

INVOLUNTARY HOSPITALIZATION AND VIOLENT BEHAVIORS: MEDICAL ACT OR SOCIAL CONTROL? A 3-year retrospective analysis

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SUMMARY

Background: The present retrospective study is aimed at assessing the clinical and psychopathological correlates of violent behaviors in a sample of acute involuntary committed inpatients.

Subjects and methods: Involuntary inpatients were retrospectively assessed for the presence of violent behaviors. Patients with and without overt hetero-aggressive behaviors were compared according to socio-demographic, clinical and psychopathological features. A stepwise backward logistic regression was performed in order to assess the variables most associated with the perpetration of violent acts. The sample of violent patients was then divided in two subgroups on the basis of the presence/absence of a serious mental illness (SMI). Bivariate analyses were performed between SMI and non-SMI violent patients.

Results: In the present sample of 160 inpatients, 88 (55%) perpetrated violent acts. Subjects who performed violence presented a higher rate of mood stabilizers prescription ($p=0.038$). The PANSS-excited component was positively associated with violent behaviors ($p=0.027$, Odds Ratio (OR)=1.14, Confidence Interval (CI) 1.01-1.28), whilst the PANSS-depressed/anxiety factor displayed a negative association ($p=0.015$, OR=0.78, CI 0.64-0.95). Violent inpatients diagnosed with SMI presented higher rehospitalization rate ($p=0.009$), longer length of stay ($p=0.005$), more frequent long-acting injectable antipsychotics prescription ($p<0.001$) and a higher positive symptoms severity as measured by the PANSS-positive factor ($p=0.049$).

Conclusions: The clinical population of acute psychiatric inpatients performing violent behavior represents a specific and heterogeneous subgroup of patients for which prevention and treatment strategies should be addressed.

Key words: violent behavior – aggression - psychiatric inpatients - involuntary commitment

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INTRODUCTION

Violent behaviors, defined as overt destructive behaviors perpetrated with the intention to cause harm (Látalová 2009) can be often observed in acute patients attending a psychiatric ward, with particularly high prevalence among involuntarily committed patients (Dack et al. 2013, Pinna et al. 2016, San et al. 2016). Violent acts can broadly include verbal aggression, aggression against objects, self-aggression and physical aggression against others (Calegario et al. 2014). The issue of violence performed by people with mental disorders has been widely investigated, due to its relevance from a public health perspective and to the common perception of the dangerousness of mental disorders (Iozzino et al. 2015, Ose et al. 2017). The clinical population of violent inpatients is rather heterogeneous, frequently including patients affected by a wide range of mental disorders, namely schizophrenia and other psychotic disorders, bipolar disorder, personality disorders and substance use disorders (Volavka et al. 2014, San et al. 2016, Van Dorn et al. 2012). Furthermore, episodes of acute agitation with violent behaviors can require psychiatric involuntary admission also in absence of a major psychiatric disorder, affecting the course of hospitalization and the interven-

tions needed to manage these episodes, representing a major challenge (San et al. 2016). A better characterization of the population of violent patients and the identification of predictive factors could help addressing therapeutic choices, in order to prevent violent acts (Amore et al. 2008). Despite this, literature defining and differentiating violent inpatients is still not univocal and mainly considers forensic populations, without specific focus on involuntary hospitalized patients (Volavka 2014, Ogloff et al. 2015). Furthermore, different definitions of violent and aggressive behavior, also including self-harm, are considered, with scarce comparability of the provided results and a not always reliable assessment of symptoms (Amore et al. 2008, Dack et al. 2013, Volavka et al. 2014, Ose et al. 2017). As a consequence, a specific characterization of involuntary inpatients who perpetrate violent behaviors is lacking. The aims of the present retrospective study are: (i) to estimate the prevalence of violent behaviors in a sample of involuntary hospitalized inpatients; (ii) to assess clinical and psychopathological characteristics more related to violent behaviors towards others and potential predictive factors of such behaviors; (iii) to investigate the difference between subgroups of violent patients according to the presence/absence of a severe mental illness.

