Psychiatry Research 272 (2019) 130–134

Contents lists available at ScienceDirect

Psychiatry Research

journal homepage: www.elsevier.com/locate/psychres

Delusion, excitement, violence, and suicide history are risk factors for aggressive behavior in general inpatients with serious mental illnesses: A multicenter study in China

Qiguang Li, Shaoling Zhong, Jiansong Zhou*, Xiaoping Wang*

Mental Health Institute of the Second Xiangya Hospital, Central South University, National Clinical Research Center on Mental Disorders & National Technology Institute on Mental Disorders. Hunan Key Laboratory of Psychiatry and Mental Health, 139 Middle Renmin Road, Changsha, Hunan 410011, China

ARTICLE INFO

Key words:
Aggressive behavior
Serious mental illness
Risk factor
Violence
Suicide

ABSTRACT

Little is known about the risk factors for aggression in general clinical settings in China. The aim of this study is to explore potential risk factors for inpatients with serious mental illness. The study was conducted from 15 March to 14 April 2013 and involved 16 general psychiatric institutions in China. A standardized data collection form was used to collect demographic and clinical characteristics data, including information on current hallucinations, delusions, depression, excitement, aboulia, apathy, and adherence to treatment. Information on lifetime history of violence and suicidality was also collected. The Modified Overt Aggression Scale (MOAS) was also administered to indicate recent (past week) aggression. A total of 511 inpatients were enrolled. On the basis of a score of five or greater on the MOAS, 245 inpatients were assigned to aggressive group and 266 were assigned to non-aggressive group. A lifetime history of violent behaviour (OR = 3.1, 95% CI = 1.95–5.11), suicide (OR = 3.0, 95% CI = 1.49–6.10), as well as current delusions (OR = 1.92, 95% CI = 1.24–2.97), and excitement (OR = 2.63, 95% CI = 1.57–4.39) were associated with aggression. The study suggested violent history, suicide history, current delusions, and excitement are the risk factors for aggression among general psychiatric inpatients with serious mental illnesses.

1. Introduction

The prevalence of aggressive behavior is higher in individuals diagnosed with serious mental illnesses, such as schizophrenia and bipolar disorder, than in the general population (Fazel et al., 2009; Fazel et al., 2010). In China, for example, between 35.4% and 53.0% of inpatients diagnosed with schizophrenia were reported to have had at least one aggressive behavior during their hospitalization (Zhou et al., 2016b).

In many counties, aggressive behavior toward other people is one of the most important "risk criterion" for involuntary admission for serious mental illnesses (Ng and Kelly, 2012; Zhou et al., 2015). The *Mental Health Act of the People's Republic of China* implemented in 2013 allows for the involuntary admission of individuals diagnosed with a serious mental illness provided that the patient poses a risk to the safety of either self or others. The Act therefore requires an assessment of aggressive or violent risk by a licensed clinical professional to meet this criterion. At the same time, patients with violent risk who are socioeconomically disadvantaged will receive free medication and subsidies for hospitalization (Liu et al., 2011), which brings more burden on the government.

More than 200 tools are available for assessment of violence risk in forensic psychiatric and other secure mental health settings; however, these tools are used only to identify determinants of detention and sentencing or provide evidence of release (Fazel et al., 2012). Moreover, few tools can be used for treatment and management in clinical settings. Most of the available tools have low-to-moderate accuracy to predict future violence or recidivism in forensic patients (Neal et al., 2015; Vojt et al., 2013). These findings could be explained by the fact that most of the tools are used in controlled research rather than in actual clinical settings; given that circumstances in research settings are typical and simple, the promising application of such tools in predicting aggressive behavior in clinical settings and their recommended clinical guidelines have not been established yet (Buchanan et al., 2012; Guy et al., 2012; Lehman et al., 2004).

In China, most of available tools for violence risk assessment are translated from Western countries and exhibit good reliability but unsatisfactory predictive validity (Zhou et al., 2016a). These tools are also

* Corresponding authors.
E-mail addresses: zhoujs2003@csu.edu.cn (J. Zhou), xiaop6@csu.edu.cn (X. Wang).

https://doi.org/10.1016/j.psychres.2018.12.071
Received 26 March 2018; Received in revised form 11 December 2018; Accepted 11 December 2018
Available online 13 December 2018
0165-1781/

Table 1
Basic demographic and clinical characteristics of aggressive and nonaggressive patients.

