Psychiatr Q (2016) 87:31–48
DOI 10.1007/s11126-015-9353-7

ORIGINAL PAPER

Patterns of Restraint Utilization in a Community Hospital's Psychiatric Inpatient Units

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Published online: 22 April 2015

Abstract Restraint use in psychiatry has been a topic of clinical and ethical debate for years. As much as the medical community desires to attain the goal of a restraint-free environment, there are not many alternatives available when it comes to protecting the safety of violent patients and those around them. Our objective was to examine patterns of restraint use and analyze the factors leading to its use in adult psychiatric inpatient units. We conducted a retrospective review of restraint orders from January 2007 to December 2012, for inpatient units at a community mental health hospital, examining—unit, patient gender, number and duration of restraint episodes, time of day, and whether medications and/or verbal redirection were used. For the 6-year period studied, a total of 1753 restraint order-sheets were filed for 455 patients. Mixed-model regression found significant differences in duration of restraint episodes depending on: patient gender, unit, medication use, verbal redirection and AM/PM shifts. These differences were consistent over time with no significant interactions with years and remained significant when included together in an overall multivariate model. We elucidate variable patterns of restraint utilization correlating with elements such as patient gender, time of day and staff shift, medication use, and attempts at verbally redirecting the patient. Besides providing much needed data on the intricate dynamics influencing restraint use, we suggest steps to implement hospital-wide restraint-reduction initiatives including cultural changes related to restraint usage, enhanced staff-training in conflict de-escalation techniques and personalized treatment plans for foreseeable restraint episodes.

Keywords Physical restraints · Psychiatry · Agitation · Inpatient unit · De-escalation

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Introduction

Though much of the practice of psychiatry has changed over the course of its existence, the use of restraints has unfortunately remained a constant. Physical containment can assume therapeutic effects, such as communicating a message of reality to the patient submitted to this procedure or providing him or her shared attention and limiting his or her aggressiveness; all these non-verbal messages represent a crucial moment of therapy [1]. However, morbidity and mortality associated with restraint utilization is a worldwide problem and fatalities related to restraint use continue to occur [2]. Restrained patients are reportedly more likely to have more admissions and longer inpatient stays than non-restrained patients [3]. The legal and ethical responsibility that comes with the moral dilemma of selecting safety over a patient's dignity and autonomy always haunts mental health workers, but when a compassionate, humanistic approach is used, restraint can achieve a therapeutic outcome for the patient while protecting the safety of others [4].

There are two forms of restraints defined in the Centers for Medicare and Medicaid Services (CMS) glossary, namely, physical restraints and chemical restraints [5]. Physical restraints are defined as, "any manual method or physical or mechanical device, material, or equipment attached to or adjacent to the resident's body that the individual cannot remove easily which restricts freedom of movement or normal access to one's body." Chemical restraints are defined as, "any drug used for discipline or convenience but not required to treat medical symptoms." How often restraints are used varies greatly by country. The reported prevalence of physical restraint varies from 7.4 to 17 % in acute care hospitals, and up to 37 % in long-term care facilities in the United States. The prevalence of chemical restraints is up to 34 % in long-term facilities [6]. Knutzen and colleagues found that young patients were more likely to be mechanically restrained than older patients ($p < 0.001$); women were more likely to be pharmacologically restrained than men ($p = 0.001$); and those above age 49 were more likely to be pharmacologically restrained [3]. In a mental healthcare facility catering to children, children who were diagnosed both with developmental issues and with mental health issues were much more likely to receive pharmacological restraint than were children diagnosed only with mental health issues [7]. Restraints are reportedly more frequent in compulsory admissions and voluntary admissions with altered state of consciousness (p value of <0.001 for each) [1].

The literature on restraint and seclusion utilization in inpatient and nursing-home settings support the following conclusions:

(1) Restraints are efficacious in preventing injuries and decreasing agitation.
(2) Restraints have physical and psychological adverse effects on both patients and staff.

These two contradictory statements represent a dialectic that forms the basis of almost all the current research on the subject of restraints.

There are several factors that lead to the initiation of a restraint episode, and various studies have examined them. They can be broken down by the following elements; the patient, the staff, the physician or clinician ordering them, unit setup, and regulations.

