Jordi Font Pujol[1,2]

Maria E. Gras[2]

Laia Calvó-Perxas[3]

Joan Vilalta-Franch[3,4,5]

Scale for the Evaluation of Risk of Aggressiveness in Psychiatric Intensive Care Units

[1]Unitat d'Aguts de Psiquiatria. Hospital Santa Caterina. Institut d'Assistència Sanitària, Salt, Girona, Catalunya
[2]Institut de Recerca sobre la Qualitat de Vida. Universitat de Girona, Girona, Catalunya
[3]Institut d'Investigació Biomèdica de Girona (IdIBGI), Girona, Catalunya
[4]Unitat de Valoració de la Memòria i les Demències. Hospital Santa Caterina, Institut d'Assistència Sanitària, Salt, Catalunya
[5]Departament de Ciències Mèdiques, Universitat de Girona, Girona, Catalunya

Introduction. The multifactorial origin of violent behaviors generates the need to use prediction tools adapted to different contexts, patient profiles and types of aggression. The main objective of this work was to design an instrument to detect the risk of violence and aggression quickly and effectively in patients with mental disorder in psychiatric intensive care units.

Material and methods. The sample consisted of 722 admissions of 629 patients from the psychiatric intensive care units. Violent incidents were recorded using the Overt Aggression Scale (OAS). A new scale has been designed and its psychometric properties have been evaluated.

Results. The Scale for the Evaluation of Risk of Aggressiveness (ERA) includes static and dynamic risk factors, has an AUC=0.854, a sensitivity of 82%, a specificity of 73%, a positive predictive value of 62% and a negative predictive value of 88% when the cut-off point of ¾ is used to determine the risk of violent or aggressive behavior.

Conclusions. The ERA has proven to be a valid and reliable instrument to forecast the risk of aggressiveness in patients admitted to an acute care unit of psychiatry. It also allows monitoring and updating this risk during the patient's stay in the psychiatric intensive care unit.

Keywords: Aggressiveness, Violent behavior, Psychiatric intensive care units, Quality of care

Escala para la Evaluación del Riesgo de Agresividad en una Unidad de Agudos de Psiquatría

Introducción. El origen multifactorial de la agresividad y la violencia genera la necesidad de utilizar instrumentos de predicción adaptados a diferentes contextos, perfiles de pacientes y tipos de agresividad. El principal objetivo de este trabajo fue diseñar un instrumento para detectar el riesgo de violencia y agresividad de forma rápida y eficaz en pacientes con trastorno mental en unidades de agudos de psiquiatría.

Material y Métodos. La muestra consistió en 722 ingresos de 629 pacientes de la Unidad de Agudos. Los incidentes de violencia y agresividad fueron registrados usando la Overt Aggression Scale (OAS). Se ha diseñado una nueva escala y se han evaluado sus propiedades psicométricas.

Resultados. La Escala para la Evaluación del Riesgo de Agresividad (ERA) incluye factores de riesgo estáticos y dinámicos, tiene un AUC=0.854, una sensibilidad del 82%, una especificidad del 73%, un valor predictivo positivo del 62% y un valor predictivo negativo de 88% cuando se utiliza el punto de corte ¾ para determinar el riesgo de comportamiento violento o agresivo.

Conclusiones. La ERA ha demostrado ser un instrumento válido y fiable, eficaz para predecir el riesgo de agresividad en los pacientes ingresados en una unidad de agudos de psiquiatría. También permite hacer un seguimiento y actualizar este riesgo durante la estancia del paciente en la unidad de agudos.

Palabras clave: Agresividad, Violencia, Unidad de agudos, Calidad de la atención

Correspondence:
Laia Calvó-Perxas
Institut d'Investigació Biomèdica de Girona (IdIBGI)
C/ Dr. Castany, s/n
17190 Salt (Girona) Catalunya
Tel.: 972 182600 (ext. 1832)
E-mail: lcalvo@idibgi.org

INTRODUCTION

The risk of aggressiveness in psychiatric units is high, particularly in psychiatric intensive care units[1]. Up to 75-100% of mental health professionals have been assaulted by their patients at least once throughout their professional life[2], and 21% of patients are assaulted by other patients in the first two weeks after admission[3]. The incidence of violent behavior in psychiatric intensive care units fluctuates between 9% and 50%[4,5], but this variability may be due to the methods used to assess and register aggressive behavior.