	Total (n = 511)		Aggressive (n = 245)		Non-aggressive (n = 266)		*Statistics*		
	N	%	*N*	%	*N*	%	χ^2	df	*p*
Male	261	51.1	139	56.7	122	45.9	6.0	1	0.01
Female	250	48.9	106	43.3	144	54.1			
Single	303	59.3	155	63.3	148	55.6	3.1	1	0.08
Rural residence	273	53.4	143	58.4	130	48.9	4.6	1	0.03
Unemployed	220	43.1	119	48.6	101	38.0	5.8	1	0.02
History of psychiatry admission	418	81.8	209	85.3	209	78.6	0.9	1	0.33
Violence history	120	23.5	87	35.5	33	12.4	37.9	1	<0.001
Suicide history	51	10.0	35	14.3	16	6.0	9.7	1	<0.01
Non-adherence	333	65.2	169	69.0	164	61.7	3.0	1	0.08
Diagnosis							2.0	1	0.16
Schizophrenia	356	69.7	178	72.7	178	66.9			
Bipolar disorder	155	30.3	67	27.3	88	33.1			
Hallucinations	244	47.7	132	53.9	112	42.1	7.1	1	0.01
Delusions	317	62.0	172	70.2	145	54.5	13.3	1	<0.001
Depression	151	29.5	54	22.0	97	36.5	12.7	1	<0.001
Excitement	111	21.7	69	28.2	42	15.8	11.5	1	<0.01
Aboulia	265	51.9	134	54.7	131	49.2	1.5	1	0.22
Apathy	210	41.1	118	48.2	92	34.6	9.7	1	<0.01
Insight							10.4	2	<0.01
Lack of insight	329	64.4	159	64.9	170	63.9			
Impairment of insight	147	28.8	78	31.8	69	25.9			
Completely of insight	35	6.8	8	3.3	27	10.2			
			Mean	SD	Mean	SD	*t*	df	*p*
Age	34.7	13.1	33.6	12.7	35.6	13.5	1.7	509	0.089
Age of onset (year)	28.3	11.8	26.7	10.8	29.7	12.5	2.9	509	0.003
Education (years)	10.3	3.0	10.1	2.8	10.5	3.2	1.5	509	0.123
Length of illness (month)	73.9	93.1	82.0	100.6	66.5	85.1	1.88	509	0.061

Note: The level of significance was set at 0.05 (two-tailed).

time consuming and require training, thus greatly limiting their application in general clinical settings.

The purpose of this study was to explore potential risk factors associated with aggressive behavior and develop a valid and brief aggressive risk screening tool for use in general clinical settings.

2. Methods

2.1. Participants

The study sample was based on a multicenter research sponsored by the Chinese Psychiatric Association. Additional details of the study sample were reported in a previous study (Zhou et al., 2015). The study was conducted from 15 March to 14 April 2013 and involved 16 general psychiatric institutions in China. The study recruited all participants admitted to the closed general psychiatric wards of these 16 institutions and who were diagnosed with schizophrenia or bipolar disorder according to the ICD-10 (the International Statistical Classification of Diseases and Related Health Problems 10th Revision) criteria by at least two attending psychiatrists. Patients with alcohol or drug history were excluded. All participants and their family/guardians provided written informed consent for their participation. The study protocol was approved by the Biomedical Ethics Board of the Second Xiangya Hospital, Central South University and the ethics committees of the participating institutions.

2.2. Tools

A standardized data collection form was used to obtain basic demographic and clinical characteristics. Basing on prior studies (Witt et al., 2013), we coded for a number of psychiatric symptoms shown to be associated with aggressive behavior from the inpatient's record; such symptoms include current hallucinations, delusions, depression, excitement, aboulia, apathy, adherence to treatment, and insight. Each of these symptoms was scored as either 0 = absent or 1 = present. Insight was scored as 0 = absent, 1 = impaired, or 2 = present. Demographic data included patient's age, gender, marital status, residence, employment status, history of drug or alcohol abuse or dependence, and history of violence or suicide attempt. These data were obtained from the patients' medical record.