SUBJECTS AND METHODS

Subjects

The present retrospective study was conducted in the Psychiatric Inpatient Unit of University/General Hospital Santa Maria della Misericordia, Perugia, Umbria, Italy, between January 1st 2015 and December 31st 2017. The selected sample included inpatients aged ≥ 18 , admitted to the Unit using involuntary treatment procedures. In order to better address the aim of the study, only patients hospitalized as a result of psychomotor agitation or behavioral disturbances, particularly due to substance/alcohol abuse, were recruited for the present analysis, in consideration of the most frequent co-occurrence of the above-mentioned conditions and violence in psychiatric inpatients (Ogloff et al. 2015, Huber et al. 2016, Mi et al. 2016, San et al. 2016). Subjects presenting with mental disturbances due to a medical illness were excluded. All selected patients signed their informed consent prior to inclusion in the study.

Methods

A retrospective analysis of clinical charts routinely used in the Unit was performed. Socio-demographic and clinical data were collected. Violent behaviors at the moment of admission or during the previous 30 days were assessed according to clinical details recorded in the medical charts, collected directly from patients and, whenever possible, from other informants. Violent behaviors were defined as overt injurious behaviors directed towards another person/object with intention to inflict harm (Látalová 2009, Verdolini et al. 2017, Verdolini et al. 2018). All diagnoses were made according to the Diagnostic and Statistical Manual of Mental Disorders, 4th Text-Revision and 5th Edition (American Psychiatric Association 2000, American Psychiatric Association 2013). Psychopathological characteristics of selected patients were assessed by means of the Positive and Negative Syndrome Scale (PANSS) (Kay et al. 1987) and the 24-item Brief Psychiatric Reporting Scale (BPRS) (Lukoff et al. 1986). Previously defined five-factor models of the PANSS and BPRS were considered (Davis & Chen 2001, van Beek et al. 2015), which were broadly validated and previously used for assessing populations of offenders affected by psychiatric illnesses (Ruggeri et al. 2005, Levine & Rabinowitz 2007, Kopełowicz et al. 2008, Huber et al. 2016, van Beek et al. 2015). Symptom severity was evaluated using the Clinical Global Impression (CGI) (Guy 1976). All data were entered in an electronic datasheet. Assessment was performed by conveniently trained residents in psychiatry with the supervision of an expert senior psychiatrist.

Statistical analyses

Descriptive analysis and examination of the distributional properties of sociodemographic, clinical and psychopathological variables were first carried out. Two

different comparative analyses were then performed. First, involuntarily hospitalized patients who presented violent behaviors were compared to the patients with negative history of violent behaviors by means of bivariate analyses (chi-square test for categorical variables, t-test or Mann Whitney U for continuous variables; $p < 0.05$). A stepwise backward logistic regression model was then used in order to clarify the association between violent behavior and three significant variables (mood stabilizers at discharge, PANSS excited component, PANSS anxiety/depression component). Odds ratios (OR) with 95% confidence intervals (CI) were assessed for observed associations. All tolerance values in the regression analyses were > 0.2 and all variance inflation factors were < 2 , expressing that the assumption of multicollinearity was not violated. Secondly, subjects who performed violent behaviors were divided in two subgroups according to the presence/absence of a serious mental illness (SMI), namely psychotic, bipolar or anxiety disorders according to previous literature definitions (Miquel et al. 2013). Socio-demographic, clinical and psychopathological characteristics of the two subgroups were then compared in order to better characterize the population of violent patients in the present hospitalized sample. All analyses were performed using the Statistical Package for Social Sciences (SPSS), 21.0 version for Windows Inc.