The Patient

The factors that typically lead to a restraint order for a patient are:

(1) The kind and severity of mental illness
(2) The presence of aggression

(3) Attempting to leave the unit
(4) The refusal of medication
(5) The presence of self-harm
(6) An involuntary admission
(7) The patient's ethnicity

The kind and severity of mental illness are the most important risk factors for being subjected to any form of coercion [8]. Male patients tend to be more aggressive while women are more likely to self-harm. Self-harm and attempted suicide during the current admission are significantly associated with young people who have a history of self-harm [9]. Episodes of self-harm tend to occur in the evening hours, and the most common antecedents to self-harm are a distressing psychological state, conflict behaviors (behaviors that threaten staff or service-user safety), and conflict with staff [10]. Involuntary admissions were associated with statistically significant higher levels of restraint and seclusion in patients [11]. Ethnicity is also cited as a factor which can contribute to a restraint order; some studies have suggested that people of non-white ethnicity [12] and immigrants [13] are more likely to be restrained.

Staff

The unit staff members are the first to witness any alarming episode with their inpatients and the first ones to take responsible actions for the safety of the whole unit. Hence staff characteristics could influence the decision to utilize restraints. Studies point out that the following factors affect the decision of staff to use restraints:

(1) The type of violence or abuse by the patient
(2) The skill level and experience of the staff
(3) The presence of staff injury
(4) Staff gender
(5) The staff's perception of insufficient safety measures in the unit

Staff are more likely to favor a highly restrictive intervention when patients are physically violent. Male staff and unskilled staff (i.e., staff with less experience in handling agitated behavior) were significantly more prone to choosing a highly restrictive intervention [14]. Staff perception of a higher level of agitation and the perception of insufficient safety measures in the workplace play an important role in the decision of whether or not to restrain a patient. [15] Restraints and seclusion are often utilized for the treatment of agitation and disorientation, without clear demonstration of a risk for imminent violence. [16] Staff may fear violence, perhaps because of lack of skill in working with alternative interventions with the agitated patient.

Price et al. found that there is less bias for ordering restraints according to the patient's race, when there is more racial and ethnic diversity among staff [17]. With respect to the ethical standards of patient autonomy and the prevailing laws, many States and hospitals strive for a restraint-free environment, and thereby regulate the implementation of restraints through tough rules and codes of practice. As a result restraint use has decreased, but unfortunately assault and injury of mental health care workers has increased [18]. Staff injuries may not only be a consequence of decreased use of restraints, but also the process of restraint application itself. Stubbs et al. found that staff are most at risk of being injured from the process of directly applying restraints to a patient, rather than from an aggressive patient per se [19]. Moylan et al. reported that nurses who had been previously injured

decided to restrain patients later in the progression of aggression as compared to those who had not been injured [20].

Physician

It has been found that the more physicians were personally involved in restraining the patient, the more they believed in it. In a cluster analysis conducted by van Doeselaar et al. [21] using PATS-Q score (Professional Attitude Towards Seclusion Questionnaire), it was found that physicians can be divided into three categories—transformers, doubters and maintainers. Transformers showed willingness to change existing practices away from the use of restraints and were strongly in favor of finding an alternative. Doubters saw seclusion as a therapeutic intervention but questioned its use. Maintainers comprised the largest percentage of psychiatric professionals, and neither opposed nor questioned the use of seclusion. Although the focus of the van Doeselaar study was the use of seclusion, these findings may be applicable to restraints, too. Physician characteristics and lack of knowledge of restraint utilization have been suggested to be associated with the likelihood of ordering restraints. [22] Also, the patient's clinical status had less influence on the physician's likelihood of ordering physical restraints than that of the working relationship with the requesting nurse or the patient's behavior [23].

The Unit Setup

A study of different hospitals in the New York State system [24] demonstrated that hospital characteristics are a significant predictor of the use of restraint and seclusion. Within a hospital itself, unit characteristics could make a difference in restraint use.

The following factors independently predicted greater use of restraints:

(1) Type of hospital unit—emergency department or intensive care unit.
(2) Provision of safety in the unit as perceived by the staff.
(3) Closed doors (i.e. locked) versus open unit (i.e. unlocked).

Since the environment on a psychiatric ward can turn volatile at any moment, the staff's perception of safety measures in the unit plays a vital role in the use of restraints [25]. An effective ward structure with a therapeutic environment [26] and staff access to patients [27] in terms of listening and being attentive to patient needs promote reduction in restraint usage. Where the "no restraint" and "open doors" (i.e. open unit) methods are practiced, physical aggressions are reportedly rarer and escapes less frequent [28].

Regulations

The current position of regulatory agencies such as the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) and the Centers for Medicare/Medicaid Services (CMS), demonstrate a movement towards a restraint free environment. In response to a public uproar about the misuse of physical interventions following publications by *The Hartford Courant* in 1998 and many other studies, CMS defined rules for the use of seclusion and restraints in facilities that participate in Medicare and Medicaid in 1999 [29] and revised them in 2007 [30]. However, there are still no uniform rules and regulations for physical intervention that apply nationwide.