The Modified Overt Aggression Scale (MOAS) (Xie and Zheng, 2001; Yudofsky et al., 1986) was used to evaluate the level of aggression in the week prior to the index admission according to the medical notes of each patient. The MOAS is composed of four subscales: verbal aggression, aggression toward property, self-aggression, and physical aggression toward people. Each subscale includes five items, which are scored from 0 = absent to 4 = serious aggressive behavior. Total scores were calculated by weighing each subscale and ranged from 0 to 16, with high scores indicating serious aggressive behavior. In this study, the total MOAS score was used for overall evaluation of aggression, and any patient whose total score was five or higher was assigned to the aggressive group [based on our previous study, Zhou et al., 2016b)].

2.3. Statistical analysis

Statistical analyses were conducted using Statistical Product and Service Solutions (SPSS) 19.0. Differences in demographic and clinical characteristics between the aggressive and nonaggressive groups were compared using independent sample t tests and Chi-square tests, as appropriate. A binary logistic regression model was used to examine factors that independently contribute to aggressive behavior. Variables with probability value ≤ 0.10 in the univariate analyses were included as independent variables in the multivariate regression model. The level of significance was set at 0.05 (two-tailed).

3. Results

A total of 514 patients met the study criteria. Of which, 511 had

sufficient demographic and clinical data for extraction of risk factors affecting aggressive behavior. The participation rate was found to be 99.4%.

3.1. Demographic characteristics

The basic demographic and clinical characteristics are shown in Table 1. Most participants were male (51.1%) and single (59.3%). The mean age of the participants was 34.7 ± 13.1 years, and the mean level of education duration was 10.3 ± 3.0 years. Compared with nonaggressive patients, aggressive patients were more likely to have a rural residence (58.4% vs. 48.9%, $p = 0.03$) and were more likely to be unemployed (48.6 vs. 38%, $p = 0.02$) at the time of their index admission.

3.2. Clinical characteristics

A total of 356 (69.7%) patients were diagnosed with schizophrenia, and the remaining 155 (30.3%) patients were diagnosed with bipolar disorder. Almost all of the patients had a lifetime history of multiple admissions to psychiatric institutions (81.8%) and had an average duration of illness of more than 6 years (73.9 ± 93.1 months). Patients with aggressive behavior had younger age of onset than those with nonaggressive behavior (26.7 ± 10.8 vs. 29.7 ± 12.5, $p = 0.003$).

A significantly greater proportion of aggressive patients had a lifetime history of violence (35.5% vs. 12.4%, $p < 0.001$) and suicidal behavior (14.3% vs. 9.7%, $p < 0.01$). Compared with nonaggressive patients, aggressive patients were more likely to report current hallucinations (53.9% vs. 42.1%, $p = 0.01$), delusions (70.2% vs. 54.5%, $p < 0.001$), depression (22.0% vs. 36.5%, $p < 0.001$), excitement (28.2% vs. 15.8%, $p < 0.01$), apathy (48.2% vs. 34.6%, $p < 0.01$), and lack of insight (96.7% vs. 89.7%, $p < 0.01$) (Table 1).

3.3. Independent contributors to aggression

Independent contributors to aggression in patients with serious mental illness are shown in Table 2. Analysis of the binary logistic regression model revealed that a lifetime history of violence (OR = 3.1, 95% CI = 1.95–5.11), suicidal behavior (OR = 3.0, 95% CI = 1.49–6.10), delusions (OR = 1.92, 95% CI = 1.24–2.97), and excitement (OR = 2.63, 95% CI = 1.57–4.39) were independently associated with increased risk of current aggression.

4. Discussion

To our knowledge, this multicenter study is the first to investigate the independent contribution of historical and clinical risk factors to aggressive behavior in general psychiatric inpatients diagnosed with serious mental illnesses in China. Static (such as a history of violence or suicidal behavior) and dynamic (such as active symptoms of serious mental illness) factors exhibit potential for differentiating violent from nonviolent psychiatric patients in several large-scale reviews of, mostly, Western samples (Hanson and Harris, 2000; Pedersen et al., 2010; Witt et al., 2013); as such, these factors were specifically explored in the present study. Historical factors including lifetime violence history and suicidal behavior and clinical factors including delusions, excitement, and apathy were found to be significantly associated with current aggression in patients with serious mental illnesses.

