



Studying Patients with Severe Mental Disorders Who Act Violently: Italian and European Projects

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9.1 Introduction

The risk of violence posed by patients with severe mental disorders has long been a hot topic for many reasons: in particular, since the start of deinstitutionalization some critics expressed the fear that the release of many inmates from mental hospitals would have increased the risk of violence by people with severe mental disorders (SMDs), although current data do not give support to this hypothesis [1–4]. However, it is certainly true that violence committed by people suffering from SMDs tends to gain disproportionate media coverage, creating an exaggerated sense of personal risk [5], and this underlines the need for proper management of patients at risk of violent behavior and for a careful planning and management of services which care for these patients.

Italy has been at the forefront of deinstitutionalization processes: after legislative changes in 1978, Italian psychiatry underwent a thorough overhaul, with the gradual closure of all mental hospitals, completed around the year 2000 [6]. Today a nationwide network of 163 departments of mental health deliver outpatient and inpatient care, but also run semi-residential and residential facilities (RFs). Hospital care is delivered through small psychiatric units (with no more than 15 beds): for more details, one of the authors of this chapter has extensively published quantitative data about the Italian psychiatric reform [7, 8].

More recently a radical change has also occurred in the area of forensic care: recent laws (n. 9/2012 and 81/2014) set the deadline of 31 March 2015 for the gradual discharge of all patients from the six forensic mental hospitals (FMHs), which hosted on average 1300 inmates, and their relocation to special high-security units, with no more than 20 beds each [9, 10]. In addition, many patients at lower risk of reoffending are currently cared for by ordinary departments of mental health (DMHs). This change involves increasing legal responsibility of both individual psychiatrists and DMHs and also requires a substantial organizational change for mental health services compared to the past.

Given this radical change and given the marked paucity of Italian studies in this area, we set up a specific project, the “VIOlence Risk and MEntal Disorder” (VIORMED) study, with three main aims: (a) to assess the sociodemographic, clinical, and treatment-related characteristics of patients in different treatment settings (e.g., living in RFs or living in the community and in outpatient treatment) with a lifetime history of interpersonal violence (named thereafter “cases”), and compare them with matched controls with no history of violence; (b) to monitor fortnightly any episode of aggressive and violent behavior with the Modified Overt Aggression Scale (MOAS) over a 1-year follow-up in these patients; and (c) to find predictors of

aggressive and violent behavior. We also wanted to assess the association of violent behavior with personality disorders and with substance-use disorders (SUD), and the relationship between self-harm behavior (SHb) and aggression against other people.

We hypothesized that people with a history of violence would display more aggressive and violent behavior during the 1-year follow-up, but that the risk of violence would be significantly affected by the treatment setting: cases living in RFs, where treatment is granted and substance abuse prevented, would be less likely to show aggressive and violent behavior as compared to cases living in the community. We also hypothesized that patients with a recent history of SUD would be more likely to behave violently, and that a history of SHB would also increase the risk for violent behavior.

The objective of this chapter is to provide an overview of the main results of the overall VIORMED project: for more details about the many data gathered in this project we refer to specific publications [11–15]. Finally we will briefly sketch the ongoing European project EU-VIORMED, which will provide important information about the state of forensic care in Europe and will compare for the first time forensic patients in treatment in five different countries and systems of forensic care.

9.2 Materials and Methods

9.2.1 Study Design

The VIORMED study, a prospective cohort study, involved patients living in RFs (VIORMED-1) and in outpatient treatment in Northern Italy (VIORMED-2). In the residential sample, all patients with a history of severe interpersonal violence (cases), living in 22 RFs in four sites (Brescia, Cernusco, Pavia, and Turin) in the index period May–September 2013, were recruited by treating clinicians. Outpatient recruitment was carried out at four DMHs in Lombardy (Northern Italy): recruitment started in the second half of 2015 and study participants were then consecutively recruited during 6 months. Inclusion criteria were a primary psychiatric diagnosis and age between 18 and 65 years. Exclusion criteria included a diagnosis of mental retardation, dementia, or sensory deficits.

Cases were recruited first. The selection of these patients was based solely on a comprehensive and detailed documentation (as reported in clinical records) about a history of violent behavior(s). Violent patients had to meet any of the following criteria: (1) to have been admitted at least once to a FMH for any violent acts against people and then discharged and/or (2) to have a documented lifetime history of violent acts against people in the last 10 years (as reported in the official clinical records), which caused physical harm to the victim, or having committed armed robbery, pyromania, or sexual violence; these behaviors led to legal prosecution or to arrest. The control group included patients who did not meet any of these conditions during their lifetime.

All participants provided written informed consent before entering the study. Before signing consent, the treating clinician with the local research assistant provided the potential participant with detailed information about the observational

nature of the study, of the study aims and methods. The participant information sheets and consent/assent forms made explicit the voluntary nature of subjects' involvement and the possibility to withdraw from the study at any time. All patients were assessed with several standardized instruments within 14 days of recruitment. Ethical approval was granted by the ethical committee of the coordinating center (IRCCS Saint John of God, Fatebenefratelli; n° 64/2014) and by ethical committees of all other recruiting centers (for more details see [12, 14]).

9.2.2 Measures and Assessments

A specific patient schedule was developed to collect information on selected sociodemographic characteristics, clinical and treatment-related factors, and history of violence (to be completed for cases only). The Structured Clinical Interview for DSM-IV Axis I (SCID-I) and Axis II (SCID-II) [16, 17] were administered to confirm clinical diagnoses. Symptom severity and psychosocial functioning were assessed using the Brief Psychiatric Rating Scale-Expanded (BPRS-E) [18], and the Specific Levels of Functioning scale (SLOF) [19].