The JCAHO set the following goal in its Behavioral Health Care Restraint and Seclusion Standards (JCAHO, 2001): "Because restraint and seclusion have the potential

to produce serious consequences, such as physical and psychological harm, loss of dignity, violation of an individual's rights, and even death, organizations continually explore ways to prevent, reduce, and strive to eliminate the use of restraint and seclusion through effective performance initiatives." As per JCAHO regulations, the following guidelines should be used when restraining patients:

AGE	DURATION OF ORDER
18 years and above	4 hours
9 years to 17 years	2 hours
Under 9 years	1 hour

Orders can be renewed according to the time limits for a maximum of 24 consecutive hours. A physician or licensed independent practitioner should evaluate the patient in person within 1 h of the initiation of restraint order [31].

At Maimonides Medical Center the policy regarding restraints and seclusion states the following:

AGE	MONITORING	DURATION OF ORDER
10 year old and above	Every 15 minutes	2 hours
9 year and younger	Every 15 minutes	1 hour

Fifteen minute observations include checking to be sure that the devices employed are not interfering with the patient's circulatory or respiratory systems. Additionally, patients in restraints are continuously monitored one-on-one in our inpatient units.

The New York State Office of Mental Health regulations state that in case a physician is not present at the time when the restraint process is initiated, face-to-face assessment of the patient by the physician should occur within 30 min of the initiation of restraint. The order may be renewed for up to a total of 24 h. After 24 h and before writing a new order, the physician must assess the patient in a face-to-face evaluation to ensure that the use of restraint continues to be clinically justified.

Studies have shown that the implementation of restraint and seclusion regulations by the State Mental Health Authority (SMHA) in Massachusetts led to a substantial decrease in the use of restraints and seclusions on child and adolescent inpatient units [32]. But legislative measures alone are not sufficient to reduce the use of restraints [33]. The state of Massachusetts undertook initiatives to increase awareness of the use of restraints and used a public health model that valued input from patients, families, staff and advocates.

Our long-term goal is to decrease restraint utilization in our hospitalized patients by using alternative therapeutic approaches to keep our patients and staff safe from aggressive behavior. With this goal in mind, we sought to examine the patterns of restraint utilization in our community mental health center's inpatient units.

Materials and Methods

We undertook a retrospective review of restraint order sheets from two Psychiatry inpatient units at Maimonides Medical Center, an independent academic medical center in New

York City. Unit 4 has 40 beds and 11 staff members while Unit 6 has 30 beds and 9 staff members (consisting of nurses, mental health workers and psychologists). The study was done to assess the trend of restraint episodes over the course of six (6) years and to find common factors in those episodes that could be modified to approach a restraint free environment on our psychiatric units. The study began as a performance improvement and quality assurance project in the department of Psychiatry and later was conducted with the approval of our Institutional Review Board.

We reviewed the restraint order sheets of all patients admitted to Maimonides Medical Center inpatient psychiatric units from January 2007 to December 2012. The data was exclusively from the two inpatient psychiatric units; we did not include any data from other units of the hospital. Restraint episodes that were used as a fall precaution were not included data in our analyses. A total of 1753 restraint order sheets were reviewed. Demographic information and the following variables were recorded:

(1) Number of restraint episodes per patient
(2) The cause for restraint order
(3) Use of verbal redirection as a less restrictive measure before ordering restraints. (Y or N)
(4) Time and duration:
    a. The time the order was initiated
    b. The duration of time between initiation of the restraint order and a face-to-face review by a doctor or licensed independent practitioner to assess if there is any delay in assessment of the patient by a doctor and if so, how much.
    c. The time the order expired (usually 2 h after the order was initiated as per state law). Restraint orders can sometimes be renewed after the 2-h limit, if the patient continues to present a danger to self and others on the unit.
    d. The total time the patient was in restraints.
    e. Whether the episodes occurred in the morning (am) or the evening (pm) or started in the morning and ended in the evening (am/pm) or started in the evening and ended in the morning (pm/am).
    f. Whether the restraint order was initiated during the weekday shift specifically between 8 am and 4 pm, when the patient's doctor was present and when there were more activities on in the unit.
(5) Medications:
    a. Whether medications were administered before restraints. (Y or N)
    b. Whether intramuscular injections for crisis intervention were given at all, before or during the time the patient was restrained.
    c. Whether oral medications were given at all, before or during the time the patient was restrained.

Statistical Analysis

Results were described in terms of frequency (percent) for categorical variables (e.g., sex), median (minimum, maximum) for skewed continuous variables, and mean ± standard deviation for normally distributed variables. A χ^2 test was used to compare the number of patients across years as well as the percent distribution for sex and unit across years.

