

# Relationship between homicide and mental disorders

## Relação entre homicídio e transtornos mentais

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### Abstract

**Objective:** Several studies have found a relationship between severe mental disorders and violence. One of the approaches to study this theme are investigations with homicide offenders. The aim of the present article was to investigate the association between homicide and mental disorders. **Method:** A review of the literature was made through the following databases: Medline, Scientific Eletronic Library Online and Lilacs. In the Medline system, it was also searched the related articles section. **Results:** Although there is an association between mental disorders and homicide, it is not clear why some patients behave violently and others do not. Comorbid alcohol/drugs disorders and personality disorders and lack of adherence to treatment may increase this risk. **Conclusions:** Identifying people with risk of violence and offering them mental health treatment services is warranted. These services should prevent the loss of contact and non-compliance with treatment that frequently precede homicide committed by people with severe mental disorders. It is of utmost importance that society and governmental authorities decrease the barriers that limit access to psychiatric and psychosocial treatment.

**Descriptors:** Violence; Homicide; Crime; Psychotic disorders; Schizophrenia

### Resumo

**Objetivo:** Diversos estudos encontraram uma relação entre transtornos mentais graves e violência. Uma das abordagens de estudo deste tema são as investigações com criminosos homicidas. O objetivo do presente artigo foi investigar a associação entre homicídio e transtornos mentais. **Método:** Foi realizada uma revisão da literatura, através das seguintes bases de dados: Medline, Scientific Eletronic Library Online e Lilacs. No sistema Medline também foi pesquisada a seção de artigos relacionados. **Resultados:** Embora exista uma associação entre transtornos mentais e homicídio, não está claro porque alguns pacientes comportam-se de forma violenta e outros não. Transtornos relacionados ao uso de álcool/drogas e transtornos de personalidade comórbidos e falta de aderência ao tratamento podem aumentar este risco. **Conclusões:** É justificável a identificação de pessoas com risco elevado de comportamento violento e oferta de tratamento em serviços de saúde mental para as mesmas. Estes serviços deveriam prevenir a perda de contato e não-colaboração com o tratamento que freqüentemente precedem o homicídio perpetrado por pessoas com transtornos mentais graves. É de fundamental importância que a sociedade e as autoridades governamentais diminuam as barreiras de acesso ao tratamento psiquiátrico e psicossocial.

**Descritores:** Violência; Homicídio; Crime; Transtornos psicóticos; Esquizofrenia

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## Introduction

Violence committed by individuals with severe mental disorders has increasingly called the attention of physicians, law enforcement officials and the general public. Various studies conducted in the last decade have shown an association between mental disorders and violent behavior.<sup>1-3</sup> One of the principal approaches to studying this relationship is the evaluation of homicidal individuals, since murder is considered the most serious manifestation of violent tendencies.

Most authors who have described a relationship between mental disorders and homicide have employed the term "major mental disorders". In practice, this expression refers to severe mental disorders such as schizophrenia, bipolar disorder, major depression and delusional disorder.

It is difficult to interpret the data related to the risk of violent behavior among individuals with mental disorders. In countries with high homicide rates, such as the United States, the proportion of murders attributed to individuals with mental disorders is lower than that seen in countries with low homicide rates, such as the United Kingdom.<sup>4</sup> One of the few community-based studies of the association between mental disorders and violence was the Epidemiologic Catchment Area study.<sup>3</sup> In that study, 8-10% of individuals with schizophrenia reported that they had manifested violent behavior within the 12 months preceding the interview, compared with 2% in the general population. Those who were drug abusers were at greater risk for presenting such behavior, regardless of whether or not they had a mental disorder.