RESULTS

Comparison between involuntarily hospitalized patients with and without history of violent behaviors

The population of the present study consisted of 160 patients. Among these, 88 (55%) presented violent behaviors at the moment of admission or during the previous 30 days. No differences in socio-demographic characteristics were found between the two subgroups. As for clinical characteristics, violent patients were more frequently prescribed mood stabilizers at the moment of discharge (64.8% versus (vs) 47.2%, $p = 0.038$). When psychopathological characteristics were considered, subjects displaying violent behavior presented higher PANSS-excited factor score (mean $13.56 \pm$ standard deviation 4.81 vs 10.94 ± 3.95 , $p = 0.012$) and lower PANSS-anxiety/depression score (6.08 ± 2.20 vs 7.53 ± 3.21 , $p = 0.027$) (see Table 1).

After performing a stepwise backward multivariate modeling procedure ($\chi^2(3) = 14.972$, $p = 0.002$) using violent behavior as the dependent variable, the model explained between 18.1% (COX and Snell R Square) and 24.1% (Nagelkerke R Square) of the variance. Statistical significance persisted for the PANSS-excitement factor ($p = 0.027$), positively associated with violent behavior (OR = 1.14, CI 1.01-1.28) and for the PANSS-anxiety/depression factor ($p = 0.015$), which displayed a negative association (OR = 0.78, CI 0.64-0.95).

Table 1. Comparison between involuntarily hospitalized patients with (Hos-VB) and without (Hos-NVB) history of violent behaviors

	Hos-VB (n=88, 55%) n, %	Hos-NVB (n=72, 45%) n, %	χ^2	p
Socio-demographic characteristics				
Female gender	33 (37.5)	32 (44.4)	0.530	0.467
Foreign nationality	22 (25)	12 (16.7)	1.183	0.277
Marital status: single	47 (53.4)	38 (52.8)	0.000	1.000
Clinical features				
History of rehospitalizations	41 (46.6)	25 (34.7)	1.838	0.175
Committed from a Mental Health Service	39 (44.3)	29 (40.3)	0.125	0.724
Diagnostic features				
Impulse control disorders	5 (5.7)	4 (5.6)	0.000	1.000
Medical comorbidity	14 (15.9)	11 (15.3)	0.000	1.000
Mood disorders	11 (12.5)	11 (15.3)	0.077	0.782
Personality disorders	15 (17)	14 (19.4)	0.034	0.853
Psychiatric comorbidity	33 (37.5)	19 (26.4)	1.751	0.186
Schizophrenia spectrum disorders	54 (61.4)	46 (63.9)	0.027	0.870
Substance-related disorders	23 (26.1)	13 (18.1)	1.056	0.304
Treatment features at admission				
Antidepressants	7 (8)	7 (9.9)	0.014	0.906
Benzodiazepines	30 (34.1)	25 (35.2)	0.000	1.000
Long acting injectable antipsychotics	21 (24.1)	11 (15.5)	1.313	0.252
Mood stabilizers	22 (25.3)	13 (18.3)	0.736	0.391
Oral antipsychotics	38 (44.2)	28 (40)	0.132	0.716
Treatment features at discharge				
Antidepressants	0 (0)	3 (4.2)	1.815	0.178
Benzodiazepines	71 (80.7)	55 (76.4)	0.217	0.641
Long acting injectable antipsychotics	29 (33)	21 (29.2)	0.118	0.732
Mood stabilizers	57 (64.8)	34 (47.2)	4.283	0.038
Oral antipsychotics	73 (83)	57 (79.2)	0.166	0.684
Commitment at discharge				
Community Residential Facility	19 (21.6)	11 (15.3)	0.663	0.415
Outpatient Mental Health Service	52 (59.1)	33 (45.8)	2.288	0.130
	Mean (SD)	Mean (SD)	t	p
Age	40.72 (12.31)	41.49 (13.89)	0.372	0.711
Length of stay	15.62 (16.87)	13.12 (16.67)	-0.937	0.350
Psychopathological features				
CGI total score	5 (1.15)	5.02 (0.69)	0.119	0.906
BPRS-activation	14.2 (4.62)	13.22 (5.11)	-0.935	0.352
BPRS-affective	7.22 (3.24)	7.22 (4.08)	1.126	0.239
BPRS-psychosis	11.59 (4.59)	10.95 (4.32)	-0.663	0.509
BPRS-resistance	13.89 (4.31)	13.51 (4.95)	-0.382	0.704
BPRS-retardation/negative symptoms	9.04 (3.29)	8.12 (3)	-1.360	0.177
BPRS total score	60.09 (14.57)	56.85 (13.29)	-1.072	0.287
PANSS-depressed/anxiety	6.08 (2.20)	7.53 (3.21)	2.263	0.027
PANSS-disorganized	10.15 (3.96)	9.56 (3.69)	-0.675	0.502
PANSS-excited	13.56 (4.81)	10.94 (3.95)	-2.567	0.012
PANSS-positive	16 (6.54)	15.58 (6.33)	-2.800	0.780
PANSS-negative	12.72 (5.30)	14.31 (6.30)	1.184	0.240
PANSS total score	79.05 (19.68)	79.54 (16.82)	0.113	0.910