Violence threatens the safety, health and well-being of both patients and staff,[6] and can cause absenteeism, sick leaves, material damage, as well as reducing job satisfaction[7]. Violent incidents can cause a high turnover of the healthcare employees[8], a reduction in available personnel, and a higher proportion of part-time employees, which can, in turn, increase the number of violent incidents[9]. In psychiatric intensive care units the risk of aggressiveness is often assessed, and preventive strategies are usually applied. Unfortunately, they may include the use of medication at high doses and/or the use of coercive measures[10]. Patients often describe these measures as traumatic,[11] which may further increase the stress and the tension in the unit[12]. Thus, an accurate and reliable prediction of this risk is necessary. Some mental health professionals have ethical concerns regarding some instruments used to assess the risk of violence, since they can lead to the use of unnecessary preventive measures in cases of false positive assessments[13].

There are three main procedures to assess the risk of violence: (a) Unstructured clinical assessment, consisting of an individual assessment of the patients using unstructured clinical judgment[14]. (b) Actuarial methods based on the use of statistical and mathematical methods for risk assessment[15], which mostly use static risk factors that come from the empirical evidence[14]. (c) Structured clinical judgment, which combines both clinical and actuarial assessments[16] and includes empirical knowledge and professional clinical expertise.

The usefulness of an instrument to assess the risk of violence should ultimately be measured by its ability to reduce violent behaviors[17]. To date, little evidence supports the efficacy of the existing evaluation systems regarding self-harm reduction and risk of suicide[17,18].

The aim of this study, therefore, was to design and validate a new instrument to assess the risk of violent behavior in psychiatric intensive care units. The new instrument should be easy to use by any mental-health professional, it should provide reliable and clinically useful information, and it should be fast to administer during the first assessment of the patient, since it usually is in the first days of admission when the greatest number of violent incidents take place[19].

METHODOLOGY

Population

We used a consecutive sample of patients admitted to the Psychiatric Intensive Care Unit of the Santa Caterina Hospital in Salt, Girona, from May 1, 2013 to May 5, 2014. The sample consisted of 722 admissions. The study protocol was approved by the Ethical Committee of the Institut d'Assistència Sanitària of Salt (Girona).

Information on violent incidents during the inpatients stay at the psychiatric intensive care unit was collected using the Spanish translation of the Overt Aggression Scale (OAS)[20]. The scores range between 0 and 26 points, and higher scores indicate more severe incidents.

Violence during admission was defined as the presence of violent behavior in any of the four OAS categories: verbal aggression, object aggression, physical self-aggression and physical aggression against staff or other patients.

The following variables were collected from the medical chart of the patients: age, sex, marital status, residence (alone or living with someone), employment status, psychiatric diagnosis (ICD-9) and substance use during the last month. We also recorded whether it was a voluntary or an involuntary admission, the number of days of hospitalization, the type of admission (first admission or re-admission), the number of admissions during the study, the history of violent behavior, and smoking. The Positive and Negative Syndrome Scale scale (PANSS)[21] was used to evaluate positive psychotic symptoms (hallucinations, delusions, suspicion/persecution; lack of judgment and insight, and anxiety. The symptoms were considered to be present when the PANSS score was ≥3. Increased motor activity/energy was assessed using the Young Mania Rating Scale (YMRS)[22]. The risk of suicide was assessed using the Hamilton Depression Rating Scale (HDRS)[23]. In addition, some items included in the Nurses Observation Scale for Inpatient Evaluation (NOS-IE-30) were used to evaluate irritability, in agreement with previous studies where it was reported that these items are useful to predict violent behavior[24].

Assessment method

The principal investigator collected the data from the medical records, which were written by both a psychiatrist and a nurse when the patients were admitted, and during

their stay at the psychiatric intensive care unit. An interrater reliability test was performed with the first 50 cases.

All incidents of violence were recorded during the entire patient's stay at the Psychiatric Intensive Care Unit by all the employees of the psychiatric intensive care unit (psychiatrists, nurses, nursing assistants, and social workers). Specific training was carried out to homogenize the score of the violent episodes using the OAS. When a patient displayed several types and intensities of violent acts for half an hour, they were included within the same episode of violence and the highest intensity was recorded.

Finally, the Scale for the Evaluation of Risk of Aggressiveness (ERA) was elaborated based on the analysis of risk factors and aggressiveness that were more determining and easy to obtain, as detailed below.

Design and evaluation of the Scale

Processing and analyses of the data were performed using the statistical package for windows IBM SPSS Statistics version 22.0.0.0, and statistical tests were considered to be significant with a two-tailed p-value<0.05.

We conducted a descriptive analysis of the study variables using dispersion and central tendency measures for quantitative variables, and absolute and relative frequencies for qualitative variables. Normality distribution assumptions were done using the Kolmogorov-Smirnov test. Non-parametric bivariate analyses were used to assess differences between patients displaying and patients not displaying violent behavior.

