY IMPROVEMENT STUDY IN AN ACUTE PSYCHIATRIC UNIT, PRINCE SULTAN MILITARY MEDICAL CITY (PSMMC)

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**ABSTRACT**

**BACKGROUND**: Restrictive methods such as physical restraint are utilized in mental health facilities as part of patient care by nurses to prevent inpatients from injuring themselves, other patients, or hospital staff (Whittington, Baskind, & Paterson, 2006) but the use of restraints as a non-pharmacological intervention has long been a controversial practice (Barton, Johnson, & Price, 2009). The aim of the study was to reduce prevalence physical restraint incidents and improve patient safety through early intervention. The study was conduct in a 30-bed capacity acute inpatient psychiatric unit at Prince Sultan Military Medical City, Riyadh, Saudi Arabia. Participants included Inpatient Psychiatric unit nurses including Head Nurses, Charge Nurses, registered nurses and patients admitted under admission criteria. **METHODS**: The FOCUS-PDCA methodology as a quality improvement tool deployed to undertake this project. A pilot study conducted as a baseline assessment to determine contributing risk factors in the increase of physical restraint incident through documentation review of medical records for 3 months. Restraint Incident Log Book (RILB) used for data extraction on daily number of physically restraint patients against the total occupied bed per days to indicate physical restraint rate. Literature review done to identify the effective monitor tool for data collection. **INTERVENTION**: A Root Cause Analysis conducted to understand the performance variation to propose effective measure in reduction of physical restraint rate. Through formal discussion, the staff identified early recognition through risk assessment and early intervention of verbal de-escalation for implementation to improve the performance. **RESULTS**: Upon initiation of Quality Improvement Project on March 2020 and implementation of the action plan, the performance improvement was moving towards the target. After the implementation of training education program, early risk assessment, early intervention, restoration therapeutic room and effective verbal de-escalation techniques, the performance restraint rate reached target benchmark of 15 per 1,000 beds day. In fact, the prevalence of physical restraint rate reduced significantly after two PDSA cycles, from 52 per 1,000 beds day in mid-March 2020 to zero per 1,000 beds day by end of August 2020 and sustained improvement within the target benchmark thereafter. **CONCLUSIONS**: Identification of contributing factors and implementation of effective communication, education training program, early risk assessment-intervention and renovation of therapeutic room was a hallmark for the improvement in physical restraint rate. Leadership also played an essential role in the success of the project by upholding the departmental goal of zero patient harm and creating the culture of safety within psychiatric settings. Although the road to achieve zero harm far off but it is not impossible, additional work is need in several key areas, specifically in assigning a dedicated therapeutic room and introduce non-crisis intervention to replace current outdate practice.



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# INTRODUCTION

Physical Restraint is define as an approved hands on method and safe-skilled intervention by trained mental health staff using Control & Restraint Technique to restrict the freedom of movement to prevent individual harming from themselves, endangering others and seriously compromising therapeutic environment. The management of violent and aggressive behavior in mental health facilities remains a controversial practice. Although the efficacy and ethics of physical restraint are disputable, the method widely used as a safe practice to prevent individual harming from themselves, endangering others and compromising therapeutic environment (Sailas & Fenton, 2000; Whittington et al., 2006). However, the complexity of causes and factors relating to deaths and injuries in restraint make this difficult, and a growing recognition of the traumatic effects of restraint on both patients and staff led a number of mental health facilities to make efforts to reduce the use of restraints. There have been an increased attention due to recent publicity on deaths and injuries in restraints, especially in light of evidence that most deaths and injuries were unnecessary and preventable. There have been recent awareness among the public and healthcare professional to reduce physical restraint as a non-therapeutic emergency intervention to minimize patient harm. Therefore, counter measures proposed by accreditation body to replace the current and outdated practice which detrimental to patient and staff safety. Local and international accreditation agencies proposing healthcare organization to monitor related incidents surrounding physical restraint. They urge healthcare institution to maintain records of physical restraints, precipitating factors that led to aggressive behavior and crisis invention that taken to neutralize such behavior. This information are fundamental in presenting cues, which are essential to paint the clinical pictures of patient presentation and identify the event preceding to the Incidents.

Accreditation body like Joint Commission International mandated the healthcare institution should improve patient safety and harm by finding alternative strategies to physical restraint. Consistent to organizations goals to achieve zero patient harm, healthcare industry require to invest in prevention strategies, innovative ideas and quality performance improvement projects in attempt to minimize physical restraint in mental health facilities. One of the ultimate goal in achieving patient and staff safety is through prevention and reduction of physical restraint rate. In order this to take place, nursing within Psychiatric Department, Prince Sultan Military Medical City (PSMMC) played a crucial role to analyze the clinical findings and propose an evidenced based intervention to replace current practice of physical restraint through a quality improvement project.

**Problem statement:** It is estimated that 75% of the physical restraints and seclusion can be prevented by implementing appropriate mechanisms like sharing the treatment plan with patients, remodeling the emergency environment, training staff how to perform de-escalating techniques and less forceful interventions and how to recognize factors which lead to violation, and giving regular feedback to staff and so on. In addition proper surveillance, early recognition, timely risk assessment and early intervention are essential in management of aggressive behavior. Their success was substantial and consistently accompanied by a reduction in staff and patient injuries.

**Available Knowledge:** Globally there is growing awareness in reduction to physical restraint use; many mental institutions, healthcare professional and public recently raise concern by issuing position statements, guidelines and suggestion against the use physical restraint. Prince Sultan Military Medical City (PSMMC) promotes culture that minimize the use of restraint in accordance with the patients' right freedom of movement, liberty and humane treatment as outlined in the Policy of Patients and Family Right (MCWPP 1-1-8062-01-019, 2020).