Table 2
Independent contributors to aggression in patients with schizophrenia or bipolar disorder (binary logistic regression model).

	Aggressive behavior		
	Odds ratio	95%C.I.	*p* value
Violence History	3.1	1.93–5.11	<**0.001**
Suicide History	3.0	1.49–6.10	<**0.01**
Age	0.98	0.97–0.99	**0.03**
Delusions	1.92	1.24–2.97	<**0.01**
Excitement	2.63	1.57–4.39	<**0.001**
Apathy	1.68	1.11–2.54	**0.015**

Note: The study site has been controlled for as a covariate

Historical factors identified in this study as associated with aggression were compared with those reported in previous research in predominately Western samples (Fazel et al., 2017; Singh et al., 2012; Witt et al., 2013) (Table 3). Violence history has long been identified as predictive risk factor for aggression. However, different definitions of violence were used in diverse studies. In three previous studies, violence history was defined by criminal records, while in the present study, the violence history was reported by the family members.

Lifetime history of suicidal behavior was also associated with aggression. Although individuals with mental illnesses report high levels of self-harm and suicide attempts (Large et al., 2009), few studies have investigated the relationship between suicide risk and aggression. Previous works reported that impulsive (Conner et al., 2003) and poor decision-making (Szanto et al., 2015) might be the mediators between suicide risk and aggressive behavior. Among the existing 200 risk assessment tools for violence/aggression, only few of them include suicidal behavior as risk factor. Therefore, history of suicide or self-harm should be considered serious and thus included in valid aggressive risk assessment tools (Witt et al., 2013).

The role of clinical factors in risk assessment has not attracted sufficient research attention for development of risk screening tools for a specific population (Large and Nielssen, 2011), despite the importance of these factors reported in large-scale epidemiological studies (Douglas and Skeem, 2005). Previous epidemiological works reported the association between aggression and a certain set of symptom, namely, threat/control override symptoms, such as persecutory delusions and command hallucinations (Bjorkly, 2002; Link et al., 1998). Positive symptoms, including delusions and excitement, have been considered important factors in a number of epidemiological studies (Witt et al., 2013). Furthermore, psychosis symptoms may have higher contribution to evaluating violence risk than psychiatry diagnosis (Douglas et al., 2009; Marshall et al., 2016; Ullrich et al., 2014). In the present study, apathy was found to be significantly associated with aggressive behavior among inpatients. This finding is in accordance with those reported in a previous survey (Jiang et al., 2017) conducted in Beijing, China but is inconsistent with the results on predominately Western epidemiological samples (Witt et al., 2013).

A number of dynamic factors have been associated with violence risk; such factors include poor impulse control, lack of insight (Buckley et al., 2004), and nonadherence to psychological therapies and medication (Swartz et al., 1998; Witt et al., 2013). In the present study, although a slightly higher proportion of patients in the aggressive group were nonadherent to their treatment than those in the non-aggressive group (69.0% vs. 61.7%), binary logistic regression models did not demonstrate significant difference between the two groups. By contrast, this factor was identified as important in reviews of epidemiological studies on predominately Western samples (Witt et al., 2013). The difference in the findings could be due to the fact that medical record review was used in the present study, which might increase bias. Moreover, patients in predominately Western settings were treated as outpatients and could be more nonadherent to treatment (Lindenmayer et al., 2009) than inpatients.

A number of studies reported that alcohol and drug use and misuse are important risk factors for aggressive behavior in psychiatric patients (Dolan et al., 2012; Fazel et al., 2009; Lammers et al., 2014). However, these factors were not assessed in the present study. In general, alcohol and/or drug use is not routinely recorded in patients' medical records in China at present; as such, assessment of this risk factor would have relied exclusively on self-reported information, which would be highly

Table 3
Comparing identified risk factors between this study in Chinese population with other researches in mostly western samples.