Presence/absence of any violent behavior during the patient's stay was used as the dependent variable in a binary logistic regression model that we used to evaluate the relative risk for each item of the scale. The independent variables were those without colinearity problems, which could be obtained in the first evaluation of the patients and which were significant in the bivariate analyzes. The odds ratios (OR) obtained in the logistic regression were used to establish the score of each element of the scale. The percentage of lost data was used as a measure of suitability. The factor validity was investigated by Exploratory Factor Analysis of the items included in the scale. The extraction of factors was carried out through the analysis of main components. All extractions greater than 0.4 were considered to be satisfactory, and a single factor was extracted. The Bartlett test of the sphericity and the Kaiser-Meyer-Odin were been carried out to determine the conditions of application. The concurrent validity was determined by analyzing correlations with the OAS score. Interrater reliability was evaluated with the intraclass correlation coefficient (ICC) for the total score of the scale, and by the Kappa and Phy coefficients for each of the items. Internal consistency was measured using Cronbach's alpha.

To assess the performance of the ERA for the detection of general violence and physical violence, sensitivity, specificity and positive and negative predictive values were established, using the maximum efficiency cut-off point (highest Youden index) and the area under the ROC curve, both for general violence and for physical violence. Finally, the Cohen d was used for both general and physical violence as a measure of effect size. The different constructs of the scale were verified using a factor analysis with the principal component analysis method. The Promax rotation was used due to the possible correlation of the factors.

RESULTS

Our sample consisted of 629 patients who were admitted 722 times while the study was taking place. Of these patients, 70 (9.7%) were admitted twice; 13 (1.8%) three times and 10 patients (1.4%) 4 times or more. Half of the patients in the sample (50.6%, n=318) were men, with a mean age of 44.4 years (SD=17.5, range=16-92). 50.1% of patients (n=315) were single, 20.3% (n=128) were married, 21.6% (n=136) were separated or divorced, 7% (n=44) were widowed and this information was not known in 6 cases (1%). Only 15.7% of patients were working when they were admitted and 4.1% were on sick leave. For 61.2% of the patients it was the first admission in the psychiatric intensive care unit, and 57.7% of the admissions were involuntary. The most frequent diagnosis in this study was affective psychosis (30.6%), followed by other psychoses (22.0%), substance use disorders (14.5%), schizophrenia (12.6%) and other diagnoses (22.0%). The average length of stay in the psychiatric intensive care unit was 18.5 days (SD=18.9, range: <24h-190 days).

Table 1 shows the characteristics of the patients included in this study stratified by violent behavior or not.

Incidence of violent behavior

There was at least one violent incident in 35.2% (n=254) of the admissions. Specifically, in 10% (n=72) there was a single violent incident. In 19.9% (n=144) there were 2-6 violent incidents, and in 6.3% (n=38) there were 7 or more. In 14.4% (n=104) of the admissions there was only one type of violence (verbal aggression, object aggression, physical self-injury and physical aggression against staff or against other patients), while in 11.9 % (n=86) of the admissions there were two types of violence. In 6.0% (n=43) there were three types, and in 2.9% (n=21) the four types of violence were recorded. The incidence of admission with verbal ag-

Table 1	Sociodemographic and clinical characteristics of the sample used in this study stratified by violent behavior		
		Violent behavior N=209	Not violent behavior N=420
Age*	16-25 years	26.3% (55)	10.5% (44)
	26-35 years	28.2% (59)	15.5% (65)
	36-45 years	17.2% (36)	21.7% (91)
	46-55 years	14.8% (31)	21.2% (89)
	56-65 years	5.7% (12)	11.7% (49)
	>65 years	7.7% (16)	19.5% (82)
Civil status*	Married	14.6% (30)	23.5% (98)
	Single	64.1% (132)	43.9% (183)
	Divorced/Separated	18.4% (38)	23.5% (98)
	Widower	2.9% (6)	9.1% (38)
First admission**		55.5% (116)	64% (269)
Involuntary admission*		77.5% (162)	47.9% (201)
History of violent behavior*		62.7% (131)	27.1% (114)
Substance use*	0	46.4% (96)	68.2% (283)
	1	30% (62)	23.1% (96)
	2	23.7% (49)	8.7% (36)
Smoker[a]*		66.7% (134)	49.8% (205)
Delusions[b]*		68.4% (141)	45% (187)
Hallucinations[c]**		41.4% (84)	29.2% (120)
Suspiciousness/Persecution[d]*		64.1% (132)	35% (145)
Motor activity/energy*	No activity	38.3% (80)	82.6% (347)
	Minimal	13.9% (29)	8.8% (37)
	Moderate	14.8% (31)	4.5% (19)
	Increased	19.1% (40)	3.6% (15)
	Really increased	13.9% (29)	0.5% (2)
Risk of suicide*	No risk	82.8% (173)	57.6% (242)
	Low	3.3% (7)	5.7% (24)
	Moderate	2.9% (6)	12.9% (54)
	High	5.3% (11)	11.4% (48)
	Very high	5.7% (12)	12.4% (52)
Unawareness of the disease[e]*		81.3% (170)	43.4% (181)
Irritability*	Not irritable	28.7% (60)	85.7% (360)
	Mild irritability	6.2% (13)	5% (21)
	Moderate irritability	4.8% (10)	2.1% (9)
	Severe irritability	31.6% (66)	5.5% (23)
	Extremely irritable	28.7% (60)	1.7% (7)
Anxiety*		72.7% (152)	52.9% (222)