Poisson regression was used to compare the incidence of restraint episodes across years. Mixed model regression was used to compare the duration of each episode across years as well as to test whether any other factors (e.g., sex) were predictive of restraint duration. Generalized linear modeling was used to compare differences in the distribution of categorical variables across years. SAS 9.1 (SAS, Inc., Carty, NC) was used for all comparisons and a significance level of 0.05 was used for all comparisons. A simple t test comparison was used to calculate effect sizes.

Results

Table 1 shows the basic characteristics for individual patients as well as for individual episodes. The number of individual patients requiring at least one restraint episode varied significantly across years ($p = 0.03$), from a low of 58 in 2009 to a high of 93 in 2007. The relative percentage of patients assigned to each unit also varied significantly across time ($p = 0.01$) but the relative percentage of male patients to female patients remain consistent (about 60 % male to 40 % female) over the observed years.

The number of restraint episodes also varied across years, from a low in 2009 of 177 to a high of 472 in 2010. The median number of episodes per patient was consistently equal to one for all the years considered in this study. Nonetheless, the maximum number of episodes varied quite considerably so that the yearly rate of restraint episodes per patient (the total number of restraint episodes divided by the total number of patients in each year) was found to vary significantly across years, from a low of 2.68 in 2012 to a high of 7.26 in 2010 ($p < 0.001$). Mean duration of each episode also varied significantly across years (low = 1.69 h in 2012, high = 1.85 h in 2010, $p = 0.01$) as did the percentage of episodes with verbal redirection ($p < 0.001$), and episodes associated with any type of medication ($p < 0.001$).

As shown in Table 2, in addition to the differences in episode duration across years, mixed model regression found significant differences in duration for: sex (males were typically restrained for a longer period of time than females, $p = 0.01$); unit (episodes in Unit 6 tended to be longer than Unit 4, $p < 0.001$); medication administration (episodes accompanied by any medication were longer than no medication, $p = 0.005$); verbal redirection (episodes with redirection were longer than no redirection, $p = 0.003$) and shift (episodes during PM shifts were longer than AM shifts, $p = 0.004$). These differences

Table 1 Characteristics of patients with restraint episodes over time

Patients	Year						p value
	2007	2008	2009	2010	2011	2012	
Number	93	73	58	65	89	77	0.03
Male	58 (60 %)[a]	44 (60 %)	38 (66 %)	45 (69 %)	52 (58 %)	46 (60 %)	0.76
Female	35 (40 %)	29 (40 %)	20 (34 %)	20 (31 %)	37 (42 %)	31 (40 %)	
Unit 4	46 (49 %)	37 (51 %)	31 (53 %)	17 (26 %)	44 (49 %)	42 (55 %)	0.01
Unit 6	47 (51 %)	36 (49 %)	27 (47 %)	48 (74 %)	45 (51 %)	35 (45 %)	

[a] Frequency (percent)

Table 2 Characteristics of restraint episodes over time

Episodes	Year						*p* value
	2007 (N = 93)	2008 (N = 73)	2009 (N = 58)	2010 (N = 65)	2011 (N = 89)	2012 (N = 77)	
Number of episodes	298	294	177	472	306	206	–
Number of episodes per patient	1 (1, 23)[a]	1 (1, 45)	1 (1, 33)	1 (1, 80)	1 (1, 104)	1 (1, 20)	0.94
Rate of episodes per patient	3.20[b]	4.03	3.05	7.26	3.44	2.68	<0.001
Duration of episodes (h)	1.76 ± 0.37[c]	1.80 ± 0.36	1.78 ± 0.38	1.85 ± 0.35	1.71 ± 0.49	1.69 ± 0.46	0.01
Comfort measure	139 (47 %)[d]	140 (48 %)	89 (50 %)	219 (46 %)	154 (50 %)	90 (44 %)	0.75
Verbal redirection	272 (91 %)	248 (83 %)	147 (83 %)	332 (70 %)	219 (72 %)	178 (86 %)	<0.001
AM shift	143 (48 %)	118 (40 %)	78 (44 %)	242 (51 %)	144 (47 %)	111 (54 %)	0.47
Medications	242 (81 %)	192 (65 %)	126 (71 %)	348 (74 %)	252 (82 %)	185 (90 %)	<0.001

[a] Median (minimum, maximum)

[b] Number of episodes/number of patients in each year

[c] Mean ± standard deviation

[d] Number of episodes (percent)

were consistent over time that is, no significant interactions were observed with year. Moreover, these factors all remained significant when they were included together in an overall multivariate model with episode duration as outcome and controlling for year. As can be seen in Table 3, the differences in mean episode time ranged between 1 min for medications (107 min) versus no medications (106 min) and 6 min for males (109 min) versus females (103 min). The fact that such relatively small differences in average time were significant may be attributed to the large overall sample size as well as the small magnitude of the standard deviations.