	This study 95% CI	Risk factors from Witt et al. (2013) 95% CI	Risk factors from Singh et al. (2012) 95% CI	Risk factors from Fazel et al. (2017) 95%
Age	0.97–0.99	–	1.6–2.3	0.58–0.67
Historical factors				
Violent History	1.93–5.11	2.2–4.4	2.8–3.8	4.23–5.98
Previous drug use	–	–	3.1–4.0	1.23–1.72
Previous alcohol use	–	–	2.5–3.4	1.47–2.09
Recent drug misuse	–	1.6–3.2	–	–
Recent substance misuse (alcohol and/or drug)	–	1.3–6.3	–	–
Suicide History	1.49–6.10	1.1–2.3	–	–
Self-harm	–	0.4–2.8	–	1.04–1.45
Clinical factors				
Delusions	1.24–2.97	0.6–2.1	–	–
Excitement/acutely symptomatic	1.57–4.39	0.6–3.5	–	–
Apathy	1.11–2.54	–	–	–
Non-adherent with psychological therapies	–	2.4–19.2	–	–
Non-adherence with medication	–	1.0–3.7	–	–

liable to bias, as reported in a previous work (Chermack et al., 2000).

This study presents limitations. First, this study is based on medical record review. A certain degree of bias may exist because only routinely available data in clinical settings were used. Second, this study is retrospective; thus, follow-up research must be conducted to validate the risk factors of aggression in clinical settings. Third, this study was conducted in general psychiatric wards, and the results might not be suitable for forensic psychiatric patients.

In conclusion, previous violence history, suicide, delusions, excitement, and apathy are associated with aggression among inpatients with serious mental illnesses. The identified aggressive risk contributors could provide evidence for improving decision-making and intervention in psychiatric settings. Furthermore, the results provide a basis for experienced psychiatrists to easily assess the history of violence and suicide of individuals and their symptoms to stratify inpatients with mental illness into high- and low-risk groups.

Role of the funding source

This work was supported and funded by the National Key Research and Development Program of China (2016YFC0800701), the National Natural Science Foundation of China (NSFC 81571341, 81371500), the China's Ministry of Health, the Chinese Psychiatric Association (CPA), and the Mental Health Pilot Construction Project of the National Health and Family Planning Commission of the People's Republic of China and World Health Organization (WHO).

Acknowledgment

We would like to thank the participants and their families for participating in this research. We also thank the following institutes: the Hui Long Guan Hospital, Beijing; the Psychiatric Hospital of Jidong County, Heilongjiang; the Sixth Hospital of Peking University, Beijing; the Affiliated Hospital of Tongji University, Shanghai; the Affiliated Hospital of Harbin Medical University, Harbin, Heilongjiang; the Third People's Hospital of Huai'an, Anhui; the Shuangliu County Mental Health Institute, Sichuan; the Seventh Hospital of Liuyang County, Hunan; the West China Hospital of Sichuan University, Sichuan; the First Affiliated Hospital and the Department of Mental Health, Zhejiang University School of Medicine, Hangzhou; the Mental Health Center of Henan Province, Henan; and the Zigong Mental Health Center, Sichuan.

References

Bjorkly, S., 2002. Psychotic symptoms and violence toward others—A literature review of some preliminary findings Part 1. Delusions Aggress. Violent Behav. 7 (6), 617–631.

Buchanan, A., Binder, R., Norko, M., Swartz, M., 2012. Psychiatric violence risk assessment. Am. J. Psychiatry 169 (3), 340 -340.

Buckley, P.F., Hrouda, D.R., Friedman, L., Noffsinger, S.G., Resnick, P.J., Camlin-Shingler, K., 2004. Insight and its relationship to violent behavior in patients with schizophrenia. Am. J. Psychiatry 161 (9), 1712–1714.

Chermack, S.T., Roll, J., Reilly, M., Davis, L., Kilaru, U., Grabowski, J., 2000. Comparison of patient self-reports and urinalysis results obtained under naturalistic methadone treatment conditions. Drug Alcohol Depend. 59 (1), 43–49.