[a]n=613; [b]n=622; [c]n=614; [d]n=620; [e]n=626; *p<0.001; **p<0.05

Table 2	Binary logistic regression model for the risk factors for violent behavior			

		Wald	p	OR	95% CI
Age					
	>65 years	13.072	0.023	-	
	16-25 years	**7.903**	**0.005**	**4.22**	**1.55–11.53**
	26-35 years	**5.045**	**0.025**	**2.86**	**1.14–7.13**
	36-45 years	0.39	0.532	1.327	0.55-3.22
	46-55 years	0.5	0.479	1.378	0.57-3.35
	56-65 years	0.004	0.952	0.968	0.33-2.81
Suspiciousness/persecution		3,67	0.055	1.66	0.99-2.79
Motor activity/energy					
	No activity	11.782	0.019	-	
	Minimal	3.105	0.078	1.863	0.93-3.72
	Moderate	**4.863**	**0.027**	**2.602**	**1.11–6.09**
	Increased	2.763	0.096	2.124	0.87-5.16
	Really increased	**5.151**	**0.023**	**6.498**	**1.29–32.71**
Civil status	*Single*	**4.726**	**0.03**	**1.926**	**1.07-3.48**
Irritability					
	Not irritable	62.322	0.000	-	
	Mild irritability	0.443	0.506	1.356	0.55-3.32
	Moderate irritability	**7.484**	**0.006**	**4.726**	**1.55-14.38**
	Severe irritability	**40.907**	**0.000**	**8.314**	**4.35-15.91**
	Extremely irritable	**32.837**	**0.000**	**17.801**	**6.65-47.66**
Substance use					
	0	6.118	0.047		
	1	0.812	0.367	1.294	0.74-2.27
	2	**6.099**	**0.014**	**2.481**	**1.21-5.10**
History of violent behavior		3,728	0.054	1.624	0.99-2.66
Unawareness of the disease		**7,034**	**0.008**	**2.128**	**1.22-3.72**
Readmission		**5,303**	**0.021**	**1.785**	**1.09-2.92**

gression was 30.3% (n=219), physical aggression against staff or against other patients occurred in 15.7% (n=113) of the cases, the aggression to objects by 15.5% (n=112) and the physical self-aggression in 6.2% (n=45) of the admissions. Therefore, in total, 970 aggressions were committed in the context of 621 violent episodes. The majority of the episodes (80.8%, n=502) consisted of verbal aggressions or a combination of verbal aggressions with other types of ag-

gressions. The mean score of the OAS (n=621) was 7.5 points (SD=3.8, Rank 1-19).

Risk factors for aggressiveness

The regression model (Table 2) showed that the youngest patients, single, re-admitted, with a history of violent

behavior, with an increase in motor / energy activity, with irritability, consuming several substances and with a lack of awareness of disease were more prone to display a violent behavior. On the other hand, other variables such as the presence of anxiety, tobacco consumption and the presence of hallucinations showed no association with aggressiveness.

Instrument design

We included in the ERA all the items associated with violent behavior that were statistically significant in the regression model. We also included suspiciousness/persecution and the history of violent behavior on the scale because they were easy to assess and had previously been identified as risk factors for aggressiveness[26]. Given the heterogeneity of psychiatric admissions we excluded the item "first admission/readmission", since it would have entailed a loss of external validity. In addition, this item was poorly related to the others according to the factor analysis and worsened the internal consistency of the instrument. The high degree of suitability of the ERA was supported by the fact that only in 3.7% (n=27) of admissions there was one item that could not be recorded during the first interview with the patient.

