Staff Perceptions and Organizational Factors as Predictors of Seclusion and Restraint on Psychiatric Wards

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Objective: **Several factors have been shown to be involved in decisions to use seclusion and restraint in psychiatric inpatient settings. This study examined whether staff perceptions of factors related to the care team and violence on the ward predicted use of seclusion and restraint in psychiatric wards.** ***Methods:*** **A total of 309 staff members (nurses, rehabilitation instructors, and nurse's aides) providing care to patients with serious mental disorders were recruited from eight university psychiatric hospitals and general-hospital psychiatric units in the province of Quebec. Factors assessed included sociodemographic characteristics, psychological distress, staff perceptions of aggression and of interaction between members of the psychiatric team (team climate), and organizational factors.** ***Results:*** **Bivariate analyses showed that certain aspects of the team climate, staff perceptions of aggression, and organizational factors were associated with greater use of seclusion and restraint. The final multivariate model indicated that the following factors independently predicted greater use: type of hospital ward (emergency department and intensive care unit), staff perception of a higher level of expression of anger and aggression among team members, perception of the frequency of incidents of physical aggression against the self among patients, and perception of insufficient safety measures in the workplace.** ***Conclusions:*** **These findings represent the first stage of a research program aimed at reducing use of seclusion and restraint in psychiatric settings. They underscore the importance of evaluating a variety of factors, including perceptions of safety and violence, when examining reasons for use of these controversial interventions. (*Psychiatric Services* 62:484–491, 2011)**

Robert Fleury's painting shows Philippe Pinel ordering the shackles removed from the inmates at the Bicêtre Asylum, sparking a revolution in the treatment of people with mental illness. Two hundred years later, the use of seclusion and restraint in psychiatry still raises concerns (1). Seclusion is considered a therapeutic measure to isolate individuals and limit their contacts with peers; seclusion with restraint involves the additional application of mechanical restraints.

Some professionals defend the use of such practices as a necessary intervention, because studies have shown that 16% of psychiatric inpatients demonstrate aggressive behavior during the first week of hospitalization and that 7% of persons with a mental disorder have perpetrated violence in the year after their diagnosis, compared with 2% in the general population (2). Aggressive behavior affects the physical and psychological health of psychiatric nursing staff (3) and leads to increased work absence due to illness and to low morale (4). After violent incidents, many staff victims remain fearful and report less satisfaction in their work (5).

The reported incidence of seclusion without restraint in psychiatric settings ranges from 4% to 44% among adults (6), and use of seclusion with restraints is reported to range from 4% (7) to 12% (8). For a variety of reasons, nearly 24% of all patients admitted to a psychiatric emergency department require restraint or a combination of seclusion and restraint (9). However, many staff members strongly object to the use of these interventions, regarding it as a violation of the patient's right to freedom and dignity (10). Staff members have reported experiencing shame and have expressed the fear that they are abusing a pa-

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tient's rights when they must initiate a seclusion or restraint procedure (11). These interventions also lead patients to develop negative perceptions of the mental health facility, which weakens the therapeutic alliance and negatively affects treatment adherence (12). In addition, these procedures are associated with negative physical consequences for patients, including lacerations, asphyxiation, and even death (13). Some patients describe the experience of seclusion and restraint as similar to physical abuse and rape (14).

Studies conducted in the past decade have indicated that although a decision to use seclusion and restraint is based on rational needs, it may be influenced by a number of external factors, including the health care worker's psychological state and personal perceptions of violence, along with patient characteristics and organizational variables (15–17).

Several studies have assessed organizational and staff-level predictors of seclusion and restraint in psychiatric inpatient settings, either separately (16,18,19) or in combination (20–23). However, to our knowledge, no study has focused on staff members' perception of patient aggression as a predictor of the use of seclusion and restraint while also taking into account other important factors. The goal of this study was to identify the most accurate predictors of the use of seclusion and restraint on psychiatric wards. Use of these interventions has come under scrutiny in psychiatric treatment settings in the past few decades (24,25). The study reported here is therefore in line with a variety of initiatives to reduce the use of seclusion and restraint.

Methods

Participants

A total of 309 staff members (nurses, rehabilitation instructors, and nurse's aides) were recruited from eight university-affiliated hospitals in the province of Quebec. They included one general psychiatric hospital (N=59 participants), one forensic hospital (N=67), three psychiatric departments of general teaching hospitals (N=114), and three suburban hospitals (N=69). To be included in the study, participants had to be at least 18 years old, have at least one year of work experience in psychiatry, and work more than 20 hours a week on a psychiatric ward (26). All participants provided written informed consent, and all local institutional review boards approved the project. Data collection took place from April 2008 to April 2009. A retest to evaluate the temporal stability of each measure was administered to a participant subsample (N=48) between September and November 2008.