Aggressiveness, impulsiveness, and hostility were evaluated through a set of self-reported measures, notably (a) the Brown-Goodwin Lifetime History of Aggression (BGLHA) [20], an 11-item questionnaire assessing lifetime aggressive behavior across two stages of life (adolescence and adulthood) by directly asking how many times the aggressive behavior occurred for each item; (b) the Buss-Durkee Hostility Inventory (BDHI) [21], a 75-item questionnaire containing eight subscales (e.g., direct and indirect aggression, irritability, negativism, resentment, suspiciousness, verbal aggression, and guilt) and producing an index of inhibition of aggression (a higher score indicating more hostility); and (c) the Barratt Impulsiveness Scale (BIS-11) [22], a 30-item 4-point Likert scale questionnaire that investigates personality and behavioral impulsiveness, with scores ranging from 30 to 120 (a higher score indicating more impulsiveness). The State-Trait Anger Expression Inventory 2 (STAXI-2) [23], which includes 57 items grouped into six scales (state and trait anger, anger directed inside and outside, control and expression of anger) plus an anger expression index and an overall measure of total anger expression (a higher score indicates more anger) evaluated on a 4-point Likert scale, was employed to provide specific measures of anger.

9.2.3 Monitoring of Aggressive and Violent Behavior

Aggressive and violent behavior exhibited by patients during the 1-year follow-up was rated every 15 days with the Modified Overt Aggression Scale (MOAS) [24], for a total of 24 MOAS evaluations for each patient. All MOAS evaluators (treating clinicians and other mental health staff, and family relatives) were very familiar with the patients and had daily, or very frequent, contact with them. The MOAS includes four aggression subdomains: verbal, against objects, against self, and physical-interpersonal. A score from 0 to 4 is assigned: 0 indicating no aggressive

behavior and higher scores showing increasing severity. The score in each category is multiplied by a factor assigned to that category, which is 1 for verbal aggression, 2 for aggression against objects, 3 for aggression against self, and 4 for aggression against other people. The total weighted score for each evaluation ranges from 0 (no aggression) to 40 (maximum grade of aggression); since there were 24 ratings during a 1-year period, the individual MOAS total score for that time period ranged from 0 to 960. We will subsequently refer to the weighted MOAS total score (our primary outcome) simply as the MOAS score, and the MOAS score is the main dependent variable in our project.

9.2.4 Statistical Analyses

Categorical data were analyzed in inter-group comparisons with Chi-squared, or Fisher's exact test, when appropriate ($n < 5$ in any cell in binary comparison). The Cramer values were reported as an association index. Student t-test was used to compare quantitative variables. Nonparametric tests were used for comparing non-Gaussian variables. The monitoring of violent behavior was performed by analyzing the MOAS total score and MOAS subscales along all the 24 time points during follow-up. Considering the non-Gaussian (skewed and zero-inflated) distribution of MOAS score, generalized estimating equation (GEE) models with Tweedie distribution and log-link function were adopted to analyze MOAS repeated measures. Similarly, the relation between the total scores of MOAS subscales (mean across the 24 time points) was investigated by generalized linear models with Tweedie distributions. The model goodness of fit was evaluated by Akaike information index (AIC: the lower the index value, the better the model fit). Finally, the analyses of predictive factors for violence were performed by adopting generalized linear models (GLMs) with Tweedie distribution and log-link function (MOAS score (total and subscales) used as the dependent variable and all other measurements as independent ones). The model goodness of fit was evaluated by Akaike information criterion (AIC: lower value indicates a better model). All tests were two-tailed, with statistically significant level set at $\alpha = 0.05$. All data were coded and analyzed using the Statistical Package for Social Science (SPSS, version 21) for Windows (Chicago, Illinois 60,606, USA), and R: A language and environment for statistical computing, (R Core Team, 2015), R Foundation for Statistical Computing, Vienna, Austria.

9.3 Results

In the residential sample a total of 139 inpatients with a primary diagnosis of mental disorders met the study entry criteria: 82 had a lifetime history of severe aggression against people (cases) and 57 were controls. Another 10 patients (6.7%) were contacted but refused to participate in the study (7 with a history of violence). The mean age of the violent patients was 44.9 years (SD = 11.4) compared to 46.7 (SD = 9.5) for the controls (Table 9.1). More patients in the violent group (38.3%) were

Table 9.1 Sociodemographic characteristics of violent patients and controls at baseline

	Outpatients (<i>N</i> = 247)				Residential patients (<i>N</i> = 139)			
	Violent group <i>N</i> (%)	Controls <i>N</i> (%)	Test*	<i>p</i> -value	Violent group <i>N</i> (%)	Controls <i>N</i> (%)	Test*	<i>p</i> -value
<i>Gender</i>								
Male	103 (81.7)	90 (74.4)	1.96	0.161	74 (90.2)	47 (82.5)	0.114	0.179
Female	23 (18.3)	31 (25.6)			8 (9.8)	10 (17.5)		
<i>Nationality</i>								
Italian	121 (96.0)	119 (98.3)	1.20	0.240	76 (92.7)	56 (98.2)	0.122	0.150
Others	5 (4.0)	2 (1.7)			6 (7.3)	1 (1.8)		
<i>Age</i>								
18–35	20 (15.9)	25 (20.8)	2.80	0.247	11 (13.4)	5 (8.8)	0.09	0.558
36–50	70 (55.6)	54 (45.0)			38 (46.3)	31 (54.4)		
51+	36 (28.6)	41 (34.2)			33 (40.2)	21 (36.8)		
<i>Marital status</i>								
Married or cohabiting	51 (40.5)	47 (38.8)	0.07	0.793	5 (6.1)	3 (5.3)	0.201	0.232
Single	75 (59.5)	74 (61.2)			77 (93.9)	54 (94.7)		
<i>Education</i>								
Low level	82 (65.1)	63 (52.1)	4.31	0.038	67 (81.7)	45 (79.0)	0.165	0.584
Medium-high level	44 (34.9)	58 (47.9)			15 (18.3)	12 (21.0)		
<i>Occupation</i>								
Employed	52 (41.6)	60 (50.4)	1.91	0.167	31 (38.3)	11 (19.6)	0.445	0.020
Unemployed	73 (58.4)	59 (49.6)			50 (61.7)	45 (80.4)		