Psychometric properties of the ERA

In the factor analysis with the extraction of a single factor (Table 3), all the variables had a factor weight higher than 0.40, with a maximum value of 0.69 for irritability and a minimum value of 0.42 for the consumption of substances.

The correlations between the scores of the ERA and those obtained using the OAS for the first aggressive incident and for the most aggressive incident were $rs=0.591$ (p<0.001, N=254) in the first case, and $rs=0.595$ (p<0.001; N=254) in the latter. The internal consistency was 0.70. The coefficients of Phy and Kappa were greater than 0.8 for all the items, and the intraclass correlation for the total score of the scale was ICC=0.990 (95% CI=0.983-0.994).

The total score of the ERA ranged from 0 to 12, and higher scores indicated a greater risk of aggression. Table 4 shows the performance values for various cut points. The cut-off with the best performance was ¾ with a sensitivity of 82% and a specificity of 73% with an AUC=0.859. The performance of the scale only for physical violence was also evaluated. The optimal cut-off value was 4/5, with an AUC of 0.797 (ET=0.023, 95% CI=0.751-0.842, p<0.001), a sensitivity of 73%, a specificity of 73%, a positive predictive value of 33%, and a negative predictive value of 94%.

When using all the items of the scale in the factor analysis, three factors were obtained that explained 63.5% of

Table 3	Factorial validity of the ERA

Variable	Factor 1
Irritability	0.697
Unawareness of the disease	0.634
Suspiciousness/persecution	0.601
Age	0.591
Motor activity	0.580
History of violence	0.573
Single	0.547
Substance use	0.415

Extraction method: principal component analysis. Kayser-Meyer-Odin: 0.716. Bartlett sphericity test: $\chi2=1070.728$ (28); p<0.001

the total variance (Table 5). The first factor explained 34.2% of the variance and included irritability, increased motor activity / energy and a history of violence. The second factor explained 16.2% of the variance and included age, marital status and substance use. The third factor explained the remaining 13.1% of the variance and included suspicion / persecution and lack of disease awareness.

CONCLUSIONS

In this study we determined the main risk factors for violent behavior in patients admitted in a psychiatric intensive care unit, and we used this information to design a new scale to evaluate the aggressiveness risk to be used at psychiatric intensive care units in the first interview with a patient. This new scale, the SEAR, allows identifying the patients at risk of behaving with violence during their stay at the psychiatric intensive care unit.

The incidence of any type of violence during this study was 35.2%, which is in line with the incidences reported in other samples[26]. When instruments that ignore verbal aggressions are used, the recorded incidences are, in general, lower, with values between 13.3% and 21.4%[6].

The exploratory analysis of the items included in the scale showed good factor validity. The ERA scores correlate with the first OAS score and with the highest score of the OAS obtained during admission. Interrater reliability yielded values between 0.85 and 1 for the items of the scale, and a CCI=0.99, which are higher values than those obtained for similar scales such as the BVC, HCR-20, V-Risk 10 and START[27-29]. The internal consistency for all the items included

Table 4		Psychometric properties of the SEAR for general violence and for physical violence									
	Cut-off	Sensitivity	Specificity	PPV	PPN	Youden index	LR+	LR-	DOR	Cohen's D	AUC
General violence	2/3	89.34	58.09	53.56	90.97	48.24	2.132	0.184	9.905	1.643 (95% CI= 1.481-1.805)	0.859±0.15 (95% CI= 0.830-0.889)
	3/4	82.00	72.95	62.11	88.20	54.95	3.031	0.109	6.952		
	4/5	79.08	84.92	71.55	84.00	64.72	5.244	0.118	4.377		
Physical violence	2/3	88.78	46.94	23.34	95.83	35.72	1.673	0.239	21.302	1.257 (95% CI= 1.069-1.444)	0.797±0.23 (95% CI= 0.751-0.842)
	3/4	82.24	60.20	27.33	94.91	42.44	2.066	0.295	16.158		
	4/5	72.90	72.62	32.63	93.64	45.52	2.660	0.233	11.462		

PPV: Predictive Positive Value; PNV: Predictive negative Value; LR: Likelihood ratio; DOR: Diagnostic Odds ratio; AUC: Area under the Curve

Table 5	Factor analysis		
Variable	Factor		
	1	2	3
Irritability	0.835	0.167	0.401
Motor activity	0.823	0.209	0.133
History of violence	0.552	0.083	0.523
Age	0.196	0.830	0.279
Single	0.087	0.811	0.321
Substance use	0.414	0.561	-0.083
Suspiciousness/persecution	0.160	0.309	0.804
Unawareness of the disease	0.334	0.198	0.784

Extraction method: principal component analysis. Rotation method: normalization Promax with Kaizer

in the ERA was 0.70, which indicates an acceptable reliability of the instrument. The ERA has lower internal consistency than scales such as the PCL-R or the START[29,30], but the greater heterogeneity of the items in the scale allows an improved prediction of violent behavior.