Notes: BPRS=Brief Psychiatric Rating Scale; CGI=Clinical Global Impressions; PANSS=Positive and Negative Syndrome Scale; SD=standard deviation; BPRS-activation: blunted affect, elevated mood, excitement, grandiosity, motor hyperactivity, motor retardation; BPRS-affect: anxiety, depression, guilt feelings, suicidality; BPRS-psychosis: hallucinations, somatic concerns, suspiciousness, unusual thought content; BPRS-resistance: bizarre behavior, emotional withdrawal, self-neglect, tension, uncooperativeness; BPRS-retardation/negative symptoms: conceptual disorganization, disorientation, distractibility, mannerism and posturing; PANSS-depressed/anxiety: anxiety, depression, guilt feelings; PANSS-disorganized: conceptual disorganization, difficulty in abstract thinking, mannerism and posturing, poor attention; PANSS-excited: excitement, hostility, poor impulse control, uncooperativeness; PANSS-positive: delusions, grandiosity, hallucinatory behavior, suspiciousness/persecution, unusual thought content; PANSS-negative: active social avoidance, blunted affect, emotional withdrawal, lack of spontaneity and flow of conversation, motor retardation, passive/apathetic social withdrawal.

Table 2. Comparison between violent patients with (VB-SMI) and without (VB-NSMI) serious mental illness

	VB-SMI (n=62, 70.5%) n, %	VB-NSMI (n=26, 29.5%) n, %	χ^2	p
Socio-demographic characteristics				
Female gender	25 (40.3)	8 (30.8)	0.364	0.546
Foreign nationality	16 (25.8)	6 (23.1)	0.000	1.000
Marital status: single	36 (58.1)	11 (42.3)	1.249	0.264
Clinical features				
History of rehospitalizations	35 (56.5)	6 (23.1)	6.913	0.009
Committed from a Mental Health Service	40 (60.4)	9 (34.6)	5.480	0.019
Treatment features at admission				
Antidepressants	5 (8.2)	2 (7.7)	0.000	1.000
Benzodiazepines	25 (41)	5 (19.2)	2.916	0.088
Long acting injectable antipsychotics	18 (29.5)	2 (7.7)	3.746	0.053
Mood stabilizers	17 (27.9)	6 (23.1)	0.039	0.843
Oral antipsychotics	31 (51.7)	8 (30.8)	2.409	0.121
Treatment features at discharge				
Antidepressants	0 (0)	0 (0)	-	-
Benzodiazepines	25 (41)	36 (59)	2.916	0.088
Long acting injectable antipsychotics	28 (45.2)	1 (3.8)	12.344	<0.001
Mood stabilizers	42 (67.7)	15 (57.7)	0.430	0.512
Oral antipsychotics	53 (85.5)	20 (76.9)	0.441	0.507
Commitment at discharge				
Community Residential Facility	10 (16.1)	8 (30.8)	1.597	0.206
Outpatient Mental Health Service	39 (62.9)	14 (53.8)	0.306	0.580
	Mean (SD)	Mean (SD)	t	p
Age	36.96 (13.85)	42.29 (11.35)	1.880	0.064
	Median	Median	Mann-Whitney U	p
Length of stay	12	10	502	0.005
	Mean (SD)	Mean (SD)	t	p
Psychopathological features				
BPRS-activation	14.58 (4.19)	12.37 (6.32)	1.233	0.224
BPRS-psychosis	12.05 (4.26)	9.37 (5.73)	1.521	0.136
BPRS-resistance	13.79 (3.88)	14.37 (6.28)	-0.254	0.806
BPRS total score	60.42 (11.98)	58.29 (28.85)	0.214	0.837
PANSS-excited	13.23 (4.16)	14.87 (6.98)	-0.640	0.540
PANSS-positive	17.03 (6.03)	12 (7.31)	2.017	0.049
PANSS-negative	12.81 (4.97)	12.37 (6.80)	0.203	0.840
PANSS total score	79.45 (17.58)	77.62 (27.44)	0.229	0.820
	Median	Median	Mann-Whitney U	p
CGI total score	5	5	186.5	0.824
BPRS-affective	6	7	106.5	0.401
BPRS-retardation/negative symptoms	9	8	105	0.170
PANSS-depressed/anxiety	6	7	71	0.061
PANSS-disorganized	9	9	105	0.505