Conner, K.R., Duberstein, P.R., Conwell, Y., Caine, E.D., 2003. Reactive aggression and suicide: Theory and evidence. Aggression Violent Behav. 8 (4), 413–432.

Dolan, M.C., Castle, D., McGregor, K., 2012. Criminally violent victimisation in schizophrenia spectrum disorders: The relationship to symptoms and substance abuse. BMC Public Health 12, 445.

Douglas, K.S., Guy, L.S., Hart, S.D., 2009. Psychosis as a risk factor for violence to others: A meta-analysis. Psychol. Bull. 135 (5), 679.

Douglas, K.S., Skeem, J.L., 2005. Violence risk assessment —Getting specific about being dynamic. Psychol. Public Policy Law 11 (3), 347–383.

Fazel, S., Langstrom, N., Hjern, A., Grann, M., Lichtenstein, P., 2009. Schizophrenia, substance abuse, and violent crime. JAMA 301 (19), 2016–2023.

Fazel, S., Lichtenstein, P., Grann, M., Goodwin, G.M., Langstrom, N., 2010. Bipolar disorder and violent crime: New evidence from population-based longitudinal studies and systematic review. Arch. Gen. Psychiatry 67 (9), 931–938.

Fazel, S., Singh, J.P., Doll, H., Grann, M., 2012. Use of risk assessment instruments to predict violence and antisocial behaviour in 73 samples involving 24 827 people: systematic review and meta-analysis. BMJ 345, e4692.

Fazel, S., Wolf, A., Larsson, H., Lichtenstein, P., Mallett, S., Fanshawe, T.R., 2017. Identification of low risk of violent crime in severe mental illness with a clinical prediction tool (Oxford Mental Illness and Violence tool [OxMIV]): A derivation and validation study. Lancet Psychiatry 4 (6), 461.

Guy, L.S., Packer, I.K., Warnken, W., 2012. Assessing risk of violence using structured professional judgment guidelines. J. Forensic Psychol. Pract. 12 (3), 270–283.

Hanson, R.K., Harris, A.J., 2000. Where should we intervene? Dynamic predictors of sexual offense recidivism. Crim. Just. Behav. 27 (1), 6–35.

Jiang, J., Kang, R., Yan, H., Yan, Y., Wu, Y., Zhiwu, L., 2017. Retrospective analysis of overt aggressive behavior and associated factors among community-residing patients with schizophrenia from Beijing Fengtai District. Chin. Gen. Pract. 25, 3178–3183.

Lammers, S.M., Soe-Agnie, S.E., de Haan, H.A., Bakkum, G.A., Pomp, E.R., Nijman, H.J., 2014. [Substance use and criminality: A review]. Tijdschr Psychiatr 56 (1), 32–39.

Large, M., Babidge, N., Andrews, D., Storey, P., Nielssen, O., 2009. Major self-mutilation in the first episode of psychosis. Schizophr. Bull. 35 (5), 1012–1021.

Large, M.M., Nielssen, O., 2011. Violence in first-episode psychosis: A systematic review and meta-analysis. Schizophr. Res. 125 (2-3), 209.

Lehman, A.F., Lieberman, J.A., Dixon, L.B., McGlashan, T.H., Miller, A.L., Perkins, D.O., Kreyenbuhl, J., McIntyre, J.S., Charles, S.C., Altshuler, K., 2004. Practice guideline for the treatment of partients with schizophrenia. Am. J. Psychiatry 161 (2 SUPPL.).

Lindenmayer, J.-P., Liu-Seifert, H., Kulkarni, P.M., Kinon, B.J., Stauffer, V., Edwards, S.E., Chen, L., Adams, D.H., Ascher-Svanum, H., Buckley, P.F., 2009. Medication nonadherence and treatment outcome in patients with schizophrenia or schizoaffective disorder with suboptimal prior response. J. Clin. Psychiatry 70 (7), 990–996.

Link, B.G., Stueve, A., Phelan, J., 1998. Psychotic symptoms and violent behaviors: Probing the components of threat/control-override symptoms. Social Psychiatry Psychiatric Epidemiol. 33 (Suppl 1), S55–S60.