According to the results of studies conducted in Australia, the increase in the number of individuals with schizophrenia convicted of murder ran parallel to the increase in the overall homicide rate.<sup>2,5</sup> Individuals with severe mental disorders are convicted of violent crimes more frequently than are other individuals. There are three types of studies that lend support to these findings. First, there are studies that follow individuals from birth into adulthood (designated "birth cohort studies") and compare those that develop severe mental disorders (requiring hospitalization) with those who do not.<sup>1,6-8</sup> In such studies, the number of individuals who are convicted of a crime has been found to be higher among those who develop severe mental disorders than among those who do not. The difference between those with mental disorders and those without in terms of the prevalence of committing a crime has been found to be greater for violent crimes than for non-violent crimes. In addition, the association between having a mental disorder and exhibiting criminal behavior (violent or non-violent) has been shown to be stronger among women.

The second type of study is that which compares criminal activity among individuals discharged from psychiatric hospitals with that observed among those without mental disorders residing in the same community. In such studies, the rate of criminality has been found to be higher among the individuals with severe mental disorders.<sup>9</sup> Steadman et al. monitored groups of patient who were discharged into the population from general psychiatric hospitals in four cities in the United States.<sup>10</sup> The primary diagnoses included depression (42%), substance abuse (21.8%), schizophrenia (17%), bipolar disorder (14%), personality disorder (2%) and general psychotic disorders (3%). The authors reported that, during the first year after discharge, 27.5% of the patients committed at least one violent act that resulted in the victim requiring medical attention. The diagnoses related to the highest frequencies of violent behavior were schizophrenia (14.8%), depression

(28.5%) and bipolar disorder (22%). One important finding of that study was that the strongest predictor of violent behavior was having a history of such behavior.

In another study that employed a similar methodology, the authors recruited 110 male patients diagnosed with schizophrenia, schizoaffective disorder or schizophreniform disorder and discharged from forensic hospitals in Canada, Finland, Germany and Sweden.<sup>11</sup> Of those 110 patients, 25 (22.7%) had been convicted of murder. These were compared with 47 other patients diagnosed with the same disorders and discharged from general psychiatric hospitals. The authors found that violent acts, including murder, were 8 times more common among the patients discharged from forensic hospitals than among those discharged from general psychiatric hospitals. In the same study, it was found that, within the group of patients discharged from general psychiatric hospitals, the prevalence of substance abuse, as well as that of antisocial personality disorder, was greater among those with prior convictions.

The third type of study is that involving individuals convicted of murder and incarcerated in penitentiaries. Such studies have demonstrated that, in this population, the rates of schizophrenia and mood disorders are elevated (10.9% and 20.6%, relatively).<sup>12-13</sup> In April of 1988, Côté e Hodgins selected a study sample of 650 prisoners convicted of murder and imprisoned in a penitentiary in Quebec, Canada.<sup>12</sup> The sample represented 22% of the male prison population at that time. Of those 650 prisoners, the criminal records were available for 460 (71%), all of whom were interviewed.<sup>12</sup> There were 109 individuals who had a history of one of the following mental disorders: schizophrenia ( $n = 31$ ); schizophreniform disorder ( $n = 4$ ); major depression ( $n = 51$ ); bipolar disorder ( $n = 21$ ); and organic brain syndrome ( $n = 2$ ). Mental disorders were significantly more common among homicidal individuals than among other criminals (35% vs. 21%). In most cases, the mental disorder had been diagnosed prior to the murder. In summary, the association between severe mental disorders and violent or homicidal behavior has been demonstrated in all three types of studies.

It should be noted that these types of studies focus on Axis I disorders. This could explain why no apparent association has been found between antisocial personality disorder (which generates behavior that is more violent than that generated by psychoses) and violent behavior.