The PSMMC is well aware the use of physical restraint has detrimental effect on patient with mental disorders, therefore the awareness for prevention, reduction and elimination as an emergency measure in management of violent and aggressive need to be taken seriously. As dictated in MCWPP 1-1-8062- 03-019 Patient Restraint Policy, that physical restraint to be utilized as last emergency resort when imminent threat is perceived through comprehensive assessment and evaluation. This emergency measure must never be used for convenient of staff as form of punishment or to overcome lack of adequate staffing availability or perform a test or procedure that the patient has refused. Studies that had conducted in United States indicated that there have been arise in reported injuries related to restraint and due to this reason some mental health facilities implemented restraint-free policies. The New York State Commission statistical report on Quality of Care indicated that 111 patients died due to some kind of restraint practice between 1984 to 1993. Subsequently, the widespread mandate to review the practice of restraint in every healthcare facilities within United States went forth questioning the therapeutic milieu of restraint practice and the detrimental effect to patient. Another exploratory study conducted in United States concluded that in 1998, the JCAHO Sentinel Event Alert reviewed 20 restraint-related deaths and out of 40% of deaths were caused by asphyxiation directly related to patient restraint. Over the past 30 years, there have been more than 15 restraint related deaths in health and social care settings in the UK (Paterson B. et al., 2003). Some of these deaths have been attributed to positional asphyxia as well or this had been cited as a contributory factor. An analysis reported that was generated through searching databases between 1999 to 2010 on physical restraint related death indicated that positional asphyxia appears to be implicated for at least 26 of the 38 deaths. The majority of these occurred with the patient in the prone position. During a survey that was gathered on the impact of adverse impact of physical restraint in several mental health facilities in England revealed between 1.3% and 15.7% of incidents involving physical restraint resulted in physical injury.

**Rationale:** Nurses in Psychiatry Inpatient Unit at Prince Sultan Military Medical City (PSMMC) have utilized safe and control physical restraint techniques as routine practice in managing violent and aggression. It is primarily used to de-escalate destructive patients' behavior in acute psychiatric inpatient unit as a measure of last resort after alternative interventions are failed and when the potential benefit outweighs the potential risk. Research has indicated that physical restraint can impose a safety issue and a lifelong traumatic effect to both the patient and staff at the same time (Huckshorn, 2004).

There have been recent emerging incident in Psychiatry Departments on physical restraint related injuries among staff and patients in recent incident report analysis. Data analysis provided by hospital data management on Physical Restraint Rate until March 2020 indicates the performance trend still underperforming with the average performance rate of 30 beds days per 1,000, which is above the target benchmark, 15 beds days per 1,000.Moreover, prevalence of physical restraint rate reported by CQI & PS through data analysis in March 2020 was alarming, 52 per 1000 bed days.The purpose of this project is to identify the restraint prevalence and subsequently respond appropriately to reduce the use of physical restraints and improve staff/patient safety in parallel with organization goal.

**Conceptual Definition:** As per referenced in PSMMC Medical City Wide Policy, Physical Restraint is define as an approved hands on method and safe-skilled intervention by trained mental health staff using Control & Restraint Technique to restrict the freedom of movement to prevent individual harming from themselves, endangering others and seriously compromising therapeutic environment.

**Specific Aim:** A collaborative quality improvement (QI) project was undertaken in the effort to decrease the physical rate in acute adult psychiatric inpatient by achieving the target benchmark $\leq$ 15% by 1st of January 2021 (within 10 months).

**Primary Objective**

To decrease ethical issue incidents to 80% by 1st of January 2020.

- To decrease risk behavior prevalence to 80% by 1st of January 2021.

**Secondary Objective**

- Improve Patient Safety and Harm by reducing ethical issues related incidents surrounding physical restraint in Psychiatry Inpatient Unit from 121 incidents to approximately 20 incidents between December 2019 and December 2020.
- Promote Training Education in management of violent, and aggression by introducing more robust Psychiatric Enhancement Course and Workshop involving advance verbal de-escalation technique from one (1) course in 2020 to four (4) courses by end of 2020 involving all registered nurse in Psychiatry Department.

# METHODOLOGY

**Context:** The Psychiatry Department of Prince Sultan Military Medical City provides inpatient, outpatient, community, and consultation liaison services. The Acute Inpatient Psychiatry units is medium secure ward, it can only be accessed by health care providers directly involved in the care of patients and their family and consists of total of 30 beds (20 beds for male and 10 for female patients). The number of patients who are admitted into the psychiatry wards annually is approximately 260. The departmental services designed to provide comprehensive evaluation and treatment of patients with variety mental health disorders through interdisciplinary process approach that identifies focused and measurable objectives to address the bio-psychosocial needs of each patient formulates the patient's plan of care. Total patient care is a model of nursing care that the registered nurse utilizes in providing patient care to their patient during each shift.

The safety and security of the patient is primary importance of the providers and clinician within the department. The need Physical Restraint as a performance indicator would set a benchmark in our clinical settings to monitor incidents pertaining quality of care and patient safety. Most of International Accreditation Organization recognized many hospitals in past decades for taking a major role in advancing nursing science, learning and discovery e.g. Joint Commission International, MAGNET Recognition Program etc. Therefore, Mental Health Nursing within the Psychiatry Department in Prince Sultan Military Medical City (PSMMC) wants to establish ways to achieve new heights of quality, efficiency and effectiveness by implementing Nursing-Sensitive Indicator on Clinical Quality, Patient Satisfaction and Nurse Satisfaction. A pilot study conducted for 3 months periods to identify the baseline measurement of the indicator, which closely related to the incidents. The pilot study was initiated in 1st of April 2019 and the following details will collected for data analysis:-

- Total number of physical restraints during reference period.
- Total bed occupancy during reference period.
- The risk factors that contributes to patient physical restraint during reference period.

The data collection was extracted from daily nursing progress notes, Restraint Incident Log Book (RILB), and incident-reporting system. These data was documented on daily basis in excel sheet by assigned registered nurse. After the three months piloted study, the leadership in Psychiatric Nursing Department compiled the raw data and generated a report analysis to understand the variables that contributing to the prevalence of physical restraint. Based on data analysis, the leadership within the nursing department concluded that there was no significant core-relation between total number of admission and prevalence of physical restraint incidents. The prevalence of physical restraint closely related to the patient mental risk factors.