Questionnaire

Sociodemographic variables. Scales drawn from the Quebec Social and Health Survey were used to collect sociodemographic and work-related data. Psychological distress was measured with the Quebec Psychological Distress Index (27–29). The total score has been shown to be an efficient discriminative tool (27). In our sample, the total score showed good internal consistency (Cronbach's α= .89) and temporal stability in the test-retest (Pearson r=.57).

Team climate. Team climate was evaluated by the Group Environment Scale (GES) (30), a standardized tool that has been translated into French and validated (31). The scale comprises ten nine-item subscales measuring different aspects of team climate. Six subscales have good internal consistency (α=.67–.88) and temporal stability (Pearson r=.57–.79 for the test-retest). These subscales are team cohesiveness, leader support, tolerance for self-discovery, guidance in performing tasks, expression of anger and aggression within the team, and order and organization. Two subscales—freedom of speech and leader control—have a lower level of internal consistency (α=.57 and .58) and good temporal stability (Pearson r=.68 and .72 for the test-retest). The other two subscales show the weakest psychometric properties: tolerance of independence (α=.30; r=.53) and tolerance for innovation (α=.56; r=.22).

Perception of aggression and frequency of incidents. Perception of aggression was measured with the Perception of Aggression Scale (POAS) (32), a 12-item instrument that uses a 5-point Likert scale, from 1, strongly disagree, to 5, strongly agree) (33,34) to assess staff perceptions of aggressive behavior. Previous factor analysis revealed a two-factor structure: aggressiveness is dysfunctional-undesirable, and aggressiveness is functional-comprehensible. The POAS was translated into French. The internal consistency and temporal stability were good (α=.84 and .85 and Pearson r=.73 and .52, respectively, for each subscale.

The perceived frequency of aggressive incidents (verbal, nonverbal, physical toward self, and physical toward others) was measured on a 5-point Likert scale (from 1, never, to 5, daily) with a modified version of the Overt Aggression Scale (OAS) (35). The internal consistency was good (α between .84 and .89 for each subscale. The temporal stability was good for the verbal and nonverbal scales (r=.76 and .77, respectively), but it was lower for physical aggression toward self and toward others (r=.37 and .43, respectively).

Organizational factors

The research team developed questions about the availability of an aggression protocol on the ward and whether it was followed, descriptions of safety measures and whether they were sufficient, staff members' perception of their safety at work, and the type of violence management training program that was offered to staff. Most psychiatric staff members in Quebec have taken the Oméga Crisis Prevention Training Program (36). Also assessed were the type of psychiatric unit (regular hospital units versus intensive care unit and emergency department) and the hospital setting (teaching versus nonteaching milieu).

Measures of seclusion and restraint

Prevalence of seclusion and restraint was assessed by asking each participant how often the team had used these interventions in the previous two weeks. Groups were compared on the basis of the median value; high users were those who reported two or more seclusion and restraint episodes in the past two weeks, and low users were those reporting one or none. This categorization showed moderate

temporal stability (κ=.585 for the test-retest) (37), indicating that variations in seclusion and restraint use were probably a result of changing patients and staff.

Data analysis

Statistical analyses were performed with SPSS software, version 17. Bivariate analyses to compare high and low users of seclusion and restraint were conducted with chi square tests for the categorical variables and Student's t test for continuous variables. A multivariate model was then completed to evaluate independent predictors of greater recourse to seclusion and restraint. Four different models were created, and a final multivariate model was completed with variables significant at $p \leq .1$. Each of the variables in the bivariate analyses with a p value of $\leq .25$ was included in the multivariate analyses to determine significant independent predictors of seclusion and restraint in the psychiatric wards. Various models were evaluated, starting with the sociodemographic variables, followed by team climate, perception of aggression and aggressive incidents, and organizational factors. Each subsequent model retained the significant variables ($p \leq .1$) from the previous one. To control for the confounding impact of certain variables (higher level of aggression or agitation), the type of unit (intensive care units and emergency departments versus regular hospital units) and the hospital setting (teaching versus nonteaching) were entered into every model (38–41). Finally, the goodness of fit of each model was assessed by the receiver operating characteristic curve. The level of discrimination was determined by the area under the curve, and following Hosmer and Lemeshow (42), discrimination was deemed acceptable at values between .70 and .79, excellent between .80 and .89, and outstanding at values over .90.