In studying the relationship between mental disorders and homicide, one major concept is that of "abnormal" homicide, so called due to its bizarre and incomprehensible nature.<sup>14</sup> It is also recognized as such when the psychiatric examination reveals that the perpetrator presents a severe mental disorder. The incidence of abnormal homicide tends to be consistent in various societies, running parallel to that of the principal mental disorders, whereas the incidence of "normal" homicide reflects the broader aspects of a given society, such as urban violence.<sup>15</sup> Some authors have found that psychotic individuals are more likely to murder family members or close acquaintances,<sup>16</sup> whereas the murder of strangers are more frequently perpetrated by abusers of alcohol or drugs.<sup>17</sup> Simpson et al. found that, in 74% of abnormal homicides, the victims were family members or partners of the perpetrators, compared with 9% in normal homicides.<sup>18</sup> Studies evaluating the significance of the victim in the criminal process cannot be ignored.<sup>19</sup>

The reported rates of abnormal homicide vary among studies. In the study conducted by Simpson et al., that rate was found

to be 1.3/1000 inhabitants. Many studies have found higher rates.<sup>18</sup> In studies conducted in the United Kingdom<sup>4</sup> and Canada,<sup>12</sup> the rates found were 11% and 12.6%, respectively. In any given country, the higher the homicide rate is, the lower is the proportion of murders committed by individuals with mental disorders. Most authors have found that rates of abnormal homicide did not change after the period of deinstitutionalization.<sup>4,20</sup>

One curious finding is that there have been fewer studies of abnormal homicide involving study samples composed exclusively of women. Eronen studied 127 homicides, occurring over a period of 13 years in Finland, and evaluated not only Axis I disorders but Axis II (personality) disorders as well.<sup>21</sup> The author found that female murderers are 70 times more likely than are women in the general population to present one of the following profiles: antisocial personality disorder; alcohol/drug dependence and concomitant personality disorder; alcohol/drug dependence and concomitant schizophrenia. In another study, 132 female murderers, including those previously studied by Eronen, were followed in order to evaluate criminal recidivism.<sup>22</sup> The authors found that, after the first murder, 31 (23%) of the 132 women studied committed subsequent crimes, 15% of which were violent crimes. Of the women presenting criminal recidivism, 81% presented personality disorders, and 10% presented psychosis. The remaining women presented no mental disorders. After the first murder, 3% of the women studied committed another murder. In a similar study involving males,<sup>23</sup> 2% presented homicidal recidivism.

Under the current policy of deinstitutionalization, in which hospitalization is increasingly restricted, priority has been given to the development of strategies for managing the risk of violence in the community. Such strategies include formal procedures for evaluating the risk of violent behavior, better monitoring of outpatient treatment, greater attention to comorbidity with substance abuse and increasing efforts to improve the rates of compliance with treatment.<sup>24</sup>

#### Studies of homicide in various countries

There are many studies in the literature that deal with homicide in various countries. One relevant aspect common to such studies is their large size of their study samples. In a study conducted in Denmark, individuals accused of murder were followed over a period of 25 years, and most were submitted to a psychiatric evaluation.<sup>25</sup> The authors found high rates of schizophrenia (6.5% for men and 5.6% for women) and depression (3.3% for men and 27.8% for women). Less than one-fourth of the individuals studied had been treated in a psychiatric hospital. In a study conducted in Iceland, 15% of the perpetrators of homicide, regardless of gender, presented schizophrenia.<sup>15</sup>

In Sweden, Fazel and Grann evaluated 2005 homicides committed during a period of 14 years (1988-2001).<sup>26</sup> The psychiatric data were based on the forensic-psychiatric evaluation and on hospital records. The authors found that the prevalence of mental disorders was 20%, schizophrenia accounting for 9%. Secondary diagnoses were evaluated in a subgroup, in which the frequency of substance use was 47%, and that of personality disorder was 54%, cluster B (antisocial, borderline, histrionic and narcissistic) being the most common.