The analysis in the Pie Chart during the reference period indicated that more than 50% of the patients were physically restrained due to aggressive behavior, followed by 27% due to resistance to medication administration, 8% due to risk of self-harm attempts, 3% due to risk absconding and 11% for other factors. Through the pilot study, the nursing leadership formed a committee under the name Psychiatry Nursing Quality Committee to conduct a quality improvement study. Before commencement of official data collection, the Project Prioritization Matrix recommended by the Joint Commission was used to guide the decision making process regarding to determine which Patient Safety Indicators (PSIs) to be selected. Ultimately, the senior leadership made the final decision on the Patient Safety Indicators (PSIs) based on the highest total scoring. A data collection plan formulated and submitted with titled, Reduced Physical Restraint Rate. This is a Nursing Sensitive Indicator measuring theprocess of health quality to reflect improvement of patient safety in the clinical area. After obtaining Continuous Quality Improvement & Patient Safety (CQI &PS) Department approval through a Board of Review Committee Members, official data collection commenced on 1 July 2019. A statistical data collection tool was devised for data entry and submission. These data consist of daily number physical restraint incident and daily bed occupancy. This calculation method was utilized to determine monthly physical restrain rate by CQI & PS using nominator and denominator against 1000 per bed days:-

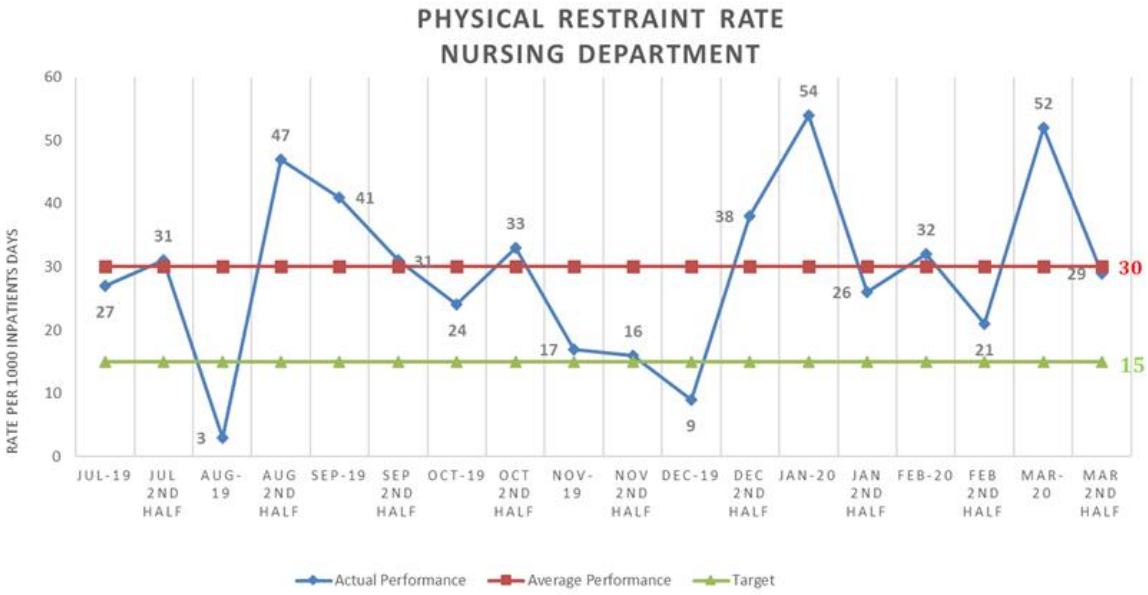
$$\text{The Physical Restraint Rate} = \frac{\text{number of physical restraint incident}}{\text{Number of patient bed days}} \times 1000$$

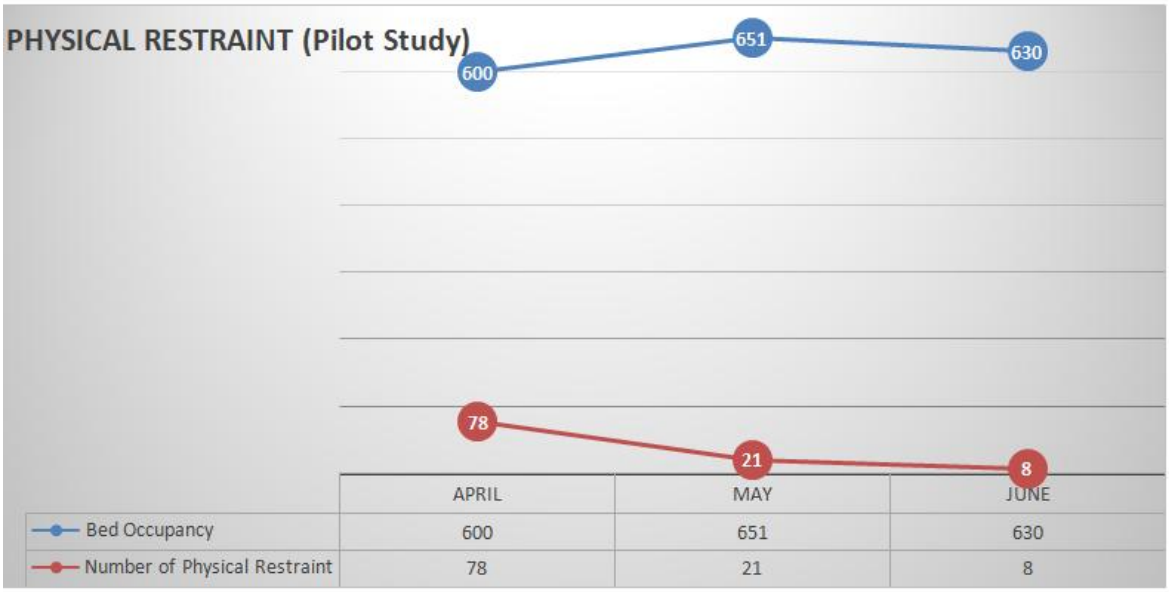
The data collection of this indicator send for analysis to CQI & PS for biweekly for analysis. Analysis report of data interpretation is published and is send to nursing administration for further justification and appropriate action plan to improve performance trend. A search of few databases conducted to determine the international and local benchmark of physical restraint rate through google scholar etc. The search on physical restraint led to many studies that carried out are on reduction mechanical restraint only. Key words such as "psychiatry', "mental health", "behavioral health", "physical restraint", "physical restraint reduction", "national benchmark", used in search to determine the target. Unfortunately, most of the studies on performance projects were pertaining to mechanical restraint reduction.