<i>Economic independence</i>										
Yes	54 (44.3)	55 (47.0)	0.18	0.670	13 (15.9)	15 (26.3)	0.128	0.130		
No	68 (55.7)	62 (53.0)			69 (84.1)	42 (73.7)				
<i>Social support in the last year</i>										
Present	86 (72.3)	94 (83.2)	3.97	0.046	48 (62.3)	31 (55.0)	0.120	0.572		
Not present	33 (27.7)	19 (16.8)			29 (37.7)	26 (45.0)				
<i>Time spent doing nothing</i>										
Less than 3 h per day	46 (37.4)	66 (55.5)	7.94	0.005	22 (26.8)	24 (42.1)	0.161	0.165		
More than 3 h per day	77 (62.6)	53 (44.5)			60 (73.2)	33 (57.9)				

employed as compared to controls (19.6%; $\chi^2 = 0.445$, $p = 0.020$). As expected, 51.2% of the violent patients were admitted to the RF from a prison or a FMH, compared to none in the control group ($\chi^2 = 0.618$, $p = 0.001$). The most common primary diagnosis was schizophrenia, with a lifetime history of alcohol abuse. There was also a relevant proportion of patients meeting the criteria for personality disorders and the difference between the two groups was statistically significant: 79.3% in the violent group versus 63.2% in the control one ($\chi^2 = 4.39$, $p = 0.036$). No significant difference (Mann–Whitney $p = 0.221$) between groups was detected in terms of length of stay in RF: 840 days (median = 314) for violent patients, and 897 days (median = 484) for the control group. Concerning the BGLHA, there was a statistically significant difference between the two groups, indicating a more severe history of lifetime aggressive behavior in violent patients during adolescence and adulthood.

In the outpatient sample, among the 274 patients who were asked to join the study, 27 (9.8%) refused; therefore, the outpatient sample included 247 subjects with a primary diagnosis of SMDs: 126 of them had a lifetime history of violence (i.e., cases) and 121 had no such history (i.e., controls). The two groups did not differ in age, gender, nationality, marital status, or occupation. Compared to the controls, the cases had a lower educational level ($\chi^2 = 4.3$, $p = 0.038$), spent more time doing nothing (more than 3 h per day; $\chi^2 = 7.9$, $p = 0.005$), and had received less social support during the past year ($\chi^2 = 4.0$, $p = 0.046$). Regarding a lifetime history of violence, the proportion of participants who had witnessed or were involved in at least one episode of domestic violence was higher among cases ($\chi^2 = 20.2$, $p < 0.001$). The most frequent primary diagnoses included schizophrenia spectrum disorders (up to 41.3%) and personality disorders (up to 28.1%). The mean duration of illness was 17.7 years (SD = 10.5) for the violent group and 16.0 years (SD = 10.0) for the control group ($F = 1.8$, $p = 0.186$). Cases had a higher number of past compulsory admissions to psychiatric hospital wards ($\chi^2 = 19.8$, $p < 0.001$) and were less able to collaborate with treating clinicians during the previous year ($\chi^2 = 5.1$, $p = 0.023$). Cases obtained higher scores on the BGLHA (mean score: 40.4, SD = 12.4, for cases vs. 33.6, SD = 9.7, for controls; $p < 0.001$) (Table 9.2).

9.3.1 History of Violence in the Outpatient Sample

In the outpatient sample we assessed in details the history of violence: outpatient cases committed a large number of violent offenses, including physical aggression (87.2%), stalking (3.2%), sexual violence (2.4%), armed robbery (1.6%), murder (1.6%), attempted murder (0.8%), and other violent acts (3.2%). In more than one-fourth of cases, violent behavior was committed in the presence of psychotic symptoms, and in 20.5% of the instances the offenders were under the influence of alcohol. The history of violence was more frequently due to an episode of impulsive violence (92.4%). Victims of violence were more frequently the patients' parents or partners (respectively, 28.0% and 24.6%), followed by clinical staff (6.8%), patients' friends (6.8%), other relatives (6.8%), other patients (2.5%), or others (24.6%). The large majority of patients (88.8%) recognized their acts as violent, while the remaining 11.2% denied the violent nature of the offenses. Almost

Table 9.2 Baseline clinical characteristics of patients with a history of violence and controls

	Outpatients (N = 247)				Residential patients (N = 139)			
	Violent group N (%)	Controls N (%)	Test*	p-value	Violent group N (%)	Controls N (%)	Test*	p-value
<i>Primary diagnosis by the treating clinician</i>								
Schizophrenia	52 (41.3)	52 (43.0)	34.20	0.331	50 (61.0)	37 (64.9)	0.223	0.228
Personality disorder	47 (37.3)	34 (28.1)			16 (19.5)	10 (17.6)		
Other	27 (21.4)	35 (29.0)			16 (19.5)	10 (17.5)		
Illness duration (years) (mean, SD)	17.7 (±10.5)	16.0 (±9.9)	1.76	0.186	20.1 (±10.5)	23.3 (±10.2)	-1.70	0.092
Age of first contact with DMHs (years)	28.6 (±10.4)	29.8 (±11.5)	0.72	0.396	28.7 (±11.4)	25.7 (±7.8)	1.504	0.135
<i>Lifetime compulsory admissions</i>								
None	66 (54.1)	88 (72.7)	19.81	<0.001	9 (12.0)	17 (37.0)	0.503	0.001
1-3	40 (32.8)	33 (27.3)			60 (80.0)	39 (63.0)		
≥4	16 (13.1)	0 (0.0)			6 (8.0)	0 (0)		
BPRS total score (range 24-168)	41.0 (±11.7)	36.8 (±8.9)	-2.43	0.015	50.2 (±24.2)	57.0 (±19.1)	6.8	0.103
<i>SLOF</i>								
Physical functioning (range 5-25)	24.1 (±1.4)	24.2 (±1.34)	0.83	0.406	24.2 (1.4)	23.7 (1.3)	0.47	0.476
Self-care (range 7-35)	33.2 (±3.1)	33.4 (±3.1)	0.44	0.663	30.1 (2.8)	28.0 (2.7)	1.89	0.363
Interpersonal relationships (range 5-25)	23.9 (±5.9)	24.9 (±5.6)	1.46	0.143	17.5 (1.8)	16.5 (1.8)	0.9	0.731
Social acceptability/adjust (range 7-35)	23.7 (±4.0)	26.9 (±2.7)	6.81	<0.001	27.6 (4.2)	28.2 (3.2)	0.62	0.403
Activities (range 11-55)	48.5 (±7.4)	49.8 (±6.0)	1.03	0.303	41.8 (6.8)	40.7 (6.9)	1.13	0.543
Work skills (range 6-30)	21.5 (±6.6)	23.2 (±6.1)	1.91	0.056	19.2 (5.4)	16.9 (5.1)	1.29	0.066
BGLHA total score (range 22-88)	40.4 (±12.4)	33.6 (±9.7)	-3.91	<0.001	40.5 (±13.5)	34.9 (±12.0)	2.5	0.014
BIS-11 total score (range 30-120)	64.8 (±11.6)	62.1 (±10.4)	-1.62	0.105	66.1 (±12.2)	67.2 (±13.1)	-0.51	0.611
BDHI total score (range 0-75)	35.6 (±14.6)	34.6 (±12.6)	0.19	0.665	36.9 (±12.3)	32.5 (±11.4)	2.09	0.039
STAXI-2 anger expression index (range 0-96)	46.4 (±16.8)	39.9 (±15.1)	-2.84	0.005	39.1 (±13.4)	37.6 (±14.4)	0.6	0.526