Results

Tables 1, 2, and 3 present results of bivariate analyses of differences in sociodemographic characteristics, subscale scores, and organizational factors, respectively, between the groups of high and low users of seclusion and restraint. Table 4 presents the four multivariate models of predictors of use of these interventions, along with the final model.

Sociodemographic variables

As shown in Table 1, there were no significant differences between the high and low users of seclusion and restraint in sociodemographic and work-related variables. Psychological distress was also not associated with greater recourse to these interventions. The first multivariate logistic regression model indicated that none of these variables was a significant predictor of the use of seclusion and restraint (Table 4). This model did not reach an acceptable level of discrimination.

Team climate

As shown in Table 2, bivariate analysis indicated no significant between-group differences on most of the GES subscales. However, a significant association was found between use of

Table 1

Sociodemographic characteristics of 309 inpatient psychiatric staff members, by whether they reported low or high use of seclusion and restraint on their ward[a]

Characteristic	Low use (N=135)		High use (N=174)		Test statistic	df	p
	N	%	N	%			
Gender					χ^2=2.44	1	.12
Female	88	65	97	56			
Male	47	35	75	43			
Age (M±SD)	43.3±11.2		42.4±1.7		t=.64	286	.52
Parents born outside Canada					χ^2=3.01	1	.08
Yes	14	10	30	17			
No	121	90	143	82			
Job title					χ^2=2.65	2	.27
Nurse	86	64	102	59			
Rehabilitation instructor	23	17	27	16			
Nurse's aide	24	18	45	26			
Employment status					χ^2=.30	1	.58
Full-time (≥32 hours per week)	106	79	130	75			
Part-time (<32 hours per week)	25	19	36	21			
Years of experience in psychiatry (M±SD)	14.5±6.2		13.7±5.9		t=.52	294	.61
Education					χ^2=1.31	2	.52
Completed high school	13	10	23	13			
Completed community college	69	51	80	46			
Completed university	52	39	70	40			
Practicing any religion					χ^2=2.93	1	.09
Yes	27	20	49	28			
No	108	80	123	71			
Psychological Distress Scale score (M±SD)[b]	2.70±5.44		21.27±5.03		t=–.95	301	.342

[a] Low use, one or no episodes in the past 2 weeks; high use, ≥2 episodes in the past 2 weeks
[b] Possible scores range from 14 to 56, with higher scores indicating higher psychological distress.

Table 2

Scores on three scales measuring the perceptions of 309 inpatient psychiatric staff members, by whether they reported low or high use of seclusion and restraint on their ward[a]

Scale	Low use (N=135) M	Low use (N=135) SD	High use (N=174) M	High use (N=174) SD	t	df	p
Group Environment Scale subscale[b]							
Cohesion	6.96	2.70	6.58	2.79	1.90	289	.058
Leader support	6.17	2.70	5.99	2.86	.54	293	.592
Expressiveness	4.34	1.22	4.38	1.38	–.25	291	.805
Independence	5.82	1.49	5.50	1.54	1.78	293	.076
Task orientation	7.61	2.02	7.50	1.89	.49	294	.623
Tolerance of self-discovery	4.84	2.39	5.02	2.32	–.66	295	.512
Expression of anger and aggression	3.60	2.04	4.56	2.25	–3.75	289	<.001
Order and organization	6.26	2.56	5.58	2.85	2.12	288	.035
Leader control	5.49	2.05	5.28	1.89	.91	290	.366
Tolerance of innovation	3.80	1.86	4.07	1.88	–1.19	287	.235
Perception of Aggression Scale subscale[c]							
Aggression is dysfunctional	21.81	5.60	23.03	5.14	–1.99	306	.047
Aggression is functional	14.36	5.18	14.19	5.52	.27	307	.787
Modified Overt Aggression Scale subscale[d]							
Verbal	13.94	3.24	16.08	2.84	–6.12	302	<.001
Nonverbal	11.95	3.53	14.73	3.33	–6.99	300	<.001
Physical toward self	9.56	2.95	12.05	3.52	–6.52	297	<.001
Physical toward others	8.53	2.09	10.21	2.97	–5.51	298	<.001

[a] Low use, one or no episodes in the past 2 weeks; high use, ≥2 episodes in the past 2 weeks
[b] Possible subscale scores range from 1 to 10, with higher scores indicating more of the aspect measured.
[c] Possible subscale scores range from 6 to 30, with higher scores indicating greater agreement.
[d] Possible subscale scores range from 4 to 20, with higher scores indicating high perceived prevalence of that type of violence.

seclusion and restraint and scores on two of the subscales; greater expression of anger and aggression by staff members was associated with higher use, and greater order and organization among staff was associated with lower use. The second multivariate model indicated that higher scores on the subscales of tolerance for innovation and expression of anger and aggression were significant predictors of greater use of seclusion and restraint (Table 4). This model reached an acceptable level of discrimination.