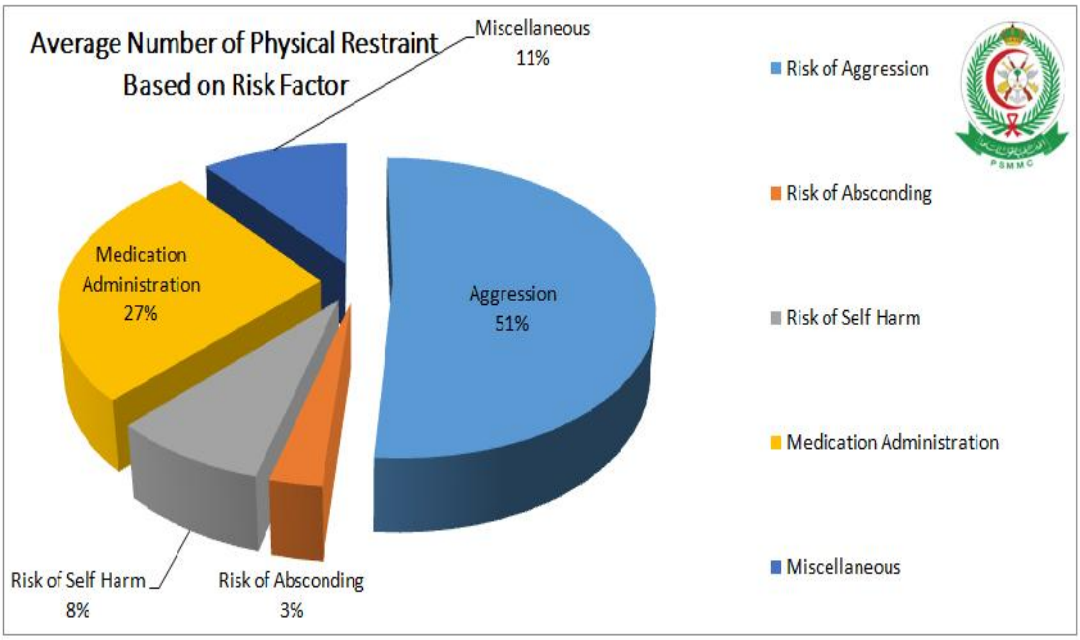
The outcome of the search did not provide any results to set the benchmark for our indicator. There was one study from Australia provided a baseline benchmark for our indicator based on their physical restraint depending on states and territory. Although there was no international nor regional benchmark with set target based on the pilot study and in the reference closer to Australia's national average total. Therefore, after series of nursing leadership group meeting within Psychiatric Department, we agreed upon 15 per 1.000 bed days as target for this indicator. Among the local factor that influence in selection of target benchmark was considering the our mental facility it is not an acute psychiatry unit with average length of stay of 30 days and no registered mental health nurse. Moreover, the inpatient admission cater to patient's forensic history, substance abuse, intellectual disabilities and co-morbidities. In order to obtain accurate and reliable data for future study, our team placed an exclusion and inclusion criteria for sample collection. Sample size includes all acute psychiatric patients admitted in the male and female inpatients with age group within 19 years old to 64 years old based on psychiatry admission criteria without co-morbidities. Exclusion criteria includes patients under the age of 19 years, above 65 years, patients with diagnosis with intellectual disability, substance abuse, admitted with a forensic history, co-morbidities, not on treatment for diagnostic purpose and special orders admission e.g. hospital's chief executive officer, MSD, Governor's Order, Royal Decree etc.

**Interventions:** An interdisciplinary team within the Nursing/ Psychiatry Department with collaboration of CQI & PS Department were designated to specific roles to undertake this project:-

During this phase, members of Psychiatric Nursing Quality Team assigned with a specific task in order to bring a positive impact to the performances.

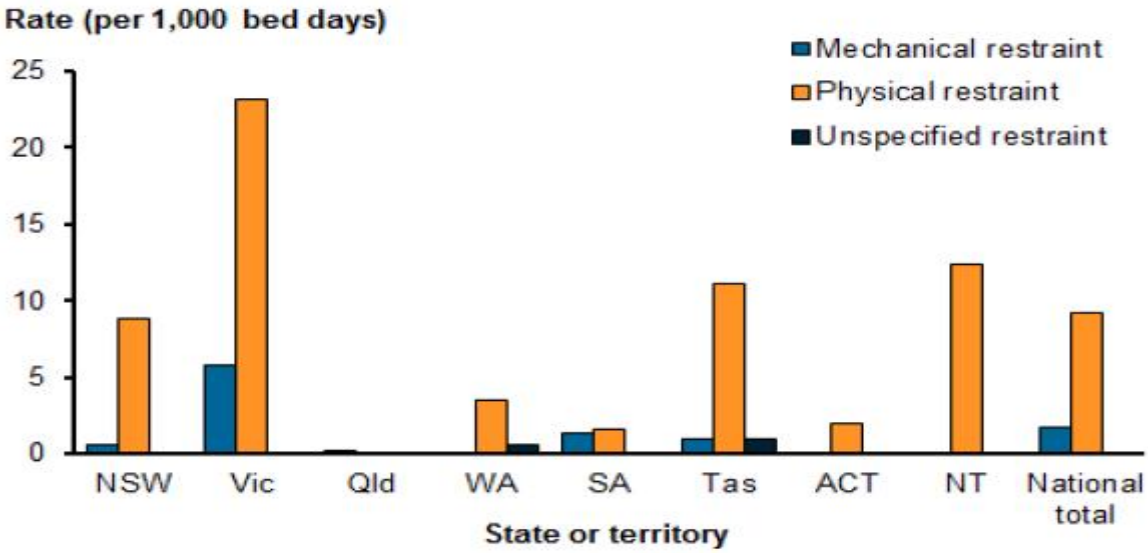

PHYSICAL RESTRAINT RATE
NURSING DEPARTMENT
RATE PER 1000 INPATIENTS DAYS
60
50
40
30
20
10
0
27
31
3
47
41
31
24
33
17
16
9
38
54
26
32
21
52
29
30
15
JUL-19
JUL 2ND HALF
AUG-19
AUG 2ND HALF
SEP-19
SEP 2ND HALF
OCT-19
OCT 2ND HALF
NOV-19
NOV 2ND HALF
DEC-19
DEC 2ND HALF
JAN-20
JAN 2ND HALF
FEB-20
FEB 2ND HALF
MAR-20
MAR 2ND HALF
Actual Performance
Average Performance
Target


PHYSICAL RESTRAINT (Pilot Study)
600
651
630
78
21
8
APRIL
MAY
JUNE
Bed Occupancy
600
651
630
Number of Physical Restraint
78
21
8