*Standardized value of V Cramer

one-fourth (23.4%) of the violent patients were arrested for the violent offenses; 72.8% of patients already had a diagnosis of SMD at the time of their violent offense, and 67.5% were under care at the local DMH.

9.3.2 Psychopathology

In the residential sample, at baseline, there were no differences in the mean BPRS total score between cases and controls: a statistically significant difference was found only for the withdrawal subscale (mean score: 11.0, SD = 5.0, for the controls versus 8.4, SD = 4.3, for cases; $p = 0.001$), which includes “emotional withdrawal,” “motor retardation,” and “blunted affect,” with higher scores pointing to a higher level of symptomatology.

Among outpatients cases showed statistically significant higher scores in the BPRS-E total score compared to controls (mean score: 41.0, SD = 11.7, for cases vs. 36.9, SD = 8.9, for controls; $p = 0.015$) and in the BPRS-E activation subdomain (mean score: 11.7, SD = 4.8, for cases vs. 9.6, SD = 3.1, for controls; $p < 0.001$).

9.3.3 Psychosocial Functioning

Among residents, there were no statistically significant group differences regarding the SLOF, although subjects with a history of violence reported higher scores on almost all SLOF domains, pointing to a higher level of psychosocial functioning. Among outpatients, although cases had lower scores on all SLOF domains, a statistically significant difference was found only for the social acceptability subscale (mean score: 23.7, SD = 4.0, for the violent group vs. 27.0, SD = 2.7, for controls; $p < 0.001$).

9.3.4 Impulsiveness and Anger

In both samples we did not find any differences in BDHI and BIS-11 scores between cases and controls. With the STAXI-2, among outpatients a statistically significant difference was found only on two STAXI-2 subscales and for the Anger Expression Index: (1) anger control-out (mean score: 27.9, SD = 13.6, for the violent group vs. 33.0, SD = 15.4, for the control group; $p = 0.006$); (2) anger control-in (mean score: 31.2, SD = 15.5, for the violent group vs. 35.1, SD = 16.6, for the control group; $p = 0.040$); and (3) Anger Expression Index (mean score: 46.5, SD = 16.8, for the violent group vs. 39.9, SD = 15.2, for the control group; $p = 0.005$).

9.3.5 Aggressive and Violent Behavior During the 1-Year Follow-Up

Among residential patients, with regard to the monitoring of MOAS total scores during the 1-year follow-up, there were no statistically significant differences

between the mean total scores in the two groups (mean = 11.6, SD = 18.3, for violent group and mean = 7.56, SD = 16.7, for controls). The most common aggressive behavior displayed by residential patients was verbal aggression: 54% of patients were verbally aggressive at least once during the 1-year follow-up, compared with 25.9% of patients scoring ≥ 1 for aggression against objects, and 19.4% for interpersonal violence.

Among outpatients, cases compared to controls displayed statistically higher scores on the MOAS total score (mean = 25.7, SD = 36.3, for the violent group and mean = 8.4, SD = 17.4, for controls; $U = -4.7$, $p < 0.001$). The MOAS sub-ratings were also higher for the violent group when compared to controls. This was true for MOAS verbal aggression (mean = 10.2, SD = 12.1, vs. mean = 4.8, SD = 8.5; $U = -4.1$, $p < 0.001$), MOAS aggression against objects (mean = 4.7, SD = 8.4, vs. mean = 1.7, SD = 5.6; $U = -3.9$, $p < 0.001$), MOAS physical aggression (mean = 7.4, SD = 17.0, vs. mean = 1.0, SD = 5.0; $U = -5.1$, $p < 0.001$), and MOAS self-aggression (mean = 3.3, SD = 10.8, vs. mean = 0.8, SD = 3.9; $U = -1.8$, $p = 0.067$).

While in previous publications we have separately shown figures with MOAS data in the two samples, here we wish to assess the overall sample, including both residential subjects and outpatients. This would allow (and to our knowledge it is the first time that this comparison is made so far) to establish whether staying in a RF, for patients with a history of violence, is associated with a lower risk of violent behavior: the results of this analysis are shown in Fig. 9.1.

Compared to both controls and residential cases, outpatient cases displayed statistically higher scores on the MOAS total score when compared to both controls and residential cases (mean = 25.7, SD = 36.3, for outpatient cases, mean = 11.4, SD = 18.0, for residential cases and mean = 8.1, SD = 17.1, for all controls; $K = 32.7$, $p < 0.001$). Our initial hypothesis (e.g., stay in a RF where treatment is granted, SUD is prevented, and there is a close overall supervision of patients that may be associated with a lower risk violence as compared to being treated in the community) is confirmed.

9.3.6 Predictors of Aggressive and Violent Behavior

We tried to identify predictors of new episodes of violence during follow-up in both samples: in the residential sample we defined as “new violent” a patient with a total MOAS score (sum across the 24 time points) > 3 . Residential patients with a total weighted MOAS score > 3 during the 1-year follow-up were 46% ($N = 64$): none of the sociodemographic and clinical characteristics stood out as a significant predictor of new violent behavior.