Perception of aggression and incident frequency

Scores on the POAS subscale indicating that aggression was perceived as dysfunctional were significantly associated with a higher use of seclusion and restraint; no association was found with the POAS subscale measuring the perception of aggression as functional (Table 2). The modified OAS measured the perception of frequency of aggressive incidents. For all four subscales, a significant association was found between higher scores (more aggression) and greater use of seclusion and restraint. The

Table 3

Organizational factors on inpatient psychiatric wards of 309 staff members, by whether they reported low or high use of seclusion and restraint on their ward[a]

Factor	Low use (N=135) N	Low use (N=135) %	High use (N=174) N	High use (N=174) %	χ^2	df	p
Violence management program received					5.93	2	.052
Oméga	97	73	109	63			
Other	20	15	46	27			
None	16	12	18	10			
Aggression protocol available					.09	1	.768
Yes	110	83	140	81			
No	23	17	32	19			
Aggression protocol followed					.18	1	.673
Yes	106	95	150	94			
No	5	5	9	6			
Sufficient safety measures					2.90	1	.089
Yes	79	60	84	50			
No	53	40	84	50			
Type of unit					15.61	1	<.001
Intensive care unit or emergency department	14	10	50	29			
Other	121	90	124	71			
Hospital setting							
Teaching hospital	95	70	145	83	7.37	1	.007
Other	40	30	29	17			

[a] Low use, one or no episodes in the past 2 weeks; high use, ≥2 episodes in the past 2 weeks

Table 4

Multivariate regression analysis of predictors of seclusion and restraint on eight inpatient psychiatric wards

	Model 1: sociodemographic characteristics[a]			Model 2: team climate[b]			Model 3: perception of aggression and frequency of incidents[c]			Model 4: organizational factors[d]			Final model[e]		
Variable	OR	95% CI	p	OR	95% CI	p	OR	95% CI	p	OR	95% CI	p	OR	95% CI	p
Nonteaching hospital (reference: teaching hospital)	1.64	.91–2.93	.980	1.28	.66–2.47	.465	1.44	.71–2.91	.312	1.54	.77–3.11	.226	1.79	.91–3.53	.091
Intensive care unit or ergency department (reference: regular unit)	2.93	1.50–5.70	.002	3.64	1.72–7.70	.001	3.05	1.39–6.72	.006	3.41	1.56–7.45	.002	2.95	1.40–6.21	.004
Female (reference: male)	.72	.44–1.17	.181												
Parents born outside Canada (reference: no)	1.10	.51–2.36	.813												
Practicing any religion (reference: no)	.65	.36–1.18	.154												
Group Environment Scale subscale															
Cohesion				1.08	.93–1.27	.324									
Independence				.85	.70–1.04	.108									
Expression of anger and aggression				1.28	1.09–1.50	.003	1.23	1.06–1.43	.007	1.26	1.08–1.46	.003	1.19	1.04–1.36	.011
Order and organization				.91	.78–1.05	.197									
Tolerance of innovation				1.20	1.02–1.43	.031	1.15	.98–1.35	.086	1.12	.96–1.31	.144			
Perception of Aggression Scale subscale: violence is dysfunctional (reference:it is functional)							1.04	.98–1.09	.175						
Overt Aggression Scale subscale															
Verbal							1.06	.94–1.19	.367						
Nonverbal							1.09	.97–1.22	.141						
Physical toward self							1.15	1.03–1.28	.015	1.25	1.13–1.38	.001	1.26	1.15–1.38	.001
Physical toward others							1.05	.89–1.24	.561						
Violence management program received (reference: none)															
Oméga										.77	.31 - 1.93	.557			
Other										1.74	.58 - 5.22	.325			
Perceived safety measures as sufficient (reference: no)									.60		.94–2.95	.083	.59	.98–2.95	.061