Average Number of Physical Restraint
Based on Risk Factor
Miscellaneous
11%
Medication
Administration
27%
Aggression
51%
Risk of Self Harm
8%
Risk of Absconding
3%
Risk of Aggression
Risk of Absconding
Risk of Self Harm
Medication Administration
Miscellaneous

| Joint Commission Resources<br>Criteria / Measures | 1 = Low volume<br>3 = Medium volume<br>9 = High volume<br>**High Volumn = 9** | 1 = No complaints<br>3 = Few complaints<br>9=Several complaints<br>**Patient Complaints=8** | 1 = Low risk and rare problems<br>3 = Moderate risks and problems<br>9 = High risks and problems<br>**High Risk and Problem Prone = 10** | 1 = Low or no costs<br>3 = Medium costs<br>High costs=9<br>**Costs of failed process=7** | 1 = Low or difficult to measure<br>3 = Moderately feasible to measure<br>9 = High or feasible to measure<br>**Feasible to Measure=6** | 1 = Low or not related<br>3 = Moderately related<br>9 = Directly related<br>**Related to National / International Patient Safety Goal** | 1 = None<br>3 = Few<br>9 = Several<br>**Complaints from patients/staff** | 1 = None<br>3 = Mild<br>9 = Strong effect<br>**Tracer/measurement shown deficiency** | 1 = None<br>3 = Somewhat, inconclusive<br>9 = Strong evidence<br>**Identified as a problem in literature** | 1 = Low or few<br>3 = Moderate resources<br>9 = Large amount<br>**Limited resources to address problem** | 1 = Slim to none<br>3 = Moderate potential<br>9 = Large potential<br>**Potential future cost savings if implemented** | 1 = Less Than 9 months<br>3 = 9 to 18 months<br>9 = More than 18 months<br>**Project Payback Period** | **Priority Score** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Patient Fall Without Injury | 9 | 8 | 30 | 63 | 54 | 9 | 3 | 3 | 9 | 3 | 9 | 3 | 203 |
| Physical Restraints Rate | 81 | 24 | 90 | 63 | 54 | 9 | 9 | 9 | 9 | 9 | 9 | 3 | 369 |
| Nurse Vacancy Rate | 27 | 8 | 10 | 63 | 18 | 3 | 3 | 3 | 9 | 3 | 9 | 3 | 159 |

Prioritization Matrix



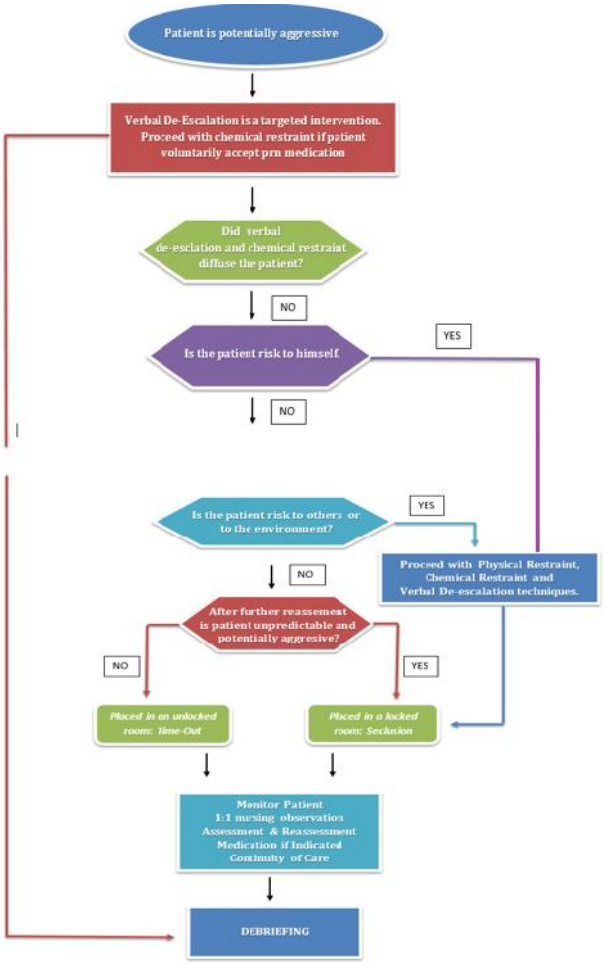

**Australia's National Average Total**

**LIST OF THE MEMBERS OF PROJECT TEAM**

| | Name | Position | Department | Roles |
|---|---|---|---|---|
| 1. | Dr. Turki Al Mutairi | Director of Nursing Administrative Services | Nursing | Project Owner |
| 2. | Dr. Eltoma Salih | Nursing Clinical Director of Psychiatry Department and Autism Center | Nursing/Psychiatry /Autism | Project Leader |
| 3. | Dr. Turki Al Bruikan | Deputy Nursing Clinical Director of Psychiatry Department and Autism Center | Nursing/Psychiatry /Autism | Project Supervisor |
| 4. | Afnan Ali Al Harthi | Quality Specialist | CQI & PS | Project Coordinator |
| 5. | Abrar abdulaliam | Data analyst | CQI & PS | Data analyst |
| 6. | HN Hamad Al Mutairi | Head Nurse | Nursing/Psychiatry/Autism | Member |
| 7. | SNI Jonathan Dela Cruz | Staff Nurse | Nursing/Psychiatry | Member |
| 8. | SN1 Isvaran Jayaraman | Staff Nurse | Nursing/Psychiatry | Member |
| 9 | SN1 MARWA ADAM | Staff Nurse | Nursing/Psychiatry | Member |

**Task Assignment**

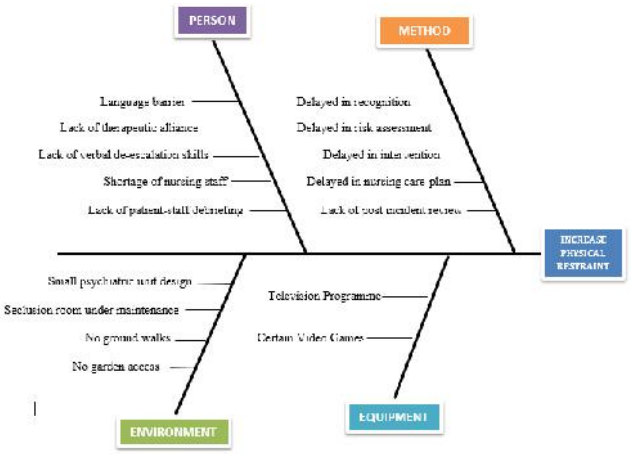
| No. | Task | Who is Responsible |
|---|---|---|
| 1. | Assignment of First Responder | Dr. Eltoma Salih |
| 2. | Early Recognition & Intervention | Dr. Turki Al Bruikan |
| 3. | Staff Training in De-Escalation Techniques | HN Hamad Al Mutairi/Jonathan Dela Cruz RN. |
| 4. | Restoration of Therapeutic Room | ACN Harvey Olayres |
| 5. | Non-Violent Crisis Intervention Proposal | Isvaran Jayaraman .RN/Marwa Adam RN |