A retrospective study was conducted in New Zealand from 1970 to 2000 using governmental data sources.<sup>18</sup> Abnormal homicides were defined as those falling into one of four categories: those in which the perpetrator was considered mentally incompetent to stand trial; those in which the perpetrator was declared innocent by reason of insanity; those in which the perpetrator was convicted

and sentenced to internment in a psychiatric hospital; and those in which the perpetrator was convicted of infanticide. During the period studied, the total number of homicides committed was 1498. Of those, 130 (8.7%) were considered abnormal homicides. Demographic and clinical data were available for 126 of the perpetrators of abnormal homicide. Of those 126 perpetrators, 55 (43.6%) had been diagnosed with schizophrenia, 19 (15%) with other psychoses, 13 (10.3%) with major depression, 5 (3.9%) with bipolar disorder, 10 (7.9%) as substance abusers, 9 (7.1%) with organic brain syndrome, 9 (7.1%) with mental retardation and 11 (8.7%) with primary or secondary personality disorder. Another significant finding was that, among the perpetrators of abnormal homicide, females predominated. The authors also found that 37 (29%) of the perpetrators of abnormal homicide had no history of admission to a psychiatric hospital. It is of note that the rate of abnormal homicide found in this study was among the lowest reported in any internationally published study. One hypothesis that could explain this difference in relation to other studies is that individuals with mental disorders who commit murder can be considered legally responsible and are therefore not included in the group of perpetrators of abnormal homicide.

In another study conducted in Denmark, Brennan et al. evaluated a sample consisting of 335,900 individuals born between 1944 and 1947.<sup>27</sup> Hospital records from the period prior to 1991 were obtained from the Danish Psychiatric Registry. The authors found that individuals with mental disorders were more likely to be arrested for violent crimes, including murder, than were those who had never been admitted to a psychiatric hospital. Among the men, violent behavior was found to be more common among those with schizophrenia (11.3%), organic psychosis (19.4%), affective psychoses (5.2%) or other psychoses (10.7%) than among those without any mental disorder (2.7%). Among the women, violent behavior was found to be more common among those with schizophrenia (2.8%), organic psychoses (2%) or affective psychoses (0.5%) than among those without any mental disorder (2.7%).

In a study conducted in England, 500 individuals convicted of murder during a period of 18 months were evaluated.<sup>16</sup> This group accounted for 70% of the convictions for murder during the study period. The authors found that 6% of these murders were committed by individuals with schizophrenia, and 44% were committed by individuals with a history of some type of mental disorder, although other diagnoses were not specified. The majority of individuals had no history of contact with mental health services, suggesting that this factor contributes to criminality.

A study based on the evaluation of 485 (70%) of the 693 homicides committed over an eight-year period in Finland revealed that 6% of the sample presented schizophrenia, 2% presented other psychoses, and 33% presented a personality disorder.<sup>23</sup> The authors also found that the risk of homicidal acts was greater among individuals presenting certain mental disorders (9.7 times greater for men with schizophrenia, 9 times greater for women with schizophrenia and 1.9 times greater for men with depression) than among healthy members of the population. It should be borne in mind that only some studies evaluated personality disorders.

In a study conducted in Austria, Schanda et al. evaluated the frequency of mental disorders in individuals who had committed a single homicidal act during a period of 25 years (1975–1999). Of those charged, 896 were convicted and imprisoned, whereas 96 were convicted and sentenced to internment in a mental institution. Within this group, the mental disorders most commonly identified were schizophrenia/schizophreniform disorder (4.5% of the men and 17% of the women), episodic major depression (0.7% of the men and 5.6% of the women) and delusional disorder (0.4 of the men).<sup>28</sup> Among the individuals with severe mental disorders, schizophrenia was seen in significantly greater proportions (70.8% of the men and 77.4% of the women). Accordingly, the risk of homicidal behavior in individuals with schizophrenia was found to be higher than that observed for healthy individuals (6 times higher for men and 26 times higher for women), and the paranoid subtype predominated (in 63.4% of the men and 47% of the women). Mental disorders related to substance abuse/dependence were diagnosed in 46.3% of the men with schizophrenia and in 11.8% of the women with schizophrenia.