Discussion

Among the data we gathered, we decided to concentrate on the following: the number of restraint episodes, the mean duration of each restraint episode, whether alternatives such as verbal redirection and medications were used, and variation in restraint episode according to the unit, the patient's gender and the shift when the episode was initiated. Our study showed that the number of restraint episodes varied across the 6 years of study, with the greatest number of restraint episodes overall occurring in 2010, which was also the year for the maximum number and highest mean duration of restraint episodes for an individual patient. We also found that the duration of restraint episodes for male patients was longer than that for female patients. Unit 6 had more extended restraint episodes when compared to Unit 4. There were more restraint episodes in the evening shift as compared to the day shift in both units and in the majority of restraint episodes, verbal redirection and medication were given prior to the episode.

When comparing our between-unit differences in restraint use, we realized that we did not have all of the information we would need to uncover the most compelling reasons for the difference. For example, the fact that verbal redirection and medications were given prior to most of the episodes, presents the impression that these interventions lead to restraint episodes. However, it should be borne in mind that we do not have data on the

Table 3 Factors related to duration of restraint episodes

Characteristic	Duration of episode (minutes)	*p* value
Gender		
Female	103 ± 27	0.002
Male	109 ± 22	
Unit		
4	104 ± 25	<0.001
6	109 ± 22	
Medications		
No	106 ± 28	0.03
Yes	107 ± 23	
Verbal redirection		
No	105 ± 27	0.003
Yes	107 ± 23	
Shift		
AM	104 ± 26	0.003
PM	109 ± 22	

number of patients who received verbal redirection and medications but did not end up in restraints. Also, the timing of medication administration was not mentioned in most restraint sheets. Therefore it is unclear whether these medications were administered well before the restraints episodes in order to have the proper effect or not. Having verbal redirection before restraint episodes points towards the good practice of exercising less restrictive measures to control aggression.

Every single restraint sheet we reviewed showed aggression as the cause leading to the episode. Since aggression is the foremost cause of ordering restraints for a patient (in our study as well as in prior literature), an individualized treatment plan based on the physiologic, psychosocial, behavioral and environmental needs of the patient may serve to reduce many of the patients' trigger points of aggression. This may translate to a decrease in the occurrence of restraint episodes. If aggression occurs and restraints are ordered, the treatment team should modify the treatment plan based on what they have learned from the episode. For example, if a patient gets agitated and aggressive during visiting hours only, try to find out what about the visiting hour makes him upset, if it's a particular visitor that makes him upset the treatment team can try to understand the dynamics between the visitor and the patient while restricting the visits from the visitor or maybe the patient feels jealous seeing people visiting other patients when no one visits him, in such cases providing a distraction during the visiting hours can be helpful. Thus, the treatment plan should be flexible, adjusting to the patient's needs as they change over the course of treatment.

The individualized treatment plan should be based on the patient's initial behavioral patterns, social activities, interactions, and relationships with others as gathered by a thorough history, followed by a talk with someone who knows the patient well. This initial knowledge base can be used to construct the plan for daily activities and groups that the patient can participate in. One should keep in mind that a sudden change in the environment can itself lead to aggression; therefore, any alteration in patient activities should only be offered at a pace tolerable by the patient. A study conducted by Swadi et al. showed that the majority of seclusion episodes occurred during the initial week of admission [34]. Therefore extra attention is needed at the beginning of any new admission.

Identifying the trigger for agitation or aggression in a patient is central to managing the agitation. To identify the triggers or causes of aggression one should go thoroughly and meticulously through the history of the event and all that transpired. From our clinical experience we have noticed that some common scenarios where many patients have difficulty controlling their aggression are crowded places, disagreement over hospitalization or the treatment plan, altercations with others on the unit, aggression from another patient, exposure to family, and conflict over resources on the unit (e.g. food, TV, recreation etc.). All of this information should be obtained and used to identify patterns which can then be considered when looking for the triggers of any aggression. If possible, go through the previous records and make a note if the patient has been violent in the past, and if so, what the cause and extent of his/her aggression was. A more comprehensive plan is needed for patients with a history of violence and assault. The next step is to identify what calming techniques work best for the patient. It is always best to ask the patient himself/herself what calming techniques have worked for them. Alternatively, if the patient is not in a condition to express himself properly, friends and family may be able to suggest personalized calming techniques. Once the calming techniques that are most effective for the particular patient are identified, nurses and other treatment team members should be informed, and a plan to pacify the patient if an aggressive episode occurs should be formulated using knowledge of patient-specific triggers and calming methods, while being careful not to promise something the unit cannot deliver.