In the outpatient sample univariate GLMs (without considering the group distinction between cases and controls) were performed to analyze factors associated with higher MOAS scores. The best predictor of new aggressive and violent behavior(s) was the BDHI suspicion score ($p = 0.030$, AIC = 1156.1, $\beta = 1.14$), followed by the BGLHA total score ($p = 0.002$, AIC = 1208.9, $\beta = 1.05$). Among outpatients a higher MOAS total score was predicted by lower levels of social

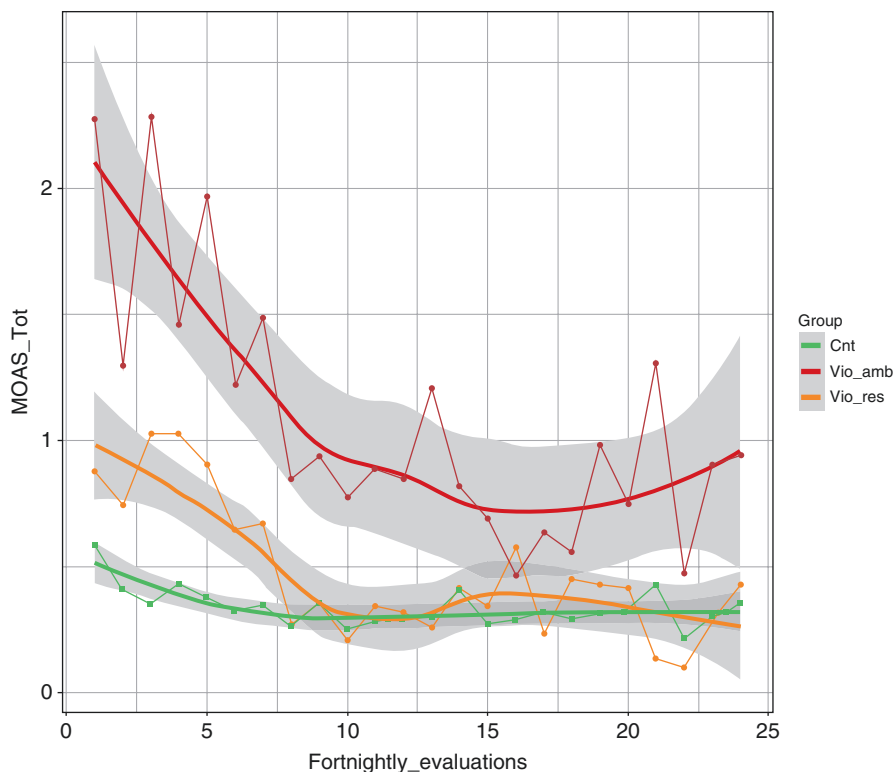


Fig. 9.1 Longitudinal evaluation of MOAS total score during the 1-year follow-up in three different clinical groups (Cnt = all controls, Vio-amb = outpatient cases, Vio_res = residential cases). Trend estimated through smoothing spline functions with corresponding 95% confidence bands (from Barlati et al., 2019)

acceptability, as assessed with the SLOF social acceptability score, among both cases and controls ($p < 0.001$, AIC = 1521.0).

With regard to the relationship between the three MOAS subscales, in both samples we found that verbal aggression was a significant predictor of aggression against objects ($p < 0.001$) and of interpersonal violence ($p < 0.001$), while aggression against objects was a significant predictor ($p < 0.001$) of interpersonal violence. This result has important clinical implications: as in the case of suicidal behavior, a continuum in aggressive and violent behavior seems to exist: a patient may start becoming verbally aggressive; this may in turn lead to aggression against objects and finally the second step may predict a final escalation to interpersonal violence. Health staff dealing with patients with SMDs should stay alert whenever a patient starts behaving aggressively; they should pinpoint the need for immediate interventions to prevent escalation and should not minimize signs of minor aggression (such as verbal aggression), especially among people with a history of violence.

9.3.7 Personality Disorders and Violence

People with personality disorders and schizophrenia are more likely to commit violent acts than healthy individuals. In our sample we did want to investigate the association between clinically significant maladaptive personality traits, PDs, schizophrenia, and risk of aggressive behavior. All recruited subjects underwent a baseline assessment also including, besides the assessment tools listed above, the Millon Clinical Multiaxial Inventory-III (MCMI-III) [25, 26]. In both samples, the most significant predictor of aggressive and violent behaviors over time was endorsing a primary diagnosis of personality disorders, and subjects meeting diagnostic criteria for personality disorders exhibited higher MOAS scores than subjects with schizophrenia. In the outpatient sample cases scored significantly higher than controls on the MCMI-III Antisocial, Sadistic, Borderline, and Paranoid personality scales (Candini et al. 2016).

These findings support the importance of routinely assessing maladaptive personality traits and features in patients with a history of violence. Identifying the most crucial risk factors for violent recidivism would contribute to both effectively preventing and reducing the risk of re-offending in this population.

9.3.8 Substance-Use Disorders and Violent Behavior

In all the samples (both residential and outpatient) we also investigated the clinical characteristics of patients with mental disorders who reported current episodes of substance use (CSU) at the time of assessment compared with patients who had only a lifetime history of substance use (LSU) and patients who had no reported episodes of substance use (NSU) over the life span (Cavalera et al., under review). We assessed the differences among these three groups in hostility, impulsivity, and aggressive behavior among 244 outpatients and 134 residential patients. Patients with CSU were more likely to be younger and of male gender than patients with LSU or NSU and showed significantly higher scores for aggressive and violent behavior (as assessed with the MOAS during the 1-year FU) compared with patients with NSU or only previous LSU. Patients with CSU also showed significantly higher scores for irritability, negativism, hostility, and verbal assault compared with NSU patients, while patients with LSU showed significantly higher scores for lifetime history of aggressive behaviors compared with patients with NSU. Whereas patients with schizophrenia showed a prevalence of NSU, patients with personality disorders showed higher rates of past or current substance use.

These findings suggest that patients with comorbid SMDs and CSU should be referred for specific interventions to reduce aggressive behavior and ensure patient well-being and community safety. In this perspective a close collaboration between mental health and addiction services appears of paramount relevance and should be at the forefront of any reorganization of mental health services.