Notes: BPRS=Brief Psychiatric Rating Scale; CGI=Clinical Global Impressions; PANSS=Positive and Negative Syndrome Scale; SD=standard deviation.

Comparison between violent patients with and without serious mental illnesses (SMI)

In the sample of subjects who displayed violent behaviors, 72 (70.5%) suffered from SMI. The two subgroups did not display any differences in terms of socio-demographic characteristics. Patients in the SMI subgroup presented more rehospitalizations (56.5% vs 23.1%, $p=0.009$), were more frequently committed from an outpatient Mental Health Service (64.5% vs 34.6%,

$p=0.019$) and presented a longer length of stay (median 12 vs 10, $p=0.005$). Treatment features also differed significantly between the two groups, with long acting injectable (LAI) antipsychotics more frequently prescribed to SMI patients (45.2% vs 3.8%, $p<0.001$). No significant differences in psychopathological features were detected between the two subgroups, except for a significantly higher PANSS-positive factor in SMI subjects (17.03±6.03 vs 12±7.31, $p=0.049$) (see Table 2).

DISCUSSION

In the present sample of acute inpatients more than a half displayed violent behaviors at admission or during the 30 days prior to hospitalization. This finding is consistent with part of the literature, reporting rates of hospitalized patients perpetrating violence up to 50%, with a higher risk among involuntarily committed subjects (Choe et al. 2008, Colasanti et al. 2008, Ose et al. 2017). No differences in socio-demographic characteristics were detected in the present study. This could be partly consistent with the fact that socio-demographic characteristics seem to represent a less reliable predictor in hospital settings than in the general community (Woods & Ashley 2007). Surprisingly, no patient-related clinical characteristics except from treatment seemed to differ among the two subgroups of patients. As for diagnostic features, schizophrenia seemed to be most frequently related to violent behaviors in previous research (Biancosino et al. 2009, Sands et al. 2012, Volavka 2014, Caqueo-Úrizar et al. 2016), thus univocal results are lacking and other disorders, namely bipolar disorders, substance use and personality disorders, also appeared to play a fundamental role in the risk of displaying overt aggressive acts (Colasanti et al. 2008, Ballester et al. 2012, Volavka 2014, Pinna et al. 2016). It should also be considered that a direct comparison with data from other studies may be misleading, due to different settings, methods employed to collect data, different definitions of violence episodes, study designs and cultural background of the analyzed samples. Furthermore, the recently approved law ordering the closure of forensic hospitals in Italy may have changed the population of patients admitted to psychiatric wards and subsequently the findings of the present study could be replicated by future research (Barbui & Saraceno 2014). The more frequent prescription of mood stabilizers in inpatients who perpetrated violent acts is consistent with part of the literature (Biancosino et al. 2009), suggesting that the occurrence of aggressive behaviors could define a distinct clinical subgroup for which targeted treatment strategies should be evaluated (Verdolini et al. 2017). When analyzing psychopathological features, specific dimensions, but not the overall symptom severity, appeared to be related to violent behavior. This could be in contrast with part of the previous literature, but the heterogeneity of the analyzed samples, frequently not including only compulsory inpatients, and the inclusion of self-aggressive subjects in the samples might have contributed to this findings (Colasanti et al. 2008, Calegaro et al. 2014, Pinna et al. 2016). The association with PANSS-excited component could be explained by the items contributing to this factor, which has actually been used as an outcome measure for evaluating treatment strategies in violent inpatients (Huber et al. 2016, Mi et al. 2016). First, the PANSS-excited dimension includes the item “hostility”, which contains specific information about aggressive