Agitation can be grouped into three broad categories: psychopathological (e.g. due to psychosis), psychosocial and environmental. The following interventions may be used according to which category best describes the agitation.

Psychopathological	Psychosocial	Environmental
-Try to understand patient's psychosis; is it pertaining to a particular thing or person? - Remove any triggers that are specific to the patient's psychosis. - Address the medication regimen	- Attention to underlying meaning of agitation. - Maintain communication.	- Remove irritants. - Offer list of preferred activities. - Provide outlet for anxious behaviour. - Provide activities at a reasonable pace if there is a sudden change in environment.

The use of evidence-based, personalized behavioral interventions leads to favorable outcomes in most cases. Some of the best-documented interventions for dealing with aggressive behavior are social learning programs, positive programming, differential reinforcement of other behavior, social skills training and time out from reinforcement [35]. Social learning programs provide a motivational system for the patient where the patient's positive behaviour is rewarded with some incentive. Positive programming attempts to stop a patient from exhibiting aggression by using a constructive activity as a distraction, which is then reinforced by positive reactions from the staff and by the patient's satisfaction of pursuing something constructive. Differential reinforcement is when behavior other than aggression is given positive reinforcement with praise, attention or any alternative method of reinforcement. Social skills-training plays a major role in giving the patient insight into his behavior and providing him with tools to modify it. As one of the main reasons for aggression is the patient's failure to express his needs in an effective way, social skills training can teach the patient alternative ways to express his needs. Time out from stressors helps the patient to get away from the emotionally charged environment to a quiet place for a specified period of time, decreasing the triggers for his aggression. For example, during an activity group on inpatient unit, if patient feels upset about something and the activity therapist feels that he might escalate, redirecting him to his room for some quiet time can be helpful.

When the patient is aggressive, an understandable response is to attempt to find the reason for the aggression, but it is equally important to maintain communication with the patient when he is escalating. It is important to identify the antecedents of aggression for a patient as this will be helpful in starting a meaningful communication with the patient about his feelings or immediate reactions to his environment. The time between escalation and aggression is when reinforcing the patient's positive qualities, providing an alternative outlet for emotional outbursts, and diversion in the form of various activities can be helpful in decreasing agitation. This is when the individualized treatment plan comes into play.

Richmond et al. described four main objectives when dealing with an agitated patient: (1) ensure the safety of the patient, staff, and others in the area; (2) help the patient manage his emotions and distress and maintain or regain control of his behaviour; (3) avoid the use of restraint when at all possible; and (4) avoid coercive interventions that escalate agitation [36]. Verbal de-escalation is an important technique that helps to engage the patient in his/her own treatment plan. According to American Association for Emergency Psychiatry project BETA (Best practices in Evaluation and Treatment of Agitation), non-coercive de-escalation is the intervention of choice in the management of acute agitation and

threatening behavior, unless the patient is actively violent [37]. Fishkind further gave 10 domains of de-escalation [38] which are as follows

(1) Respect personal space
(2) Do not be provocative
(3) Establish verbal contact
(4) Be concise
(5) Identify wants and feelings
(6) Listen closely to what the patient is saying
(7) Agree or agree to disagree
(8) Lay down the law and set clear limits
(9) Offer choices and optimism
(10) Debrief the patient and the staff

Some patients may end up in restraints despite our best efforts. After reviewing the literature we constructed an algorithm that can be followed when a patient starts escalating their language or behavior. It incorporates knowledge about the patient's positive qualities and his/her preferences into the management plan for any future aggressive behavior and can be made specific to each patient when the treatment team is preparing an individualized plan for the patient (Fig. 1).

In November 2008 a seminar was organized for nurses with the goal of reducing the episodes of restraints at Maimonides Medical Center. Nurses were given an overview of different strategies for reducing the use of restraints and for handling any negative sequelae from the restraint episode for both the patient and themselves. Nurses were informed of the importance of early recognition, intervention and debriefing. Focus areas of the seminar were sensory intervention (e.g. music, dance, painting, etc.) and cognitive procedural learning. It is hoped that the decreased episodes of restraints in 2009 (least number of episodes per year of all the years studied), can be attributed to the effect of this seminar. In a randomized trial, Kontio et al. found that after nursing personnel were given an *eLearning* course on issues involving restraint, the number of restraint/seclusion episodes did not decrease, but the duration of incidents involving mechanical restraints decreased from 36 to 4 h (median) ($p < 0.001$). [39].