[a] N=304, χ^2=23.43, df=5, p<.001, Nagelkerke R^2=.099, area under the curve (AUC)=.651
[b] N=265, χ^2=39.25, df=7, p<.001, Nagelkerke R^2=.184, AUC=.713
[c] N=258, χ^2=65.61, df=9, p<.001, Nagelkerke R^2=.301, AUC=.791
[d] N=261, χ^2=68.18, df=8, p<.001, Nagelkerke R^2=.308, AUC=.783
[e] N=272, χ^2=62.74, df=5, p<.001, Nagelkerke R^2=.275, AUC=.772

third multivariate model indicated that scores on only one of the OAS subscales—indicating greater physical violence against the self—remained a significant predictor of greater use when the analysis controlled for confounding variables (Table 4). This model reached an acceptable level of discrimination.

Organizational factors

As shown in Table 3, bivariate analysis indicated an association between the type of violence management program and the use of seclusion and restraint. A trend was found toward a significant association between staff perception that the safety measures used were adequate and use of seclusion and restraint (p=.089). The type of unit and the hospital setting were associated with more use of seclusion and restraint; specifically, there was significantly more use on intensive care units and in emergency departments and in teaching hospitals. Type of unit was a significant predictor in all the multivariate models.

Final model

Controlling for unit type and hospital setting, the final multivariate model indicated that greater expression of anger and aggression among staff members and perception of a higher level of physical aggression against the self among patients were significant independent predictors of greater use of seclusion and restraint (Table 4). A trend was found toward a significant association between staff perceptions of the adequacy of safety measures (p=.061); when safety

measures were perceived to be of a sufficient level, use of seclusion and restraint was lower. This model was the most parsimonious one and reached an acceptable level of discrimination.

Discussion

The purpose of this study was to explore staff-related and organizational predictors of the use of seclusion and restraint in psychiatric inpatient settings from the perspective of care providers. The study found that use was higher in certain types of hospital settings—intensive care unit and emergency departments—and when staff perceived greater expression of anger and aggression among team members, more incidents of aggression against the self among patients, and insufficient safety measures in the workplace. These findings underscore the importance of evaluating multiple factors (15), such as violence and safety perceptions, when examining reasons for use of seclusion and restraint.

In contrast to previous studies, our study did not find that sociodemographic characteristics of staff were a valid basis for predicting the use of seclusion and restraint. Staff education level, type of work (job title), and gender (43) have been found to affect the prevalence of seclusion and restraint in psychiatric wards and the incidence of violent behavior in general (44). Experienced staff members are generally considered to calm patients more effectively than less experienced staff and to report less use of seclusion and restraint (6,45). Findings of studies on gender and the likelihood of being the victim of a violent attack (45) are contradictory, a fact that may explain why our study found no difference in use of seclusion and restraint by gender. Furthermore, whereas other studies found a cultural bias in the use of seclusion and restraint use, our study did not find a difference between those with parents born in Canada or outside Canada.

The second multivariate model assessed the importance of team climate in managing seclusion and restraint. Two GES subscales were positively correlated with increased use. The perception of greater expression of anger and aggression among team members was a predictor of seclusion and restraint in the final model. Indeed, it is easy to understand how a psychiatric ward where expression of anger and aggressive behavior among staff members is more common would give rise to greater use of seclusion and restraint. What does this finding tell us about team climate and work satisfaction? Staff members who are more satisfied with their hospital setting and their team climate have been shown to perceive lower rates of aggression among patients (45), probably because of appropriate management and support by colleagues and administrative personnel when aggressive events occur. Many staff members in psychiatric wards feel socially pressured to "control" patients who have lost their rational capacities (46), but some staff members who consider seclusion and restraint demeaning to the patient and contrary to the principles of autonomy and care may feel conflicted. Appropriate management of anger and aggression by team members creates a sense of security and can help reconcile the balance between therapeutic interventions and the need to control patients. In the long run, the anxiety of some staff regarding aggressive behavior might be alleviated if aggression is perceived as part of the mental disorder and handled with more tolerance. In summary, these findings underscore previous research suggesting that the prevalence of seclusion and restraint in inpatient psychiatric settings is influenced more by team climate and organizational variables than by individual characteristics.