9.3.9 Self-Harm and Aggression Against Other People

We also evaluated the differences between patients with SMDs with and without a history of self-harm behavior (SHb) and/or violent behavior against other people (Vb) in relation to a variety of dependent variables, in particular violent behavior during a 1-year FU as assessed with the MOAS, and tried to identify predictors of SHb and Vb during the FU (Scocco et al., under review); because of organizational problems this analysis was restricted to outpatients. To do this we divided the overall outpatient sample into four groups: patients with lifetime Vb (V), patients with both Vb and SHb (V-SH), patients with only SHb (SH), and patients with no history of SHb and Vb (control group, CONT). Overall 246 patients were included in this specific analysis. Outpatients with a lifetime history of Vb and SHb showed more severe psychopathological symptoms compared to those with only a history of SHb or Vb or no such history. V and V-SH patient groups reached higher scores in all MOAS subscales: a history of violence against others and self-harm, or only a history of violence partially predicted future aggressive behavior at 1-year FU. Ninety percent of controls and 82% of SH did not show any aggressive behavior during the FU period, whereas 40% of Vb and SH patients aggressively behaved at least once. Of these, 13% showed both externally directed aggression and SHb. Age among the SH group and BPRS-E affect-anxiety subscale among the V group significantly predicted aggression against people.

In summary, among people with SMDs a history of SHb or Vb is associated with different medium-term outcomes, and this represents another important point for mental health practitioners in planning care for people with SMDs.

9.4 Discussion

As mentioned in the introduction and in other chapters of this book, the recent Italian law (81/2014) which enacted a significant reorganization of the forensic system has prompted a deeper investigation into the risk of aggressive and violent behavior among patients in treatment at DMHs. To our knowledge, this is the first Italian study, and one of very few international ones, to use a large set of standardized multidimensional evaluation tools and to prospectively examine the frequency and severity of aggressive and violent behavior in outpatients with SMDs. Our study demonstrates that outpatients with SMDs who have a history of serious violence are more likely to show higher levels of aggressive and violent behavior (in terms of frequency and severity) as compared to patients who do not have such a history, and this raises important clinical problems in terms of prevention and management. On the contrary, among patients with a history of violence who are hosted in residential settings, with 24-h cover, the difference in the frequency of aggressive and violent behavior between patients with and without a history of violence becomes negligible. Living in a controlled environment, with compliance granted and no possibility of substance-use disorders, may have a preventive effect on aggressive and violent behavior, while life in the community, where treatment compliance is not warranted

and there is a greater risk of SUD, has a potential detrimental effect on the risk of recurrence. To our knowledge, this is the first time ever that a study with the same prospective design has compared patients with a history of violence treated in different settings, and has shown a marked difference in behavioral patterns associated with different regimes of care (with higher or lower protection).

9.4.1 What Predicts Violence?

We identified several predictive and protective factors for community violence. Social acceptability was a predictor of nonaggressive behavior, indicating that better social acceptability is associated with lower MOAS scores among both cases and controls. With specific regard to physically aggressive behavior, higher levels of anger expression did predict aggressive behavior, while hostility was predictive only among controls. Other predictors of aggressive and violent behavior that we found in our study (i.e., lifetime substance-use disorders, early age at the first contact with DMHs, longer illness duration) are in line with findings from previous studies (REF).

9.4.2 How to Manage Violent Patients in the Community

This study provides useful indications for planners and clinicians who have the relevant task of planning and managing services which currently have also to care for mentally ill offenders in Italy. While patients with a history of interpersonal violence can be effectively managed in RFs, where treatment and clinical supervision are granted, our study shows that outpatients living in the community still pose a higher risk of reiteration of aggressive and violent behavior as compared to patients with no history of violence. It will be necessary to develop appropriate training programs for mental health staff entrusted with the care of patients with a history of violence, and the most effective pharmacological and non-pharmacological strategies of intervention need to be disseminated. An active collaboration between mental health services and addiction services (which is of paramount relevance given the importance of SUD as a primary risk factor for aggressive and violent behavior), which is often missing, is urgently required and new strategies of collaborative work involving different treatment agencies have to be developed. It will be necessary to set up appropriate monitoring systems to well understand the main unmet needs of this difficult-to-treat clinical population and identify the clinical skills which mental health workers have to learn to well manage these patients.

9.4.3 Findings of Other Prospective Studies to Assess the Risk of Violence in Outpatient Samples

Table 9.3 shows the findings of the main 20 cohort studies (concurrent or retrospective), done in Western countries, in which the authors have performed a monitoring

of aggressive and violent behaviors over different periods of time. Some of these studies have involved large sample sizes (up to a maximum of 1435 patients studied in the framework of the CATIE project); in eight studies the monitoring has been done with the MOAS (or the OAS); in both studies the assessed time span was very long (up to 10 years), but the assessments of aggressive and violent behaviors were done at very long time intervals (every 2 years in one case, at 1, 2, 5, and 10 years in the other study). In only one study [35] there was a comparison sample of community citizens randomly sampled in the areas where the majority of study subjects were living.

Overall these studies show that a sizeable proportion of patients with SMDs behave aggressively or violently, and that the risk of violence is related to a variety of unmodifiable (e.g., age, sex, previous history of violence) and modifiable (treatment compliance, illness severity, SUD, etc.) factors: services should focus on the latter variables to prevent antisocial behaviors and consequently improve patients' integration, cooperation, and outcomes.

It is worth to note that no study as the VIORMED has ever performed such a close monitoring of aggressive and violent behavior, with 24 ratings every 2 weeks over the course of 1 year.

9.4.4 The European Study of Forensic Psychiatry (EU-VIORMED)

While the VIORMED study has provided valuable data about the risk of violent behavior among patients with SMDs in treatment in ordinary mental health services, it has not studied offenders currently treated in forensic settings. From this perspective available information seems to show that treatment programs and care pathways for mentally disordered offenders vary substantially across Europe. This is partially due to differences in legal frameworks, policies, and clinical resources in the different European countries. One consequence of these differences is that research to help understand the nature of the association between violence and severe mental illness has been inconsistent.

The 3-year EU-VIORMED project (Grant Number PP-2-3-2016, November 2017–October 2020) (de Girolamo et al., in press) aims to assess pathways for forensic psychiatric care in different European countries and their legal and ethical underpinnings, to identify risk factors for violence and self-harm in people with schizophrenia spectrum disorders, to evaluate tools which can predict the risk of violence and self-harm, to assess effective treatments for people with schizophrenia in forensic services, and to examine patients' capacity to consent to treatment in forensic settings. The EU-VIORMED will expand and develop knowledge on the process of violence risk assessment and will elucidate what works in terms of treatment and practice, to help us to deliver more timely, effective, and evidence-based care for offenders. The hope is that it will help the harmonization of forensic psychiatric treatment pathways across the EU, with the ultimate objective to improve the overall quality of forensic psychiatric care in its member states.