behaviors (Látalová 2009). Furthermore, the item “poor impulse control” additionally contributes to this factor and confirms the dimension of impulsivity to be significantly associated with violence in psychiatric patients, also in consideration of its link with antisocial traits and maladaptive behaviors such as substance misuse (Volavka 2014, Huber et al. 2016). The negative association between PANSS-depressed/anxiety factor and the occurrence of violent behaviors was not previously reported in literature, but could be partly consistent with the fact that anxiety and depressive disorders were linked to a lower risk of violent behaviors than other diagnoses in previous research (Pinna et al. 2016, Ose et al. 2017) and with the lower scores at anxiety/depression measured by scales other than the PANSS (Calegaro et al. 2014). The present study compared violent patients according to the presence/absence of serious mental illness (SMI) in an Italian sample of involuntary inpatients. The higher rehospitalization rate, the more frequent commitment from outpatient Mental Health Services and the longer length of stay in SMI subjects, along with the more frequent treatment with long-acting injectable antipsychotics, may be considered as indexes of illness severity and are thus consistent with the composition of this subgroup (Di Lorenzo et al. 2016). As for psychopathological characteristics, the higher score of the PANSS-positive factor in the SMI subgroup could be at least in part supported by the fact that acute psychotic symptoms represented risk factors for the development of violent behaviors in previous studies and were linked to aggression also in populations of patients affected by severe disorders other than schizophrenia, i.e. mood disorders (Swanson et al. 2006, Sands et al. 2012, Verdolini et al. 2017). The present study presents limitations. First, the retrospective nature did not provide a standardized evaluation of violent behaviors, which relied on an operational clinical criterion. Second, the small sample size may limit the statistical power of the analyses. Moreover, additional socio-demographic and clinical characteristics possibly related with overt aggression, such as socio-economic status, having being subjected to violence during childhood and history of previous recurrent violent acts were not evaluated in the present study, along with setting-related characteristics connected to the perpetration of violent behaviors (Biancosino et al. 2009, Pinna et al. 2016). Finally, restrictive inclusion criteria considering only patients hospitalized due to specific reasons might have increased the risk of selection bias. As a consequence, the results of the present research should be replicated in future prospective studies on larger samples.

CONCLUSIONS

The present study confirms that the occurrence of violent behaviors among acute psychiatric inpatients may be related to specific symptomatological constellations, defining a specific subgroup of patients for

which tailored treatment strategies should be addressed. The population of inpatients perpetrating violent acts is heterogeneous and should be better stratified in order to understand different pathways leading to offending and to develop prevention strategies.