The scales used to measure perceptions of aggression and the frequency of aggressive incidents shed further light on the management of seclusion and restraint. Scores on a POAS subscale indicated that when violence was perceived as dysfunctional, seclusion and restraint were used more frequently. Scores on the OAS subscales showed that when the analysis controlled for unit type, higher perceived violence of various types (verbal, nonverbal, against self, or against others) predicted greater use of seclusion and restraint in the past two weeks. Taken together, these findings suggest that fears provoked by the irrational aggressiveness of psychiatric patients affect frontline workers in psychiatric wards and the way that they manage seclusion and restraint. As Foster and colleagues (18) reported, staff were more likely to use physical methods to manage incidents of aggression when they experienced fear, and fear can be induced by working in environments such as psychiatric wards, where incidents of physical and verbal abuse occur often and where it is difficult to understand the causes of patient aggression. In addition, Bowers and colleagues (47) reported that care providers with a positive attitude toward people with mental health problems had an easier time managing their emotional reactions and adopting a cooperative attitude with clients. Care providers with a negative attitude managed their emotional reactions less skillfully. They consequently adopted a controlling attitude that led them to resort more readily to use of seclusion and restraint. Wards with higher aggression rates have been found to have a preponderance of nurses whose style of interacting and intervening is restrictive and controlling (48).

However, only the OAS subscale measuring perceptions of violence against the self was a significant predictor in our final model. Recent empirical studies do not provide a reason for this finding—that is, they do not explain why this subscale rather than the OAS subscales measuring other types of violence was a predictor of seclusion and restraint use. On psychiatric wards, self-harm has been found to be a precipitating factor of the use of these interventions (6,9), especially with patients who have affective disorders. In such circumstances, seclusion and restraint measures may be perceived as a way of protecting the patient, and psychiatric staff may be more likely to use coercive measures in this context.

Staff training has also been shown to have an impact on the use of seclusion and restraint (49). Many reports have described examples of violence management training programs that have been implemented in hospitals

with the aim of reducing the use of these interventions; many such programs have been successful (50,51). In our study, the association between training programs and lower use of seclusion and restraint was significant in the bivariate analysis, but training was not a predictor in the third multivariate model. Systematic training of every staff member might reduce recourse to seclusion and restraint, but current programs need improvement to attain this goal, and more alternatives to these interventions must be developed.

Staff perceptions that safety measures in psychiatric units are insufficient also appears to be important. A trend in the final model suggested that this factor has an independent significant impact on use of seclusion and restraint. This finding is consistent with results of earlier studies showing that psychiatric nurses' decisions were influenced by safety issues in the workplace (52,53) and that safety in the working environment was strongly related to staff satisfaction (54). To reduce the use of seclusion and restraint, staff perceptions of security should be targeted.

The study had several limitations worth noting. First, it was a cross-sectional study with a relatively small sample, although it was conducted in different types of institutions to ensure representation of diverse practices. Second, no data were available for staff members who refused to participate, and nonparticipants may not have had similar profiles. There was also a risk of recall bias in reports of the frequency of seclusion and restraint use. Finally, incidents of seclusion and restraint may have been underreported because of social desirability bias.

Conclusions

Much of the psychiatric literature supports the contention that the triad of research, education, and administrative leadership is integral to facilitating the move toward a "restraint-free" environment (50). Some have raised concerns about efforts to reduce seclusion and restraint because no controlled study has examined the value of these interventions for patients with serious mental illness (55). Although initiatives to reduce the use of these interventions by modifying certain organizational factors have been undertaken in Britain, success has been limited (24,56). New violence management techniques based on psychological and deescalation approaches might be used in combination with organizational changes to introduce alternative therapeutic interventions and reduce the conflicting feelings of psychiatric ward staff about use of seclusion and restraint. Research on patients' views of these interventions might also cast light on the subject.

Acknowledgments and disclosures

The authors thank Michele De Benedictis, B.L.A., for his help in the elaboration of the tables.

The authors report no competing interests.