An intense level of involvement by all staff is needed to maintain an active program to manage crises "restraint free." The frequent concerns voiced by administration and staff if restraints are to be decreased are increased violence on the units, increased length of stay, increased use of "chemical restraints" and increased use of staff time in observation hours. However, these were not reported in an acute care inner city psychiatric service when following a dramatic decrease in restraint use [40].

Regular training of the staff in terms of how to handle an agitated patient can be fruitful. In addition, organizing mock drills can enhance the readiness of a team and their expertise in handling tough situations without the real chance of patient or staff injury. A recent study on restraint reduction pointed that the most crucial step in decreasing restraint utilization is to do a rapid, detailed clinical review of restraint occurrences and giving feedback to staff [41]. If the patient is a new admission and the treatment team feels that he/she could get agitated, the team should have a detailed discussion about the person's mental status, the situations in which he/she could turn violent, and how to handle those situations should they occur. If the patient is well known to the staff, a different discussion should be had to review interventions that have worked during former treatment episodes.

One of the keys to decreasing restraint utilization is innovation. The treatment team should regularly evaluate, update and apply measures of decreasing the agitation of a

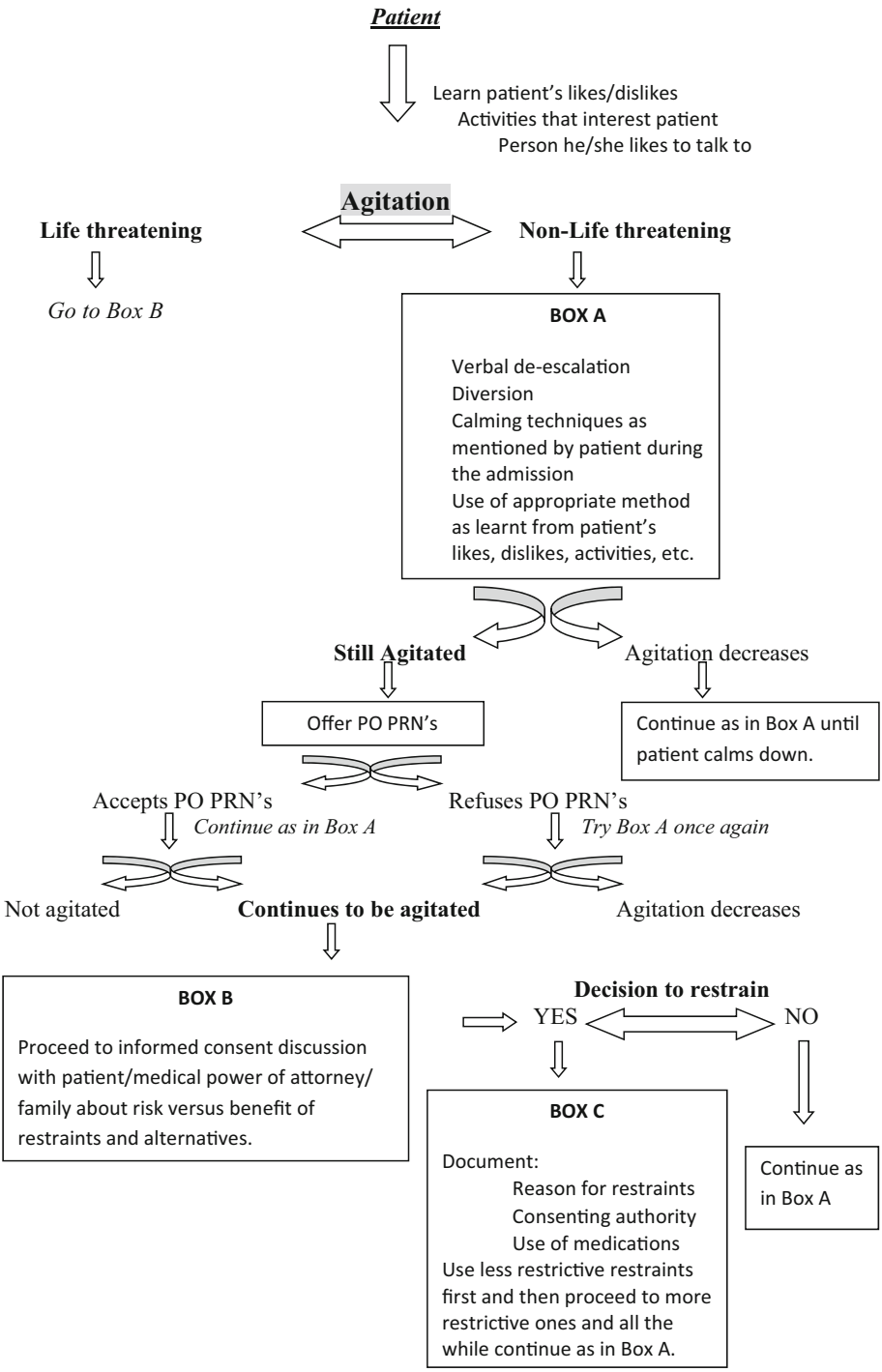

Fig. 1 Understanding and management of patient agitation to reduce restraint use

patient. The treatment plan should be tailor-made for each patient for greatest effectiveness. Each restraint episode should be considered a treatment failure, motivating the team to revise the treatment plan accordingly. Catering to the senses of the patient by sensory intervention and providing a diversion from agitation by cognitive procedural learning can be very effective, but this requires the staff to know the patient, understand the techniques, and to have the time to work with them. For example, if the staff know that a person likes a particular kind of music, it could be used as a distraction to prevent the patient from requiring restraints. Another example would be a comfort room with soothing pictures, music and aroma. In cases where the patient is new to the staff, it can be very difficult to predict agitation. Therefore, it may be useful to discuss different strategies to decrease the patient's agitation if possible, during the admission process itself.

With patients for whom restraints seem inevitable, try a less restrictive measure first and if it fails, then follow with a more restrictive one. The patient should be monitored continuously while restrained as per the JCAHO guidelines, and restraints should be removed as early as possible. Once the patient is out of restraints, it is important to do separate debriefings with the patient and with the staff. A pilot study by Bonner et al. showed that most of the events leading to aggression often involve patient-staff conflict [42], which makes it imperative to know both sides' perceptions of the restraint episode. Debriefing provides a chance for the treatment team to look for any failed communication that might have occurred and may prove pivotal in making sure that such incidents do not occur again. It helps patients and staff alike in expressing their feelings about the episode and may help them identify the missing link leading to the episode. Debriefing can be therapeutic and may help the patient to overcome the feelings of injustice and distress that may occur during the episode and afterwards. The treatment plan should be changed accordingly after debriefing. Figure 2 describes the purpose and the points to be kept in mind for debriefing.