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Contribution of individual authors:

Giulia Menculini, Norma Verdolini & Patrizia Moretti conceived and designed the study;

Giulia Menculini & Norma Verdolini conceived the electronic datasheet for data collection, and performed statistical analyses;

Giulia Menculini, Roberta Lanzi & Giorgio Pomili collected clinical data;

Roberta Lanzi & Giorgio Pomili wrote substantial part of the introduction;

Giulia Menculini wrote substantial part of methods and results;

Giulia Menculini & Norma Verdolini discussed results;

Alfonso Tortorella & Patrizia Moretti corrected the first draft of the manuscript;

Alfonso Tortorella supervised all phases of the study design and writing of the manuscript.

References

1. American Psychiatric Association: *Diagnostic and Statistical Manual of Mental Disorders: DSM-IV-TR*, Washington DC, 2000
2. American Psychiatric Association: *Diagnostic and Statistical Manual of Mental Disorders*, 5th Ed., Washington DC, 2013
3. Amore M, Menchetti M, Tonti C, Scarlatti F, Lundgren E, Esposito W et al: Predictors of violent behavior among acute psychiatric patients: Clinical study. *Psychiatry Clin Neurosci* 2008; 62:247-55
4. Ballester J, Goldstein T, Goldstein B, Obreja M, Axelson D, Monk K et al: Is bipolar disorder specifically associated with aggression? *Bipolar Disord* 2012; 14:283-90
5. Barbui C & Saraceno B: Closing forensic psychiatric hospitals in Italy: a new revolution begins? *Br J Psychiatry* 2015; 206:445-6
6. Biancosino B, Delmonte S, Grassi L, Santone G, Preti A, Miglio R et al: PROGRES-Acute Group. Violent behavior in acute psychiatric inpatient facilities: a national survey in Italy. *J Nerv Ment Dis* 2009; 197:772-82
7. Calegario VC, Dotto AB, Freitas D, Brum AB, Valerio AG, Schetinger CC et al: Aggressive behavior during the first 24 hours of psychiatric admission. *Trends Psychiatry Psychother* 2014; 36:152-59
8. Caqueo-Urizar A, Fond G, Urzúa A, Boyer L, Williams DR: Violent behavior and aggression in schizophrenia: Prevalence and risk factors. A multicentric study from three Latin-America countries. *Schizophr Res* 2016; 178(1-3):23-28
9. Choe JY, Teplin LA, Abram KM: Perpetration of violence, violent victimization, and severe mental illness: balancing public health concerns. *Psychiatr Serv* 2008; 59:153-64
10. Colasanti A, Natoli A, Moliterno D, Rossattini M, De Gaspari IF, Mauri MC: Psychiatric diagnosis and aggression before acute hospitalisation. *Eur Psychiatry* 2008; 23:441-8
11. Dack C, Ross J, Papadopoulos C, Stewart D, Bowers L: A Review and Meta-analysis of the patient factors associated with psychiatric in-patient aggression. *Acta Psychiatr Scand* 2013; 127:255-68
12. Davis JM & Chen N: The effects of olanzapine on the 5 dimensions of schizophrenia derived by factor analysis: combined results of the North American and international trials. *J Clin Psychiatry* 2001; 62:757-71
13. Di Lorenzo R, Sagona M, Landi G, Martire L, Piemonte C, Del Giovane C: The revolving door phenomenon in an Italian acute psychiatric ward. *J Nerv Ment Dis* 2016; 204:686-92
14. Guy W: *ECDEU Assessment Manual for Psychopharmacology*. US Department of Health, Education, and Welfare Public Health Service Alcohol, Drug Abuse, and Mental Health Administration, Rockville, 1976
15. Huber CG, Hochstrasser L, Meister K, Schimmelmann BG, Lambert M: Evidence for an agitated-aggressive syndrome in early-onset psychosis correlated with antisocial personality disorder, forensic history, and substance use disorder. *Schizophr Res* 2016; 175:198-203
16. Iozzino L, Ferrari C, Large M, Nielssen O, de Girolamo G: Prevalence and Risk Factors of Violence by Psychiatric Acute Inpatients: A Systematic Review and Meta-Analysis. *PLoS One* 2015; 10:e0128536
17. Kay SR, Fiszbein A, Opler LA: The positive and negative syndrome scale (PANSS) for schizophrenia. *Schizophr Bull* 1987; 13:261-76
18. Kopelowicz A, Ventura J, Liberman RP, Mintz J: Consistency of Brief Psychiatric Rating Scale factor structure across a broad spectrum of schizophrenia patients. *Psychopathology* 2008; 41:77-84
19. Látalová K: Bipolar disorder and aggression. *Int J Clin Pract* 2009; 63:889-99
20. Levine SZ & Rabinowitz J: Revisiting the 5 dimensions of the Positive and Negative Syndrome Scale. *J Clin Psychopharmacol* 2007; 27:431-6
21. Lukoff D, Nuechterlein K, Ventura J: *Manual for expanded Brief Psychiatric Rating Scale (BPRS)*. *Schizophr Bull* 1986; 12:594-602
22. Mi W, Zhang S, Liu Q, Yang F, Wang Y, Li T et al: Prevalence and risk factors of agitation in newly hospitalized schizophrenia patients in China: An observational survey. *Psychiatry Res* 2017; 253:401-06
23. Miquel L, Roncero C, García-García G, Barral C, Daigre C, Grau-López L et al.: Gender differences in dually diagnosed outpatients. *Subst Abuse* 2013; 34:78-80
24. Ogloff JR, Talevski D, Lemphers A, Wood M, Simmons M: Co-occurring mental illness, substance use disorders, and antisocial personality disorder among clients of forensic mental health services. *Psychiatr Rehabil J* 2015; 38:16-23
25. Ose SO, Lilleeng S, Pettersen I, Ruud T, van Weeghel J: Risk of violence among patients in psychiatric treatment:

- results from a national census. *Nord J Psychiatry* 2017; 71:551-60
26. San L, Marksteiner J, Zwanzger P, Figuero MA, Romero FT, Kyropoulos G et al.: State of Acute Agitation at Psychiatric Emergencies in Europe: The STAGE Study. *Clin Pract Epidemiol Ment Health* 2016; 12: 75-86.
 27. Sands N, Elsom S, Gerdtz M, Khaw D: Mental health-related risk factors for violence: using the evidence to guide mental health triage decision making. *J Psychiatr Ment Health Nurs* 2012; 19:690-701
 28. Swanson JW, Swartz MS, Van Dorn RA, Elbogen EB, Wagner HR, Rosenheck RA et al.: A national study of violent behavior in persons with schizophrenia. *Arch Gen Psychiatry* 2006; 63:490-99
 29. Van Beek J, Vuijk PJ, Harte JM, Smit BL, Nijman H, Scherder EJ: The factor structure of the Brief Psychiatric Rating Scale (expanded version) in a sample of forensic psychiatric patients. *Int J Offender Ther Comp Criminol* 2015; 59:743-56
 30. Van Dorn R, Volavka J, Johnson N: Mental disorder and violence: is there a relationship beyond substance use? *Soc Psychiatry Psychiatr Epidemiol* 2012; 47:487-503
 31. Verdolini N, Perugi G, Samalin L, Murru A, Angst J, Azorin JM et al.: BRIDGE-II-Mix Study Group: Aggressiveness in depression: a neglected symptom possibly associated with bipolarity and mixed features. *Acta Psychiatr Scand* 2017; 136:362-72
 32. Verdolini N, Pacchiarotti I, Köhler CA, Reinares M, Samalin L, Colom F et al.: Violent criminal behavior in the context of bipolar disorder: Systematic review and meta-analysis. *J Affect Disord* 2018; 239:161-70
 33. Volavka J: Comorbid personality disorders and violent behavior in psychotic patients. *Psychiatr Q* 2014; 85:65-78
 34. Woods P & Ashley C: Violence and aggression: A literature review. *J Psychiatr Ment Health Nurs* 2007; 14:652-60
 35. Woods P & Ashley C: Violence and aggression: A literature review. *J Psychiatr Ment Health Nurs* 2007; 14:652-60

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