References

1. Appelbaum PS: Seclusion and restraint: Congress reacts to reports of abuse. Psychiatric Services 50:881–885, 1999
2. Choe JY, Teplin LA, Abram KM: Perpetration of violence, violent victimization, and severe mental illness: balancing public health concerns. Psychiatric Services 59: 153–164, 2008
3. Wykes T: Predicting symptomatic and behavioural outcomes of community care. British Journal of Psychiatry 165:486–492, 1994
4. Nijman HL, Palmstierna T, Almvik R, et al: Fifteen years of research with the Staff Observation Aggression Scale: a review. Acta Psychiatrica Scandinavica 111:12–21, 2005
5. Arnetz JE, Arnetz BB: Violence towards health care staff and possible effects on the quality of patient care. Social Science and Medicine 52:417–427, 2001
6. Bowers FL, McCullough CS, Timmons ME: A synthesis of what we know about the use of physical restraints and seclusion with patients in psychiatric and acute care settings: 2003 update. Online Journal of Knowledge Synthesis for Nursing E10:1–29, 2003
7. Kaltiala-Heino R, Korkeila J, Tuohimäki C, et al: Coercion and restrictions in psychiatric inpatient treatment. European Psychiatry 15:213–219, 2000
8. Legris J, Walters M, Browne G: The impact of seclusion on the treatment outcomes of psychotic in-patients. Journal of Advanced Nursing 30:448–459, 1999
9. Kaltiala-Heino R, Tuohimäki C, Korkeila J, et al: Reasons for using seclusion and restraint in psychiatric inpatient care. International Journal of Law and Psychiatry 26:139–149, 2003
10. Soloff PH, Gutheil TG, Wexler DB: Seclusion and restraint in 1985: a review and update. Hospital and Community Psychiatry 36:652–657, 1985
11. Wells MI: Beyond cultural competence: a model for individual and institutional cultural development. Journal of Community Health Nursing 17:189–199, 2000
12. Steinert T, Bergbauer G, Schmid P, et al: Seclusion and restraint in patients with schizophrenia: clinical and biographical correlates. Journal of Nervous and Mental Disease 195:492–496, 2007
13. Paterson B, Duxbury J: Restraint and the question of validity. Nursing Ethics 14: 535–545, 2007
14. Rain SD, Steadman HJ, Robbins PC: Perceived coercion and treatment adherence in an outpatient commitment program. Psychiatric Services 54:399–401, 2003
15. Larue C, Dumais A, Ahern E, et al: Factors influencing decisions on seclusion and restraint. Journal of Psychiatric and Mental Health Nursing 16:440–446, 2009
16. Wynn R: Medicate, restrain or seclude? Strategies for dealing with violent and threatening behaviour in a Norwegian university psychiatric hospital. Scandinavian Journal of Caring Sciences 16:287–291, 2002
17. Knutzen M, Sandvik L, Hauff E, et al: Association between patients' gender, age and immigrant background and use of restraint: a 2-year retrospective study at a department of emergency psychiatry. Nordic Journal of Psychiatry 61:201–206, 2007
18. Foster C, Bowers L, Nijman H: Aggressive behaviour on acute psychiatric wards: prevalence, severity and management. Journal of Advanced Nursing 58:140–149, 2007
19. Pollard R, Yanasak EV, Rogers SA, et al: Organizational and unit factors contributing to reduction in the use of seclusion and restraint procedures on an acute psychiatric inpatient unit. Psychiatric Quarterly 78:73–81, 2007
20. Bowers L: Association between staff factors and levels of conflict and containment on acute psychiatric wards in England. Psychiatric Services 60:231–239, 2009
21. Bowers L, Van Der Merwe M, Nijman H et al: The practice of seclusion and time-out on English acute psychiatric wards: the City-128 study. Archives of Psychiatric Nursing 24:275–286, 2010
22. Stubbs B, Leadbetter D, Paterson B et al: Physical intervention: a review of the literature on its use, staff and patient views, and the impact of training. Journal of Psychiatric Mental Health Nursing 16:99–105, 2009
23. Suen LK, Lai CK, Wong TK, et al: Use of physical restraints in rehabilitation settings: staff knowledge, attitudes and predictors. Journal of Advanced Nursing 55:20–28, 2006
24. Gaskin CJ, Elsom SJ, Happell B: Interventions for reducing the use of seclusion in

psychiatric facilities: review of the literature. British Journal of Psychiatry 191: 298–303, 2007

25. Donat DC: Encouraging alternatives to seclusion, restraint, and reliance on PRN drugs in a public psychiatric hospital. Psychiatric Services 56:1105–1108, 2005

26. Erickson L, Williams-Evans SA: Attitudes of emergency nurses regarding patient assaults. Journal of Emergency Nursing 26: 210–215, 2000

27. Boyer R, Preville M, Legare G, et al: Psychological distress in a noninstitutionalized population of Quebec: normative results of the Quebec Health Survey. Canadian Journal of Psychiatry 38:339–343, 1993

28. Legare F, Belanger N, Doyon H: Rally-resources: the integration of community principles. Canadian Family Physician 46: 2444–2448, 2000

29. Stravynski A, Boyer R: Loneliness in relation to suicide ideation and parasuicide: a population-wide study. Suicide and Life-Threatening Behavior 31:32–40, 2001