Despite the safety risk in using restraint and seclusion, there are no randomized controlled studies comparing alternative methods of reducing violence in inpatient settings [43]. Such studies are needed to know what are the best practices, as well as how to implement them.

Study Limitations

The following data were not gathered:

(1) Length of stay
(2) Diagnosis of each patient
(3) Whether the admission was voluntary or involuntary
(4) Ethnicity of the patient
(5) History of substance abuse
(6) Availability of staff such as, the number of nurses or mental health workers per patient

Apart from these, the following points also limit the results of the study:

In many restraint order sheets, the medications given to the patient were not specified. The prospect of under-reporting of the verbal redirections used and of oral PRN medications given prior to restraint episodes cannot be ruled out. In several cases, it was not clear how much time had elapsed between the administration of medication and the restraining of the patient.

Debriefing after restraints

Goals:

To identify trigger points in a patient
To prepare individualized treatment plan for a patient.
To avoid/decrease and limit the use of restraints only as a last resort

Debriefing with whole team:

1) Communicate
2) Let each member speak his feelings
3) How the situation could be avoided?
4) Did the team missed to identify a trigger point? If so how can it be identified?
5) What can be done in future to avoid restraints in the patient?
6) Change treatment plan accordingly

Debriefing with the patient +/- Family:

1) Communicate the cause for restraints
2) Let patient express his/her feelings
3) Explain to the patient the rationale of using restraints and patient's own role in the decision
4) What could be done in future to avoid such a situation?
5) Go through patient's record with the patient, to give them an understanding of the incident.
6) Change treatment plan accordingly

Fig. 2 Debriefing following restraint use

Conclusion

However tempting the prospect of total abolishment of restraints may be, the reality is that we are far from it; the best we can often do is decrease the number of incidents of restraint use. Reducing the use of restraints ultimately comes down to the delicate relationship between the patient and the staff. Each episode is a complex event which involves the interplay of various factors. In our study we found that the gender of the patient plays an important role in restraint utilization (males having longer duration of restraints than females) along with the time of the shift (evening shifts having more restraint episodes than morning shifts). These findings need to be further dissected to identify what makes these factors play a significant role in restraint episodes. Our study contributes to the pool of data which will help in identifying the different factors that affect restraint episodes. To this point, it appears that individualized treatment plans that incorporate specific procedures to either prevent or reduce the severity of an aggressive episode are the most realistic way to decrease the use of restraints.

Conflict of interest The authors declare that they have no conflict of interest.

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