Liu, J., Ma, H., HE, Y.L., Xie, B., XU, Y.F., TANG, H.Y., Li, M., Hao, W., WANG, X.D., ZHANG, M.Y., 2011. Mental health system in China: History, recent service reform and future challenges. World Psychiatry 10 (3), 210–216.

Marshall, C., Deighton, S., Cadenhead, K.S., Cannon, T.D., Cornblatt, B.A., McGlashan, T.H., Perkins, D.O., Seidman, L.J., Tsuang, M.T., Walker, E.F., Woods, S.W., Bearden, C.E., Mathalon, D., Addington, J., 2016. The violent content in attenuated psychotic symptoms. Psychiatry Res. 242, 61–66.

Neal, T.M., Miller, S.L., Shealy, R.C., 2015. A field study of a comprehensive violence risk

assessment battery. Crim. Just. Behav. 42 (9), 952–968.
Ng, X.T., Kelly, B.D., 2012. Voluntary and involuntary care: Three-year study of demographic and diagnostic admission statistics at an inner-city adult psychiatry unit. Int. J. Law Psychiatry 35 (4), 317–326.
Pedersen, L., Rasmussen, K., Elsass, P., 2010. Risk assessment: The value of structured professional judgments. Int. J. Forensic Mental Health 9 (2), 74–81.
Singh, J.P., Grann, M., Lichtenstein, P., Langstrom, N., Fazel, S., 2012. A novel approach to determining violence risk in schizophrenia: Developing a stepped strategy in 13,806 discharged patients. PLoS One 7 (2), e31727.
Swartz, M.S., Swanson, J.W., Hiday, V.A., Borum, R., Wagner, H.R., Burns, B.J., 1998. Violence and severe mental illness: The effects of substance abuse and nonadherence to medication. Am. J. Psychiatry 155 (2), 226–231.
Szanto, K., de Bruin, W.B., Parker, A.M., Hallquist, M.N., Vanyukov, P.M., Dombrovski, A.Y., 2015. Decision-making competence and attempted suicide. J. Clin. Psychiatry 76 (12), e1590.
Ullrich, S., Keers, R., Coid, J.W., 2014. Delusions, anger, and serious violence: New findings from the MacArthur Violence Risk Assessment Study. Schizophr .Bull. 40 (5), 1174–1181.
Vojt, G., Thomson, L.D., Marshall, L.A., 2013. The predictive validity of the HCR-20 following clinical implementation: Does it work in practice? J. Forensic Psychi. Psychol. 24 (3), 371–385.
Witt, K., van Dorn, R., Fazel, S., 2013. Risk factors for violence in psychosis: systematic review and meta-regression analysis of 110 studies. PLoS One 8 (2), e55942.
Xie, B., Zheng, Z., 2001. The modification of Overt Aggression Scale. Chin. J. Behav. Med. Sci. 10, 195–196.
Yudofsky, S.C., Silver, J.M., Jackson, W., Endicott, J., Williams, D., 1986. The Overt Aggression Scale for the objective rating of verbal and physical aggression. Am. J. Psychiatry 143 (1), 35–39.
Zhou, J., Witt, K., Xiang, Y., Zhu, X., Wang, X., Fazel, S., 2016a. Violence risk assessment in psychiatric patients in China: A systematic review. Aust. N. Z. J. Psychiatry 50 (1), 33–45.
Zhou, J.S., Xiang, Y.T., Zhu, X.M., Liang, W., Li, H., Yi, J., Liu, F., Zhao, N., Chen, G., Shi, S., Li, G., Shen, D., Wei, N., Qi, F., Tan, W., Ungvari, G.S., Ng, C.H., Hao, W., Li, L., Wang, X., 2015. Voluntary and involuntary psychiatric admissions in China. Psychiatr. Serv. 66 (12), 1341–1346 appips201400566.
Zhou, J.S., Zhong, B.L., Xiang, Y.T., Chen, Q., Cao, X.L., Correll, C.U., Ungvari, G.S., Chiu, H.F., Lai, K.Y., Wang, X.P., 2016b. Prevalence of aggression in hospitalized patients with schizophrenia in China: A meta-analysis. Asia Pac Psychiatry 8 (1), 60–69.