The highest Youden index placed the cut-off point at 3/4, with a sensitivity of 82% and a specificity of 73%. However, given that preventive strategies can be used in patients at risk of violent behavior,[31] sensitivity is, in this case, more important than specificity and therefore a limit of 2/3 is recommended, where the sensitivity increases to 89%. As far as we know, AUC values indicated that the ERA is better than any of the other scales when predicting general vio-

lence[4,27,32,33]. It should be taken into account, however, that there are some methodological differences with other scales that hamper a proper comparison, such as the inclusion or not of verbal violence, or the length of the follow-up.

So far, the BVC, DASA, VSC and V-Risk 10 scales are the only ones that were originally designed to predict violent behavior in the general population with mental disorders and without judicial problems during admission to psychiatric intensive care units. The main disadvantage of the BVC is that some elements considered as risk factors in this scale are considered as violent behavior in other scales. This makes the BVC useful for predicting physical violence, but it does not predict verbal aggressions[19]. According to its authors, the limitations of DASA[34] are that it detects too many false positives and that it does not accurately predict violence after 24 hours. As for the VSC, it is restricted to physical aggression[28]. In the case of V-Risk[10], some of its items are difficult to register in the first interview with the patient, such as the reaction to future stress situations or the lack of empathy. In addition, this scale uses some diagnoses as predictive elements and many times a diagnosis cannot be made at the moment of admission.

Our results indicate that frequently the different subtypes of physical aggression occur together. Other authors affirm that violent behavior is a process in which verbal aggressions precede more serious forms of violence, such as physical violence[35]. This may explain why some instruments that do not include verbal aggressions (BVC, VSC or HCR-20) may be less effective in identifying the risk of aggressiveness compared to the instruments that do include it.

In addition, the ERA includes dynamic elements that will fluctuate during admission (such as motor / energy activity, irritability, perspicacity/persecution or lack of awareness of disease), and static elements that will remain the same throughout the stay of patient 33 (such as age, history of

violence or substance use). Previous studies reported that dynamic factors predict violence better than static factors,[24,33] but factor analysis did not separate dynamic from static factors. This leads us to think that they can be interrelated factors, and that the inclusion of both types of factors in our scale will probably increase the performance of our instrument.

When interpreting our results, we must take into account some limitations: (a) Some items in our scale (age, sex, marital status or substance use) have a priori high reliability, and othersther items (such as irritability, motor / energy activity, disease awareness or suspicion / persecution) are included in other instruments with proven interrater reliability[21,22,32]. However, in our case, interrater reliability has been tested using only two raters, and a larger study including more raters should be conducted. (b) We lack information on external validity, and we cannot provide information on psychometric performance in specific diseases or in various mental health settings (other Psychiatric Intensive Care Units, Emergency Units, Sub-acute Units). (c) The concomitance of the different types of violence prevents individual studies for each subtype of violence (verbal aggression, object aggression, physical self-injury and physical aggression against staff or against other patients). However, the available literature indicates that violent behavior follows a dimensional model, where each type of aggression would belong to a general concept of violent behavior that includes them all.

Some authors argue that the risk of aggressiveness assessed by many instruments practically never translates into real violent behavior, and preventive measures can create stigma, discrimination and have few benefits for the patient, which can lead to ethical problems[36]. However, if the instruments have characteristics that ensure their usefulness[37] most of the disadvantages can be overcome, and the benefits can outweigh the risks. The ERA has shown to have all these characteristics. The psychometric performances and the predictive capability of the ERA have been seen to be satisfactory, which shows that the ERA is a valid instrument for predicting violent behaviors, whether mild or severe, in psychiatric intensive care units, regardless of the patient's diagnosis.

The ERA is fast to administer, since it contains elements that are collected routinely during the first interview with a patient, and any professional in the field of mental health can use it without specific training. Given that the ERA includes all types of aggressions, it also allows predicting verbal aggressions, which are the most frequent form of aggression and that generally precede the most serious forms of violence. The ERA contains dynamic elements, which allows monitoring and updating the risk of violent behavior throughout the patient's stay in the psychiatric intensive care unit Unit. Finally, it allows evaluating not only the need to take preventive measures, but also their efficacy.