Table 9.3 List of prospective studies assessing aggressive and violent behavior in outpatient samples

Author (country)	Sample (N) Male (%)	Diagnoses	Study design (FU, assessment tool, frequency of monitoring)	Main findings
Amore et al. [27] (Italy)	186 (M 68.3%, age 40.6 ± 14.5)	SSD 52.1%; PDs 28.5%; MDD 14.6%; SA 43.0%. All patients discharged from a GHPW	1-year FU. OAS at inclusion (in hospital), 1 month and 1 year after discharge	23.6% showed aggression at 1-month FU and 22.2% at 1-year FU contacts. Overall, 8.3% of these pts resulted to be persistently aggressive in both of the FU assessments. Risk factors for physical violence in the short time period were social problems and a longer time from the first psychiatric contact. Living in residential facilities and physical aggressiveness during hospitalization were correlated to violence in the long-time period.
Appelbaum et al. [28] (USA)	1136 (M 58.7%, age 25–40: 75.3%, 18–24: 24.7%)	MDD 40.3%, SCZ or SchAff: 17.2%, BDs 13.3%, other mental disorders 3.5%, SUD 23.9%, PDs only 1.8%.	1-year FU. MACVI every 10 weeks (five assessments)	The proportions of patients who committed acts of violence across the 5 FU evaluations were 13.5%, 10.3%, 6.9%, 7.6%, and 6.3%, respectively, with a 1-year aggregate violence rate of 27.5%. Delusional symptoms did not increase the overall risk of violence in pts with mental illness in the year after discharge from hospitalization.
Bobes et al. [29] (Spain)	895 (M 66.9%, age 38.7 ± 11.5)	SCZ 100%	MOAS for the week prior to the study visit	Prevalence of recent violent behavior (defined as a score ≥3 in any of the MOAS subscores) 5.1%, where 47.0% reached the violent threshold. Most episodes were verbal (44%), followed by violence towards objects (29%), violence towards others (19%), and self-directed violence (8%). Variables associated with recent violent behavior included a history of violence, relapses in the previous year, and low treatment satisfaction.

(continued)

Table 9.3 (continued)

Author (country)	Sample (N) Male (%)	Diagnoses	Study design (FU, assessment tool, frequency of monitoring)	Main findings
Brucato et al. [30] (USA)	200 (M 72%, age 20.1 ± 3.8)	Psychosis-risk cohort. 30% of the participants developed psychosis during the FU.	2-year FU. MACVI for the past 6 months and at any FU contact	28% of pts reported violent ideation at baseline, 6% reported violent behavior within 6 months pre-baseline, and 4% committed acts of violence during the FU period. Both violent ideation and violent behavior at baseline, as well as a diagnosis of psychosis, predicted violent behavior during FU, independent of clinical and demographic variables.
Colasanti et al. [31] (Italy)	269 (M 63.2%, age 44.1 ± 13.6)	Psychotic disorders 68.0%, mood disorders 28.2%, others 4.0%	MOAS for the week prior to hospital admission	Aggressive and violent behaviors were highly prevalent, respectively, in 45% and 33% of the cases. Violence before admission was independently associated with drug abuse, involuntary admission status, and severe psychopathology. A diagnosis of a psychotic disorder did not increase the risk of aggression or violence, compared to the other psychiatric diagnoses. Personality disorders were significantly more associated to aggressive behaviors than psychotic disorders.
Dean et al. [32] (UK)	495 (M 57.9%, age 30.7 ± 10.8)	SCZ 72.5%, mania 13.5%, depressive psychosis 13.9%	Psychiatric and personal history schedule administered to the patients + review of clinical records	Almost 40% (N = 194) of the samples were aggressive at first contact with services; approximately half of these were physically violent (N = 103). Younger age, African-Caribbean ethnicity, and a history of previous violent offending were independently associated with aggression. Aggressive behavior was associated with a diagnosis of mania and individual manic symptoms were also associated with aggression both for the whole sample and for those with schizophrenia. Factors differentiating violent from nonviolent aggressive patients included male gender, lower social class, and past violent offending.

Ekinci and Ekinci [33] (Turkey)	133 (M 66.2%, age 36.4 ± 10)	SCZ 100%	MOAS for the week prior to the study visit	35.3% pts classified as violent (OAS >7), 64.7% as nonviolent. Nonviolent with more depressive symptoms, lower scores on positive symptoms, better clinical insight, more self-reflectivity.
Keane et al. [34] (Ireland)	132 (M 53%, age 33.3 ± 11.7)	SSD 74.5%, mood disorders 23.5%	MOAS for the week prior to the study visit	36% and 29% of the samples were rated as aggressive and violent, respectively. Aggression was independently associated with involuntary and inpatient treatment status in the week prior to presentation. Violence was associated with involuntary and inpatient status in the week prior to presentation.
Langeveld et al. [35] (Norway, Denmark)	178 (M 55.5%, 28.3 ± 9.2)	First-episode psychosis	10-year FU. Patient interviews at inclusion, 3 months, 1, 2, 5 and 10-years	During the FU, 20% of pts had been apprehended or incarcerated. At 10-year FU, 15% of pts had exposed others to threats or violence in the year before assessment. SUD at baseline and 5-year FU, younger age, and a longer duration of psychotic symptoms predicted violence.
Mauri et al. [36] (Italy)	400 (M 52.7%, age 49.7 ± 14.7)	SCZ 23.3%, PDs 13.5%, BD 17.0%, other diagnoses of the remaining sample.	MOAS for the week prior to the study visit	21.5% of pts with MOAS >0, 11.5% MOAS 0–10, 9% MOAS 11–20, and 1% MOAS >20. Violence related to unemployment, compulsory admission, suicide attempts, and PDs.
Pinna et al. [37] (Italy)	678 (M 45.4%, age 49.6 ± 15.3)	ADs 30.7%, SSDs 25.0%, BD 18.3%, MDD 17.2%, PDs 2.9%, MR 2.6%	Retrospective evaluation of clinical records	27.6% of the sample had committed at least one act of violence during the lifetime, 10.5% over the previous year. 56.7% of those who committed violence acts had acted violently twice or more during the lifetime. Risk of violent behavior: males, younger age, low education, unemployment, living with parents, early age at onset and at first psychiatric treatment, longer DOI, previous hospital admissions and violent events, schizophrenia and other PDs, MR, and comorbidity between two or more psychiatric disorders.