In another study, conducted in England and Wales, the incidence of mental disorders among individuals convicted of murder was estimated.<sup>29</sup> The psychiatric data analyzed were provided by the courts, prison administrations and other agencies. In those two countries, 1594 murder convictions were reported between 1996 and 1999. Information was obtained from the courts in 1168 (73%) of the cases. Overall, 1434 (90%) of those convicted were men. Mental disorders were identified in one-third of the cases. Within that subgroup, most presented a single mental disorder, and the most common diagnoses were personality disorders and alcohol/drug dependence. A diagnosis of schizophrenia was made in 5% of the perpetrators. Of the 164 individuals who had a mental disorder at the time that the crime was committed, 76 (46%) presented symptoms of psychosis (delusions and hallucinations), and 101 (62%) presented symptoms of depression. One interesting finding is that the majority of perpetrators with a history of mental disorder were not acutely ill when the murder was committed, and most had never sought treatment at mental health facilities.

### Homicide and mental disorders

Various authors have investigated specific groups of patients with mental disorders in order to establish correlations between violent/homicidal behavior and variables related to sociodemographic or psychopathological data. In this aspect, schizophrenia has, without a doubt, been more widely studied than any other mental disorder. What follows is an analysis of violent or homicidal behavior among patients with specific mental disorders.

#### 1. Schizophrenia, schizoaffective disorder and delusional disorder

Schwartz et al. studied 267 patients with schizophrenia and monitored each of those patients continually for at least six months.<sup>30</sup> The authors found that manic symptoms, psychotic symptoms and impaired global function all correlated significantly with homicidal ideation and attempted murder, lending credence to the supposition that the lack of reality testing, judgment and communication, as well as impairment in other functional areas, can lead to violent or homicidal behavior.

Joyal et al. evaluated 58 patients diagnosed with schizophrenia or schizoaffective disorder, convicted of murder or attempted murder and ordered to a forensic hospital for treatment.<sup>31</sup> The authors found that the majority of the perpetrators (86%) had a personal or professional relationship with the victim. The violent acts were found to have more often occurred in a private residence (78%) than in a public place (22%). However, the authors also found that perpetrators with antisocial personality disorder more often attacked individuals who are not their family members or housemates. The paranoid form of schizophrenia was the most common, 60% of the murders occurring subsequent to homicidal delusions or hallucinations. One interesting finding is that being influenced by psychotic symptoms during the commission of the crime was reported by a significantly lower percentage of perpetrators with antisocial personality disorder than of those without this disorder (46% vs. 83%). Delusions of persecution predominated. In the subgroup consisting of perpetrators with antisocial personality disorder, the mean age at the time of the first offense was lower, and the frequency of alcohol abuse/dependence was higher than in the subgroup composed of those not presenting this disorder.

The authors of another study examined the criminal records of 2861 individuals first hospitalized for schizophrenia between 1975 and 2000, comparing them to an equal number of individuals residing in the same community, matched for age, gender and region of inhabitation.<sup>5</sup> Violent acts were defined as aggression, violence resulting in serious bodily harm or murder. The authors observed convictions for at least one violent act in a significantly higher percentage of individuals with schizophrenia than of those without schizophrenia residing in the same community (8.2% and 1.8%, respectively). Another significant finding was that more substance abusers were convicted of crimes than were those who did not use drugs (68% and 11.7%, respectively). The risk of being convicted of at least one violent act was found to be 3.6–6.6 times greater among individuals with schizophrenia than among the controls.

Some authors have found that 45% of the cases of violent behavior among individuals with schizophrenia are directly related to the symptoms of this mental disorder.<sup>32–33</sup> Certain psychotic symptoms, such as delusions of persecution<sup>34</sup> and auditory hallucinations,<sup>33</sup> have been shown to be more strongly associated with violent behavior. However, other authors have found no association between active psychotic symptoms and violent behavior.<sup>35</sup> One explanation for this is that, in individuals with previous tendencies toward violent behavior or homicide, the risk for such behavior increases when they develop a psychosis. Therefore, evaluating the symptoms associated with acts of aggression can be useful is assessing the risk for violent behavior in such patients.