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CONFLICT OF INTERESTS

None.

REFERENCES

1. Commissioning O, Unit S. http://www.nhsstaffsurveys.com/Caches/Files/NHS staff survey_nationalbriefing_Final 24022015 UNCLASSIFIED.pdf. Brief Note Issues Highlighted By 2014 NHS Staff Surv Engl. 2015.
2. Hatch-Maillette MA, Scalora MJ, Bader SM, Bornstein BH. A gender-based incidence study of workplace violence in psychiatric and forensic settings. Violence Vict. 2007;22:449–62.
3. Ross J, Bowers L, Stewart D. Conflict and containment events in inpatient psychiatric units. J Clin Nurs. 2012;21:2306–15.
4. Hartvig P, Roaldset JO, Moger TA, Ostberg B, Bjørkly S. The first step in the validation of a new screen for violence risk in acute psychiatry: The inpatient context. Eur Psychiatry. 2011;26:92–9.
5. Stewart D, Bowers L. Inpatient verbal aggression: content, targets and patient characteristics. J Psychiatr Ment Health Nurs. 2013;20:236–43.
6. Abderhalden C, Needham I, Dassen T, Halfens R, Haug H-J, Fischer J. Predicting inpatient violence using an extended version of the Brøset-Violence-Checklist: instrument development and clinical application. BMC Psychiatry. 2006;6:17.
7. Gunenc C, O'Shea LE, Dickens GL. Prevalence and predictors of verbal aggression in a secure mental health service: Use of the HCR-20. Int J Ment Health Nurs. 2015;24:314–23.
8. Di Martino V. Workplace violence in the health sector Relationship between work stress and workplace violence in the health sector [Internet]; 2003 [accesed 3 february 2013]. Available in: https://www.who.int/violence_injury_prevention/violence/interpersonal/WVstresspaper.pdf
9. Bowers L, Simpson A, Alexander J, Hackney D, Nijman H, Grange A, et al. The nature and purpose of acute psychiatric wards: The tompkins acute ward study. J Ment Heal. 2005;14:625–35.
10. Kaunomäki J, Jokela M, Kontio R, Laiho T, Sailas E, Lindberg N. Interventions following a high violence risk assessment score: a naturalistic study on a Finnish psychiatric admission ward. BMC Health Serv Res. 2017;17:26.
11. Olofsson B, Jacobsson L. A plea for respect: involuntarily hospitalized psychiatric patients' narratives about being subjected to coercion. J Psychiatr Ment Health Nurs. 2001;8:357–66.
12. Moran A, Cocoman A, Scott PA, Matthews A, Staniuliene V, Valimaki M. Restraint and seclusion: a distressing treatment option? J Psychiatr Ment Health Nurs. 2009;16:599–605.
13. Douglas T, Pugh J, Singh I, Savulescu J, Fazel S. Risk assessment tools in criminal justice and forensic psychiatry: The need for better data. Eur Psychiatry. 2017;42:134–7.
14. Andrés-Pueyo A, Echeburúa E. Valoración del riesgo de violencia: Instrumentos disponibles e indicaciones de aplicación.

Psicothema. 2010;22(3):403-49.

15. McDermott BE, Holoyda BJ. Assessment of aggression in inpatient settings. CNS Spectr. 2014;19:425–31.

16. Hart SD. The role of psychopathy in assessing risk for violence: Conceptual and methodological issues. Leg Criminol Psychol. 1998;3:121–37.

17. Wand T, Large M. Little evidence for the usefulness of violence risk assessment. Br J Psychiatry. 2013;202:468.

18. Troquete N, van den Brink RHS, Beintema H, Mulder T, van Os TWDP, Schoevers RA, et al. Authors' reply. Br J Psychiatry. 2013;202:468–9.

19. Vaaler AE, Iversen VC, Morken G, Fløvig JC, Palmstierna T, Linaker OM. Short-term prediction of threatening and violent behaviour in an Acute Psychiatric Intensive Care Unit based on patient and environment characteristics. BMC Psychiatry. 2011;11:44.

20. Silver J, Yudofsky S. Documentation of aggression in the assessment of the violent patient. Psych Ann. 1987;17:375–84.

21. Kay SR, Fiszbein A, Opler LA. The positive and negative syndrome scale (PANSS) for schizophrenia. Schizophr Bull. 1987;13:261–76.

22. Young RC, Biggs JT, Ziegler VE, Meyer DA. A rating scale for mania: reliability, validity and sensitivity. Br J Psychiatry. 1978;133:429–35.