**Physical Restraint Algorithm**

**Pre-intervention Review & Analysis:** The nursing leadership group consist of Nursing Director, Nursing Clinical Director, Head Nurses, Quality Nurses and Senior Staff Nurses gathered to review the analysis report provided by the Data Management, CQI & PS Department. The team took this action based on the recommendation that provided by CQI & PS after March 2020 analysis report. The report indicated that there is continues variation in performance trends without any significant improvement. Therefore, the leadership group convened to analysis the detail data performance trends to determine factors that causing the variations and carry out a comparison study through literature review. Several literature review suggested that the possibility in high prevalence of any restraint incidents in a clinical area might be delayed recognition, delayed risk assessment, delayed intervention, lack of leadership role, lack of training and poor staffing. Hence, to understand the complete mechanism of the trending performance and factors associate higher physical restraint rate, the nursing leadership group outline physical restraint algorithm and utilized quality control tool, Ishikawa fishbone diagram to uncover bottlenecks in your processes and discover the root cause of the problem respectively. Through Physical Restraint Algorithm and initial pilot study, the leadership group identity several triggers factors that precipitated the initiation physical restraint in acute psychiatric unit. A review of incident reports and patient medical records identified that the situation that may trigger distress, anger and aggression which led patient to be physically restraint in the clinical setting are following:-

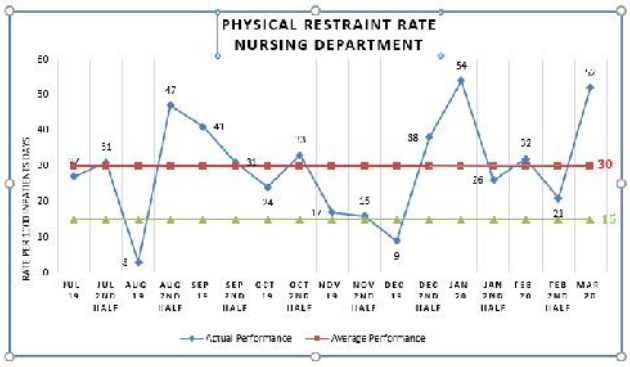
- Patient's demands are not met, such as cigarettes, out on pass, leave, ground walk etc.
- Refuse and resistant to administration of medication due to poor insight to illness
- Patient experiencing intense psychotic phenomena such as paranoia, hallucination, having homicidal ideas etc.




**Root Cause Analysis (RCT) - Ishikawa diagrams Fishbone**

Further analysis through Root Cause Analysis (RCT) led the leadership group to discovered that following factors influence the triggering factors

- Language barrier, lack of therapeutic alliance and communication skills.
- Delayed in recognition, assessment and intervention.
- Lack of enhanced staff education and training in management of crisis behaviors.
- Therapeutic room (seclusion) was under maintenance.




**Pre-Intervention Data Analysis Report:** Data analysis indicates that there was continues variation in the actual performance trends. The performance reached several high peak rates of 47, 54, and 52 per 1,000 bed days in 2nd half of August 2019, 1st half of January 2020 and 1st half of March 2020 respectively and the lowest rate recorded was 3 per 1,000 bed days in 1st half of August 2019. Most of the time the physical restraint prevalence incidents is recorded higher in female admission compared to male admission in comparison to bed occupancy of each area. Majority of patient that was physically restraint in the clinical settings are younger adults' age group between 25 years to 35 years old. The common primary diagnosis according ICD-10 associated with the high physical restraint prevalence incident in the acute psychiatry in units are Schizophrenia and Bipolar Disorders. The pilot study that was conducted in the psychiatric inpatient between April 2019 and June 2019 indicated that the primary reason for utilizing physical restraints 50% in managing aggressive behavior cases, followed by 27% to manage resistance and agitation during medication administration, 8% to manage self-harm behaviors and 3% in managing patient with high absconding risk (Appendix A). Therefore, the primary reason patients has been physically restraint in acute admission psychiatric unit in PSMMC due to aggression and agitation. The contributing factors that led to this higher percentage directly related to delay recognition, language barrier and lack of competency in de-escalation skill. Furthermore, the ethical issues surrounding physical restraint from incident reports in 2019 related verbal assault, physical assault, and physical injuries related to physical restraint both staff and patient was overwhelming.

However, there was no comparison statistical record on this assault and injuries but that ethical issues related restraint and seclusion was 121 incidents.

**Interventions:** The primary aim of this project is to decrease the physical rate in the acute adult psychiatric admission consistent with target benchmark of 15 per 1,000 bed days or less by 1st of January 2021 (10 months) and sustained it thereafter. In order to accomplish the goal and objective of this project, the nursing leadership group within Psychiatric Department reviewed the outcome of Root Cause Analysis (RCT) and utilized Improvement Model called Plan-Do-Study-Act (PDSA). Therefore, the following action plan was implemented in March 2020 to decrease physical restraint incident and improve staff-patient safety into two PDSA cycles:

**Assigned bilingual (Arabic-English) nursing staff as a first responder in management of crisis behavior to ensure effective therapeutic communication:** Language barriers can lead to ineffective communication, which often contributes to uncertainty, stress, and hurdles that affect patient-centered and holistic care. Patients with linguistic differences may struggle to advocate for themselves and may not be able to express their psychosocial stressors. Linguistic differences between healthcare providers and patients may cause higher prevalence of adverse events (Montie et al., 2016).Therefore, we assigned an Arabic speaking registered nurse as a first responder who able to communicate more effectively with the disturbed patient will help to de-escalate patient effectively and prevents physical restraint.