According to Hodgins, patients with schizophrenia who exhibit offensive behavior can be categorized into two groups: the first, and largest, group being composed of those who exhibit antisocial behavior from infancy or adolescence; and the second consisting of those who begin to exhibit such behavior in their 30s or 40s and are responsible for a greater number of homicides.<sup>6</sup> It is possible that, in the latter group, the symptoms of the disease (delusions, hallucinations, affective disorders, etc.) contribute more significantly to the tendency toward homicidal acts. In individuals with schizophrenia, the risk for committing murder increases if the individual is male, is a substance abuser and does not live with the family.<sup>34</sup>

Some authors have identified homicidal behavior in individuals with delusional disorder. One such author<sup>15</sup> found 2.1% of the perpetrators studied to present delusional disorder (jealous type), whereas another found that 1.9% of the homicidal men studied presented "chronic paranoia".<sup>25</sup>

## 2. Affective disorders

In two different studies, individuals were followed from birth into adulthood, and the risk of criminal behavior among those developing affective disorders was assessed. The first included 12,058 individuals born in Finland in 1966.<sup>7</sup> Data regarding outpatient and inpatient psychiatric treatment, as well as regarding criminal convictions, were collected in 1992. By the age of 26, only six men (0.001%) and three women (0.006%) had been diagnosed with severe affective disorder. Of the six men, two had been convicted of a crime, one being convicted of a violent crime. None of the three women had a criminal record.

The previously cited Danish study, which employed the same methodology, provided data that was more reliable, since the authors evaluated individuals between the ages of 43 and 46.<sup>1</sup> Among the men, a history of being imprisoned for at least one offense was found for 13% of those who had not undergone psychiatric treatment, for 20% of those who had been hospitalized for psychotic depression and for 27% of those with bipolar disorder. Among the men, a history of the same was found for 3.5% of those who had not undergone psychiatric treatment, for 8% of those who had been hospitalized for psychotic depression and for 10% of those with bipolar disorder. Another finding was that the risk of committing a violent crime was greater among men and women with severe affective disorders. Among individuals without mental disorders, 3.3% of the men and 0.2% of the women had been convicted of at least one violent crime, compared with 6.3% and 0.6%, respectively, among those with severe affective disorders.

In a study conducted in Canada and involving 495 prisoners, the prevalence of major depression was 17%, and the prevalence of bipolar disorder was 4.8%.<sup>36</sup> However, the authors of two studies found that the prevalence of major depression was higher in homicidal individuals than in the general population.<sup>12,23</sup> One aspect that must be considered is that, in those studies, the association between severe affective disorders and homicide was underestimated, since murderers who subsequently commit suicide were not included, and many such murderers might have presented severe affective disorders.

Again in Quebec, Hodgins evaluated a sample of patients with severe affective disorders and schizophrenia for a period of 24 months after their release (from one forensic hospital and from two general psychiatric hospitals).<sup>9</sup> The study sample consisted of 104 male patients, 30 of whom had been diagnosed with severe affective disorders (18 with bipolar disorder and 12 with major depression), and 74 of whom had been diagnosed with schizophrenia. By the end of the follow-up period, 33% of the patients with severe affective disorders and 15% of those with schizophrenia had committed crimes, most of them violent, as defined for the purposes of the study (murder, attempted murder, assault and robbery with a deadly weapon or sexual assault). During the follow-up period, the patients with major depression and those with bipolar disorder were convicted in equal proportions (4 of the 12 and 6 of the 18, respectively). Another finding was that drug use during the follow-up period appeared to be more strongly associated

with violent behavior among the patients with severe affective disorders or schizophrenia.