23. Hamilton, M. A rating scale for depression. J Neurol Neurosurg Psychiatry. 1960;23:56–62.

24. 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.

25. Hellings JA, Nickel EJ, Weckbaugh M, McCarter K, Mosier M, Schroeder SR. The overt aggression scale for rating aggression in outpatient youth with autistic disorder: preliminary findings. J Neuropsychiatry Clin Neurosci. 2005;17:29–35.

26. 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.

27. Douglas KS, Ogloff JR, Nicholls TL, Grant I. Assessing risk for violence among psychiatric patients: the HCR-20 violence risk assessment scheme and the Psychopathy Checklist: Screening Version. J Consult Clin Psychol. 1999;67:917–30.

28. Bjørkly S, Hartvig P, Heggen F-A, Brauer H, Moger TA. Development of a brief screen for violence risk (V-RISK-10) in acute and general psychiatry: An introduction with emphasis on findings from a naturalistic test of interrater reliability. Eur Psychiatry. 2009;24:388–94.

29. Nicholls TL, Brink J, Desmarais SL, Webster CD, Martin M-L. The Short-Term Assessment of Risk and Treatability (START): a prospective validation study in a forensic psychiatric sample. Assessment. 2006;13:313–27.

30. Moltó J, Poy R, Torrubia R. Standardization of the Hare Psychopathy Checklist-Revised in a Spanish prison sample. J Pers Disord. 2000;14:84–96.

31. NICE. Violence and Aggression Short-term management in mental health, health and community settings Updated edition NICE Guideline NG10 National Collaborating Centre for Mental Health The British Psychological Society and The Royal College of Psychiatrists. 2015.

32. Almvik R, Woods P, Rasmussen K. The Brøset Violence Checklist. J Interpers Violence. 2000;15:1284–96.

33. Dolan M, Fullam R, Logan C, Davies G. The Violence Risk Scale Second Edition (VRS-2) as a predictor of institutional violence in a British forensic inpatient sample. Psychiatry Res. 2008;158:55–65.

34. Ogloff JRP, Daffern M. The dynamic appraisal of situational aggression: an instrument to assess risk for imminent aggression in psychiatric inpatients. Behav Sci Law. 2006;24:799–813.

35. Morrison EF. A hierarchy of aggressive and violent behaviors among psychiatric inpatients. Hosp Community Psychiatry. 1992;43:505–6.

36. Ryan C, Nielssen O, Paton M, Large M. Clinical Decisions in Psychiatry Should Not Be Based On Risk Assessment. Australas Psychiatry. 2010;18:398–403.

37. Szmukler G, Everitt B, Leese M. Risk assessment and receiver operating characteristic curves. Psychol Med. 2012;42:895–8.

Appendix	Scale for the Evaluation of Aggressiveness Risk (SEAR)

1. Age of the patient when admitted

16–25 years......................................☐ 2

26–35 years......................................☐ 2

36–45 years......................................☐ 1

46 years or more ....☐ 0

2. Suspiciousness/persecution: the patient presents a suspicious or even manifestly distrustful attitude, but thoughts, social relationships and behavior are minimally affected

Yes......................................☐ 1

No......................................☐ 0

3. Lack of judgment and insight: the patient recognizes having a psychiatric disorder but clearly underestimates its importance, the need for treatment, or the need to take measures to avoid relapses. Future projects may be scarcely planned

Yes......................................☐ 1

No......................................☐ 0

4. History of hetero-aggression: verbal aggression, object aggression, physical self-aggression, or physical aggression against others during the week before admission

Yes......................................☐ 1

No......................................☐ 0

5. Civil status: single

Yes......................................☐ 1

No......................................☐ 0

6. Substance use (alcohol, cannabis, cocaine) in the last month. Any pattern of use will be considered (abuse, sporadic use causing work/family/social dysfunction or that has caused an intoxication, use in the last 24h, and any positive determination in urine during admission)

No substance use / Use of one substance in the last month... ☐ 0

Use of two substances or more in the last month.. ☐ 1

7. Irritability

Is not irritable or impatient..☐ 0

Is in a bad mood..☐ 1

Gets angry or annoyed easily..☐ 2

Loses his/her nerve easily ....☐ 3

Appendix	Continuation

8. Increased motor activity–energy

Absent/subjectively increased...☐ 0

Animated; gestures increased / Excessive energy; hyperactive at times; restless (can be calmed) ....☐ 1

Motor excitement; continuous hyperactivity (cannot be calmed) ....☐ 2

TOTAL SCORE _____

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