**Increased frequency of surveillance, early recognition and intervention through timely risk assessment in prevention crisis behavior:** Early clinical risk assessment provides an opportunity for early recognition of sign of agitation and early intervention. This may prevent further escalation of patient behavior and promote patients' safety, recovery and wellbeing. Frequent surveillance through 15 minutes observation implemented as a measure to promote early recognition and identification of disturbed behavior. Lack of training in risk assessment and management skill also found to be one of the primary contributing factors in the increase of physical restraint. Therefore, with the launch of an advanced training on management of aggression, registered nurse will be able to acquire sufficient knowledge and skills in clinical risk assessment/management.

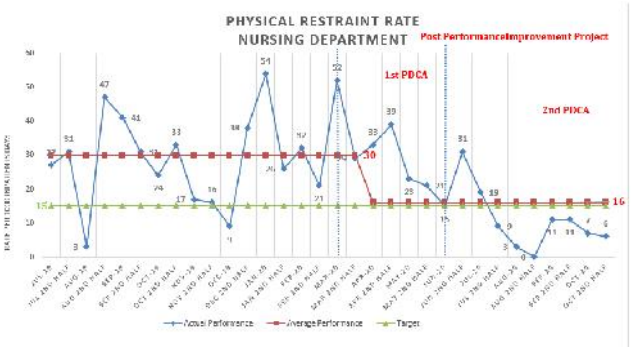
**To promote education and training in management of crisis behaviors through de-escalation strategies:** Verbal de-escalation is a foremost intervention in management of crisis behavior. Verbal de-escalation techniques have the potential to decrease agitation and associated violence in the mental health setting. Annual staff training with proficient verbal de-escalation skill in management of the aggressive patients is pivotal in prevention of physical restraints. Therefore, Nursing Department in collaboration with Nursing Continuous Training & Research (NCTR) has recently launched an enhanced training and workshop on management of violent and aggression for all registered nurse within Psychiatric Department in effort to reduce physical restraint rate.

**Renovation and restoration of Therapeutic Room (Seclusion Room) to provide low stimulus and conducive environment for patients presenting with disturbed behavior.** Although the central focus of acute psychiatric units is to provide mental health care needs and treatment, patients have described acute psychiatric wards as "therapeutically superficial" (Hummelvoll and Severinsson, 2001) and an environment not conducive to healing (Thomas and Pollio, 2002). Therapeutic room is a non-pharmacological clinical intervention and an open room used in inpatient psychiatric wards to create an environment free from distractions and promote conducive environment for relaxation as a continuation of milieu therapy. Therefore, the renovation process was underway to restore seclusion room as a therapeutic management tool for "time-out" to enhance self-control in the patient with disturbed behavior.

**To replace current outdated Safe & Control Restraint practice with more effective de-escalation training e.g. Non-Violent Crisis Intervention Technique:** The Non-Violent Crisis Intervention training program is a holistic behavior management system focuses on preventing disruptive behavior by communicating with individuals respectfully and with concern for their well-being further preventing physical restraint or seclusion. The program teaches non-physical techniques as a primary intervention to de-escalate patient who presents with an imminent danger to self or others or the environment and this interventions designed to be non-harmful, non-invasive, and to maintain the individual's dignity. Therefore, a proposal submitted to nursing administration for an approval to organize the train the trainer program on NON-VIOLENT CRISIS INTERVENTION (NVCI) for psychiatric nursing staff.

# RESULTS

**Post Intervention Result**




**Pre & Post Intervention Data Analysis Report:** In order to determine the effectiveness of this project pre-intervention data gathered on restraint prevalence for the period of July 2019 to March 2020. Pre-intervention data will be compared to data collected post project implementation to assess whether the prevalence of restraint rate decreases, stays the same, or increases, this data may tell us whether or not the desired goal of reducing restraint prevalence of 15 per 1,000 bed days by January 1, 2021 was achieved. The outcome of the Performance Improvement Project will further reveal the effectiveness of action plans through the process cycle of PDSA. Each actions plans that was proposed and implemented in attempt to reduced physical restraint incidence will be constantly monitored in real time through trends of performance variation provided by CQI & PS biweekly. The leadership group met with key leaders of the admission area to motion two action plans as part of the first phase PDSA cycle. Head Nurse, Charge Nurse and Team Leader of both male and female area were advised to assign a bilingual (Arabic-English) nursing staff as a first responder in management of crisis behavior to close the language barrier when encountering patient with disturbed behavior and the leadership group ensured daily of this assignment. At the same time, clinical resource nurse within the psychiatric unit conducted several microteachings and competencies putting a strong emphasis made to increase frequency of surveillance, early recognition and intervention through timely risk assessment in prevention crisis behavior. Staff nurses encouraged to be extra vigilance during 15 minutes nursing observation to look for any emerging signs and symptoms of disturbed behavior among the patients. Risk assessment policy reinforced and the importance of early recognition through timely assessment incorporated in the nursing process.

The primary goal in the implementation of the first PDSA cycle is to reduce physical restraint rate from 52 per 1000 bed days to 20 per 1000 bed days within 92 days. After implementation both proposed plans, an analysis report on 61 days data collection generated by CQI &PS indicated a reduction of 56 % in physical restraint noted by the leadership group. The effectiveness of the action plans in reduction of