Psychopathological variables seem to play an important role in violent/homicidal behavior exhibited by individuals with severe affective disorders. Manic patients can present unpremeditated, serious and sudden violent acts as a result of persecutory ideation or frustration at the limitations imposed.<sup>37</sup> In a review of the literature, the frequency of homicide was found to be higher among individuals with psychotic or major depression than among those with depression not accompanied by psychotic symptoms.<sup>38</sup>

## 3. Organic brain syndrome

Few authors have examined the association between organic brain syndrome and violent/homicidal behavior. In fact, the majority of the data regarding organic brain syndrome and violence come from broader studies of criminality and mental disorders. Unfortunately, the percentage of patients with organic brain syndrome is typically low in such studies.<sup>1</sup> In epidemiological studies,<sup>39</sup> the number of crimes committed by individuals with significant brain damage is equal to that seen in the general population. The frequency of violent behavior in individuals with brain damage ranges from 18% in demented patients<sup>40</sup> to 60% in those with damage to the frontal lobe.<sup>41</sup>

One inconsistency among the studies of organic brain syndrome is related to the question of causality. Most studies of these disorders presuppose that they precede and are responsible for the criminal behavior. Leygraff (1988), cited in Grekin et al.,<sup>42</sup> studied patients with organic brain syndrome confined to West German forensic hospitals and found that 52% committed their first crime before the organic psychosis had been diagnosed. Therefore, although these disorders could lead some individuals to commit crimes, others presented antisocial behavior well before becoming symptomatic.

No significant association has been found between epilepsy and violent behavior. However, it has been shown that brain damage acquired in adulthood can increase the risk of violent behavior or homicide. In demented patients, violent behavior is more common among those presenting delirium, the principal victims, in such cases, being family members or neighbors.<sup>39</sup>

Hafner and Boker (1982), cited in Martell,<sup>43</sup> followed 533 individuals who entered the forensic mental health system in Germany over a period of ten years. The authors found that 33.6% of those patients were diagnosed with a disorder that indicated organic brain damage, including mental retardation (12.7%), brain damage acquired in adulthood (8%), cerebral atrophy (7.5%) and epilepsy (5.4%).

In another study conducted in Denmark, 565 male patients with organic brain syndrome were evaluated. All had a history of at least one psychiatric hospital admission and of having been arrested at least once for a violent crime, including homicide. The most significant finding of that study was that individuals who begin their criminal activity before the age of 18 presented significantly higher rates of recidivism than did those beginning their criminal activity after that age. Such individuals also more frequently presented antisocial personality disorder.<sup>42</sup>

The authors of a study conducted in New York<sup>43</sup> evaluated a sample of 50 male maximum-security forensic psychiatric patients. A diagnosis of organic brain syndrome, according to DSM-III-R criteria, was made in 16% of the cases.<sup>44</sup> This diagnosis included cases of alcohol-induced dementia, Alzheimer's dementia, organic delirium, organic hallucinosis

and mental retardation. Another finding was that all of the patients diagnosed with organic brain syndrome had been imprisoned or interned for violent crimes. A full 75% had been confined to a forensic hospital for murder or attempted murder. When the 20 who had committed murder were evaluated as a separate group, 6 (30%) were found to have been diagnosed with organic brain syndrome.

These data certainly indicate the need to collect complete patient histories regarding brain damage, as well as to perform a clinical evaluation, a neurological evaluation and a test of the integrity of brain function, in forensic populations. Impaired brain function can be a risk factor for violent behavior. In addition, brain dysfunction can have a significant impact on patient response to various forms of treatment.

### Discussion

Most of the studies in which high rates of violent behavior have been found for individuals with severe mental disorders portray the situation in Europe, where the overall rates of violence are relatively low. These results cannot be extrapolated to countries with high crime rates and widespread substance abuse. There is a scarcity of studies in the literature that deal with the relationship between mental disorders and homicide in developing countries, where the number of homicides committed by individuals with mental disorders is low in relation to that of normal (intentional) homicides.