(continued)

Table 9.3 (continued)

Author (country)	Sample (N) Male (%)	Diagnoses	Study design (FU, assessment tool, frequency of monitoring)	Main findings
Steadman et al. [38] (USA)	951 (57.6%, age 18–24 23.7%, 25–40 76.3%)	SCZ 20.4%, MDD 23.7%, BD 37.2%, PDs 37.0%, SUD 56.4%	1-year FU. Interviews every 10 weeks (5 assessments) with the patient and informants	The proportion of patients with at least 1 act of violence during the 1-year FU was 4.5% using agency records alone; 23.7% adding patient self-reported acts that had not been in agency records; and 27.5% adding collateral informant-reported acts that had not been in either agency records or patient self-reports. In a community sample used for comparison (N = 519) 4.6% reported violence and 15.1% aggressive acts only. There was no significant difference at 2 out of 5 FUs between the prevalence of violence by pts without SUD and the prevalence of violence by others living in the same neighborhoods who were also without SUD. SUD significantly raised the rate of violence in both groups, and a higher portion of pts than of others in their neighborhoods reported SUD. Violence in both patient and comparison groups was most frequently targeted at family members and friends, and most often took place at home.

Swanson et al. [39] (USA)	1410 (M 74.3%, age 40.5)	SCZ 100%	MACVI for the past 6 months	The 6-month prevalence of any violence was 19.1%, with 3.6% of participants reporting serious violent behavior. Distinct, but overlapping, sets of risk factors were associated with minor and serious violence. "Positive" psychotic symptoms, such as persecutory ideation, increased the risk of minor and serious violence, while "negative" psychotic symptoms, such as social withdrawal, lowered the risk of serious violence. Minor violence was associated with co-occurring substance abuse and interpersonal and social factors. Serious violence was associated with psychotic and depressive symptoms, childhood conduct problems, and victimization.
Swanson et al. [40] (USA)	802 (M 65.1%, age 41.9 ± 9.9)	SCZ 44.8%, SCZAff 19.5%, BD 16.9%, MDD 11.3%, other 7.0%. Comorbid with SUD 45.4%	Specific assessment instrument	The 1-year prevalence of serious violent behavior was 13.6%. Variables associated with violent behavior included past violent victimization, violence in the surrounding environment, SA, homelessness, PTSD, poor subjective mental health status, earlier age at onset of psychiatric illness, and psychiatric hospital admission. Physical abuse occurring before age 16 significantly increased the risk of violence.
Swanson et al. [41] (USA)	1011 (M range 32.4–64.5%, age range 41.3–46.7)	SCZ 41.5–49.5%. Comorbid with SA 13.9%–35.5%	MCVI for the previous 6 months	18–21% of pts reported having committed violent acts in the past 6 months; 3–9% reported having used or made threats with a lethal weapon, committed sexual assault, or caused injury. Variables associated with violent behavior included younger age, male gender, poorer clinical functioning, more years in treatment, more frequent hospitalizations, and negative attitudes towards medication adherence.

(continued)

Table 9.3 (continued)

Author (country)	Sample (N) Male (%)	Diagnoses	Study design (FU, assessment tool, frequency of monitoring)	Main findings
Tyrer et al. [42] (UK)	70 (M 100%, age 44.5 ± 10.5)	SCZ, SCZaff, BD (83%), PDs (17%)	8.6-month FU. MOAS and QOVS based on patient notes	Mean MOAS monthly score: 1.91 ± 4.39. No of incidents of severe violence: 3.
Tosato et al. [43] (Italy)	80 (M 51%, age 42.1 ± 12.2)	SCZ (100%)	OAS for the previous 6 years from multiple sources	% of males with no recorded episodes of aggression 58.1%; 11.6% had only one recorded episode, and 30.3% had more than one episode. The corresponding percentages for females were 51.4%, 13.5%, and 35.1%.
Winsper et al. [44, 45] (UK)	670 (M 69%, age 21.3 ± 4.9)	FEP	1-year FU, assessment at inclusion, 6- and 12-month AOSQ	13.7% (8.6% at 6 months; 8.5% at 12 months) of the total sample were violent at 6 or 12 months. Past drug use (OR, 1.15; 95% CI, 1.00–1.32), longer DUP (OR, 1.66; 95% CI, 1.06–2.58), positive symptoms (OR, 1.15; 95% CI, 1.09–1.21), and younger age at illness onset (OR, 0.91; 95% CI, 0.87–0.96) were all significantly associated with violent behavior.
Zanarini et al. [46] (USA)	290 (M 22.9%, age 27.0 ± 6.3)	BPD	10-year FU study ABQ-R FUV 5 times (every 2 years)	BPD pts reported higher rates of verbal, emotional, and physical aggression towards others, but the rates of these forms of aggression towards others declined over time. The strongest predictors of adult aggression towards others were the severity of adult experiences of adversity and a concurrent SA disorder.

*Standardized value of V Cramer

9.5 Conclusions

Our data show that outpatients with a history of violence are more aggressive than patients with no lifetime violent behavior, as well as residential patients with a history of violence. Indeed, more intensive care, as found in RFs, where treatment is granted and prevention of SUD is avoided, is associated with a substantial decrease in the frequency and severity of aggressive and violent behavior even among people with a history of violence.

Violence by the mentally ill has a profound detrimental effect on public opinion, is associated with stigma and discrimination, and places a great burden on family members, who are generally the victims of such a violence. Risk assessment plays a key role in the prevention and/or decrease of violent behavior [REF]. Better prediction also means better prevention by developing more appropriate treatments tailored to the psychopathological dimensions associated with violence (e.g., impulsivity, hostility). If community psychiatry can prevent the violence associated with mental disorders, the full integration of patients and their families will be much easier: therefore the management of mentally ill offenders in the community is one of the great challenges imposed on community psychiatry.

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