30. Moos R, Shelton R, Petty C: Perceived ward climate and treatment outcome. Journal of Abnormal Psychology 82:291–298, 1973

31. Cote A: Legislation on occupational accidents and occupational diseases [in French]. Infirmiere Auxiliere 58:9–10, 1985

32. Jansen G, Dassen T, Moorer P: The perception of aggression. Scandinavian Journal of Caring Sciences 11:51–55, 1997

33. Abderhalden C, Needham I, Friedli TK, et al: Perception of aggression among psychiatric nurses in Switzerland. Acta Psychiatrica Scandinavica Supplementum 412: 110–117, 2002

34. Palmstierna T, Barredal E: Evaluation of the Perception of Aggression Scale (POAS) in Swedish nurses. Nordic Journal of Psychiatry 60:447–451, 2006

35. Yudofsky SC, Silver JM, Jackson W, et al: The Overt Aggression Scale for the objective rating of verbal and physical aggression. American Journal of Psychiatry 143: 35–39, 1986

36. Parent D: Industry recognizes the importance of taking action. Healthcare Papers 5:49–53, 2004

37. Viera AJ, Garrett JM: Understanding interobserver agreement: the kappa statistic. Family Medicine 37:360–363, 2005

38. Guedj MJ, Raynaud P, Braitman A, et al: The practice of restraint in a psychiatric emergency unit. L'Encephale 30:32–39, 2004

39. Bowers L, Jeffery D, Bilgin H, et al: Psychiatric intensive care units: a literature review. International Journal of Social Psychiatry 54:56–68, 2008

40. Keeler EB, Rubenstein LV, Kahn KL, et al: Hospital characteristics and quality of care. JAMA 268:1709–1714, 1992

41. Kupersmith J: Quality of care in teaching hospitals: a literature review. Academic Medicine 80:458–466, 2005

42. Hosmer DW, Taber S, Lemeshow S: The importance of assessing the fit of logistic regression models: a case study. American Journal of Public Health 81:1630–1635, 1991

43. Klinge V: Staff opinions about seclusion and restraint at a state forensic hospital. Hospital and Community Psychiatry 45: 138–141, 1994

44. Downey LVA, Zun LS, Gonzales SJ: Frequency of alternative to restraints and seclusion and uses of agitation reduction techniques in the emergency department. General Hospital Psychiatry 29:470–474, 2007

45. Johnson ME: Violence on inpatient psychiatric units: state of the science. Journal of the American Psychiatric Nurses Association 10:113–121, 2004

46. Hall JE: Restriction and control: the perceptions of mental health nurses in a UK acute inpatient setting. Issues in Mental Health Nursing 25:539–552, 2004

47. Bowers L, van der Werf B, Vokkolainen A, et al: International variation in containment measures for disturbed psychiatric inpatients: a comparative questionnaire survey. International Journal of Nursing Studies 44:357–364, 2007

48. Duxbury J: An evaluation of staff and patient views of and strategies employed to manage inpatient aggression and violence on one mental health unit: a pluralistic design. Journal of Psychiatric and Mental Health Nursing 9:325–337, 2002

49. Holzworth RJ, Wills CE: Nurses' judgments regarding seclusion and restraint of psychiatric patients: a social judgment analysis. Research in Nursing and Health 22:189–201, 1999

50. Taxis JC: Ethics and praxis: alternative strategies to physical restraint and seclusion in a psychiatric setting. Issues in Mental Health Nursing 23:157–170, 2002

51. Infantino JA Jr, Musingo SY: Assaults and injuries among staff with and without training in aggression control techniques. Hospital and Community Psychiatry 36: 1312–1314, 1985

52. Garritson SH: Ethical decision making patterns. Journal of Psychosocial Nursing and Mental Health Services 26:22–29, 1988

53. Fassler D, Cotton N: A national survey on the use of seclusion in the psychiatric treatment of children. Hospital and Community Psychiatry 43:370–374, 1992

54. Rossberg JI, Eiring O, Friis S: Work environment and job satisfaction: a psychometric evaluation of the Working Environment Scale–10. Social Psychiatry and Psychiatric Epidemiology 39:576–580, 2004

55. Sailas E, Fenton M: Seclusion and restraint for people with serious mental illnesses. Cochrane Database of Systematic Reviews 1:CD001163, 2000

56. Bowers L, Brennan G, Flood C, et al: Preliminary outcomes of a trial to reduce conflict and containment on acute psychiatric wards: city nurses. Journal of Psychiatric Mental Health Nursing 13:165–172, 2006