In an epidemiological study conducted in Brazil in the 1990s, it was found that homicide remained a leading cause of death in the general population, actually being the number one cause of death from external causes.<sup>45</sup> The authors also found that, regardless of the gender of the perpetrator, the murder weapon of choice was a gun, and that most homicides were related to urban crime. These data reflect the fact that, in countries with high homicide rates, the so-called "normal" homicides are much more common than the "abnormal" ones.

Despite the fact that various studies have demonstrated a significant association between mental disorders and violence, it remains unclear why some patients present violent behavior, and others do not. According to Hodgins, violent behavior is associated with contextual and individual factors.<sup>9</sup> Among the contextual factors are police harassment and availability of appropriate psychiatric treatment. Individual factors include concomitant personality disorders and disorders related to the use of alcohol or drugs, as has been stated by other authors,<sup>12,46</sup> as well as treatment noncompliance and a lack of insight in relation to the disorder.<sup>24</sup> Substance abusers present a 12- to 16-times greater risk of exhibiting violent behavior than do other individuals.<sup>47</sup> It must be borne in mind that criminal conduct is a sociocultural process, and that individuals with mental disorders act within this scenario. Therefore, variables such as level of education and socioeconomic status play a role in determining the rate of violent behavior in the general population, as well as among individuals with mental disorders. A mental disorder can function as a facilitator of violent behavior and not as a generator of criminal conduct *per se*.

It has been demonstrated that, in patients with schizophrenia, antisocial personality disorder is significantly associated with violence.<sup>48</sup> Moran et al. studied 708 patients with psychosis and found that comorbidity with a personality disorder was significantly associated with violent behavior over the two-year follow-up period, the association being independent of other risk factors for violence.<sup>49</sup> In a study involving 29 individuals convicted of murder or attempted

murder and detained by the police in Brazil, 15 (51.72%) were found to present antisocial personality disorder.<sup>50</sup> It is obvious that antisocial personality disorder is associated with various risk factors for violent behavior (substance abuse, little schooling, impulsiveness, etc.) Therefore, it is essential to evaluate the personality of patients with severe mental disorders.

Individuals with personality disorders and concomitant substance abuse account for the greater portion of a broad category encompassing all individuals with mental disorders who commit murder.<sup>4</sup> Those who present a mental disorder in combination with antisocial personality disorder and substance abuse/dependence are frequently refused treatment and are more often dealt with by the criminal justice system than by the mental health system.<sup>13</sup> In fact, a great number of the murderers with severe mental disorders described in various studies present concomitant personality disorders or substance abuse/dependence. Therefore, when these disorders are found in combination, it is difficult to determine the exact influence that each has on homicidal behavior.

There is some concern that the deinstitutionalization process has resulted in an increase in the number of crimes committed by individuals with severe mental disorders, although this has not been proven scientifically. This lack of data can be attributed to the fact that the number of studies assessing the number of individuals with mental disorders arrested prior to the era of deinstitutionalization is very low, as is that of studies providing data regarding criminal behavior among individuals with mental disorders prior to that era. Policies regarding outpatient mental health care have certainly played a role in preventing criminality among individuals with mental disorders.

Treatment programs that employ a multi-pronged approach, in which specific patient problems (symptom management, substance abuse, social skill deficits and personality disorders) are addressed, are more effective than are those employing traditional approaches, which are focused only on drug treatment. These multi-pronged treatment programs can prevent violent or homicidal behavior.<sup>9</sup> It is important that mental health facilities make efforts to avoid the loss of contact and noncompliance with treatment that frequently precede murders committed by individuals with severe mental disorders. It is equally fundamental that governmental authorities and the society at large work to remove the barriers to psychiatric and psychosocial treatment.

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