physical restraint led to a significant achievement of 23per 1000 bed days by end of mid-May 2020. We were confident by the end of August 2020 the performance rate may exceed the target benchmark of this indicator. Although our primary goal is to reduce physical restraint rate but the team is thriving to achieve zero-harm consistent to international patient safety goals. The nurses in the clinical area are motivated with initially achievement and inspired to move forward with the implementation of the action plans. Further proactive moves taken to ensure both action plans are implemented in clinical setting through series of meetings with clinical leaders on weekly basis via zoom in Nursing Psychiatric Quality Meetings. Constructive feedbacks from the clinical staff taken into consideration to resolves any hurdles or issues surrounding the implementation of intervention plan. Leadership group continues to play a pivotal part in goal-orientated mission by providing regular clinical supervision to staff members. Performance trends closely monitored as current action plans was put to motion in full capacity. During this period, biweekly analysis report indicated the performance continues to accelerate towards target benchmark. Finally, at the end of mid-June 2020, the performance trend made an outstanding achievement reaching the set benchmark of 15 per 1,000 beds. Implementation of both intervention plans not only improve patient/staff safety but also further enhance the therapeutic alliance between nurse and patient. There was drop in ethical issues related incident reporting indicating that patient harm reduction. Although there was no patient or staff survey, the moral and satisfaction among the clinical staff certainly evident. Subsequently, it is safe to assume that patient experience would had a positive effect during this period. The goal of second PDSA cycle is to exceed the target performance of set benchmark and sustained thereafter. The 2nd PDSA cycle commenced at the of June 2020, the leadership group launched the 2nd and 3rd Psychiatric Enhancement Course and Workshop taking a major steps to include every registered nurse within Psychiatry Department to participate in the education and training of management behaviorcrisis through de-escalation strategies. Through this course and workshop, we equipped every nurse's with updated evidenced based practice in the knowledge and skill in verbal de-escalation. We put a huge emphasis on verbal de-escalation, as it is fundamental in elimination of physical restraint. An effective de-escalation technique is a key to prevent further escalating patient into aggressive or violent behavior. Studies has shown 70% verbal de-escalation able to diffuse any agitation or disturbed behavior successfully thus prevent physical restraint. In addition, the leadership group had series of meeting with hospital engineering and maintenance department to renovate the existing therapeutic room. Therapeutic room used as time out for self-de-escalation to promote a conducive and therapeutic environment for management behavior crisis. The availability of therapeutic room is essential in prevention of physical restraint by voluntarily escorting a patient with behavior crisis to de-escalate while providing an environment soothing and calming to the mental state. After several meeting and letters, the therapeutic room eventually was renovated in mid-September 2020. These implementations has led further improvement in performance trend as per the report generated by CQI & PS in the end of August 2020. As the performance exceeded the target in previous phase, through the 2nd PDSA cycle we managed achieve 0 per 1,000 beds days. Thriving to achieve the organization goal towards zero-harm and patient/staff safety, the leadership group with empowered nursing staff ensured each intervention resulted an expected outcome. Further analysis report indicated the performance trends sustained the improvement exceeded the target thereafter.

# DISCUSSION

### Summary

Through inspired and goal-oriented mission, the nursing leadership group with dedicated nursing staff members within Psychiatry Department ensured each intervention plans designed to reduce physical restraint rate and patient harm. To achieve the SMART goal, we promote culture and mindset of safety first within the department. Our evident based practice and interventions led a significant improvement in reduction in physical restraint. Outcome of this reduction in physical restraint prevalence has positively impacted the moral of staff and patient experience. The initiation of first PDSA in March 2020 resulted in 71% of reduction in physical restraint prevalence. Analysis from CQI & PS department revealed there was significant reduction in physical restraint rate from 52 per 1,000 beds day to 15 per 1,000 beds days by mid-Jun 2020. When 2nd PDSA cycle, not only the performance trends exceeded our target benchmark of 15 per 1,000 beds day but it reached zero physical restraint incident by end of August 2020 and sustained the improvement thereafter. Moreover, the average performance for this indicator decreased and reaching 16 per 1,000 bed days after Performance Improvement Project in contrast to pre-intervention plan, the physical restraint rate was 30 per 1,000 beds. This is remarkable achievement in the reduction of average physical restraint rate was almost 50%. In coming months, we as a team with the support of nursing leadership group will be able to achieve the average of 15 per 1,000 beds day to reach the aim of this project.

### Interpretation

The project utilized multimodal approach to achieve the goal in reduction of physical restraint rate without adverse outcome in Acute Inpatient Psychiatric Unit, Prince Sultan Military Medical City. Through FOCUS-PDCA quality improvement model combine with transformational and exemplary nursing leadership group with empowered nursing teamwork and the evidenced based practice intervention have contributed to the success of the indicator by improving patient/staff safety, reducing patient harm, increasing staff satisfaction and patient experience. The outcome of this study has shown that the leadership awareness towards culture and mindset of safety, early recognition and intervention in behavior crisis management, education and training in verbal de-escalation technique and availability of therapeutic room was essential in reducing physical restraint incident in Psychiatric Inpatient Unit.

### Limitations

Unfortunately, there have been not many studies conducted on physical restraint rate therefore the proposed intervention plan for this project may not be applicable to other organization. Moreover, this study did not include 100% population admission as we have excluded patients with primary psychiatric diagnosis with comorbidities and special admission. In addition, approximately 25% registered nurses within psychiatric unit have not competed the Psychiatric Enhancement Course and Workshop and the 3rd phase PDSA wasn't implemented as Non-Violent Crisis Intervention Technique requires funding.

### Conclusion

The prevalence physical restraint incidence in acute psychiatric inpatient unit reduced with early risk assessment and early non-therapeutic intervention and therapeutic intervention. Increased registered nurse surveillance with periodic nursing observation every 15 minutes enable the nurses to do early recognition to prevention physical restraint incident. Training and education to enhance nurse's skill and competency in effective de-escalation further contributes to the success of the project. Renovation of therapeutic room on timely manner also made a significant difference in the outcome of the project. Ultimately, without the support of the nursing leadership group within Psychiatry Department, Nursing Administration and Nursing Continues Training and Research it would be impossible to achieve the objective of this project. Furthermore, the dedication and commitment demonstrated by the registered nurses in clinical area, collaborating every evidence based practice and intervention proposed by leadership group into patient care plan led to achieve the final target set benchmark of physical restraint rate for this nursing sensitive indicator. Physical restraint practice implemented in our mental health facilities to prevent inpatients from injuring themselves, other patients, or hospital staff and the use of restraints in the treatment of mental illness remains a controversial practice. Evidence

has been presented in many studies that the use of physical restraints has no therapeutic value in managing mentally disturbed patient. The negative impact surrounding the intervention of physical restraint on some occasion outweighs the patient safety. Therefore, physical restraint should be used as a last resort, and only when the potential benefits are greater than the potential harm. However, the complexity of causes and factors relating to deaths and injuries in restraint make this difficult, and a growing recognition of the traumatic events of restraint on both patients and staff led a number of facilities to make efforts to reduce the use of restraints. The nursing leadership group moving forward creating culture and mindset of safety and zero harm in healthcare parallel with by Kingdom's Vision 2030 , governance of MSD and PSMMC mission, local and international accreditation agency goals' and our success was substantial and consistently accompanied by a significant decrease in staff and patient injuries through reduction of physical restraint prevalence.

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