

## Psychosis and the Risk of Stranger Homicides

Ilkka Ojansuu<sup>\*.1</sup>, Markku Lähtenvuo<sup>1.◉</sup>, Jari Tiihonen<sup>1,2,3</sup>, Martti Lehti<sup>4</sup>, and Hanna Putkonen<sup>5</sup>

<sup>1</sup>Department of Forensic Psychiatry, Niuvanniemi Hospital, Kuopio, Finland; <sup>2</sup>Department of Clinical Neuroscience, Karolinska Institutet, Stockholm, Sweden; <sup>3</sup>Department of Forensic Psychiatry, University of Eastern Finland, Kuopio, Finland; <sup>4</sup>Institute of Criminology and Legal Policy, University of Helsinki, Helsinki, Finland; <sup>5</sup>Addiction Psychiatry, University of Helsinki and Helsinki University Hospital, Helsinki, Finland

\*To whom correspondence should be addressed: Niuvanniemen sairaala, Niuvankuja 65, 70240 Kuopio, Finland; tel: +358 295 242 222, fax +358 173 682 419, e-mail: [ilkka.ojansuu@niuva.fi](mailto:ilkka.ojansuu@niuva.fi)

**Introduction:** Psychosis increases the risk of committing homicide, but it remains unclear whether it also affects victim selection. Individual cases of stranger homicide elicit a lot of public attention and outrage, even though evidence of their incidence is scarce. **Methods:** Forensic psychiatric reports of 389 patients who had committed homicide in Finland during 1980–2014 were examined to determine the relationship between the offender and the victim. The stranger homicide incidence derived from perpetrators with psychosis was compared to a comparative incidence derived from a group of perpetrators without psychosis (other mental disorders were not excluded) over the time frame 2003–2014. Stranger homicide incidence rates were calculated using Finnish population averages of the study years, assuming a Poisson distribution and reported as per 100 000 person-years among potential victims in the Finnish general population. **Results:** Three hundred and eighty nine patients with psychosis had committed 414 homicides, with 40 complete stranger victims and 15 victims known for less than 24 h. Complete stranger homicide incidence committed by individuals with psychosis was 0.022 per 100 000 person-years and 0.13 for individuals without psychosis. When also including victims known for < 24 h, the incidence was 0.031 for individuals with psychosis and 0.28 for individuals without psychosis per 100 000 person-years. **Discussion:** Nine out of ten stranger homicides are committed by individuals without psychosis. However, on the basis of a 3.1% prevalence of psychotic disorders in Finland, individuals with psychosis have about a 3- to 5-fold risk of committing stranger homicides as compared to individuals without psychosis.

**Key words:** psychosis/homicide/stranger/epidemiology

### Introduction

Homicides are always tragic events, but when committed by patients with a serious mental disorder and, especially, when the victim is a stranger, they inevitably lead to a significant reaction in the public. Major mental disorders are known to be associated with violence and homicides.<sup>1,2</sup> The rates of homicides committed by patients with schizophrenia are also shown to correlate with overall regional homicide rates, and they are likely to have some common etiological factors.<sup>3</sup> One such factor has been shown to be substance abuse comorbid to the major mental disorder.<sup>4</sup> Schizophrenia in itself has also been shown to be associated with violence, especially if patients are not receiving proper care.<sup>5,6</sup> Finland has in the past had higher homicide rates than other Scandinavian countries, but the homicide rate in Finland has fallen in recent years and is now on average < 2 homicide victims per 100 000 inhabitants, which is in line with the rest of Western Europe.<sup>7</sup>

The proportion of homicides targeted at strangers and committed by individuals affected by the serious mental disorders has been addressed in some studies, although the topic, in general, is understudied. In England and Wales, the frequency of homicides committed by strangers was noted to have increased between 1967 and 1997, but the increase was not the result of the increase in homicides committed by individuals with serious mental disorders.<sup>8</sup> In another study in England and Wales, it was noted that during the years 1996 to 1999 5% of the people convicted of homicide had schizophrenia or another delusional disorder, and 14% of the homicides committed by them were targeted at strangers.<sup>9</sup> In a study covering 1993 to 2002 in New South Wales, Australia, 93 homicides committed by patients with psychosis were studied and 10% of them were found to be targeted at strangers.<sup>10</sup>

In a meta-analysis of seven studies that reported homicidal acts (homicides and attempted homicides) committed by patients during psychotic illness, the incidence of stranger homicidal acts was estimated to be 1 in 14.3 million people per year (95% CI = 1 in 18.9 million per year to 1 in 11.5 million per year).<sup>11</sup> Any homicidal act in which the perpetrator and the victim did not know each other 24 h before the homicide was classified as a stranger homicide in the meta-analysis. To our knowledge, that has been the only study so far reporting on the incidence of homicidal acts on strangers by individuals with psychosis, but since the authors also included attempted homicides in their incidence, there is no prior literature on the incidence of stranger homicides by individuals with psychosis.

The purpose of this study was to analyze the incidence of stranger homicides committed by patients with psychosis and to compare this incidence to the incidence of stranger homicides committed by perpetrators without psychotic illness. We believe that this intrinsically valuable purpose is enhanced given that individual cases of stranger homicide are emotionally charged events that elicit a lot of notoriety and public attention, even though evidence on the incidence of these cases is scarce.

## Methods

This study population consists of 389 patients (one of whom is included twice due to a recurrent offense) who had committed homicide in Finland during the years 1980 to 2014 and were assessed in court and ordered to undergo a forensic psychiatric examination as they were deemed to be suffering from a psychotic disorder; instead of imprisonment, they were committed to compulsory forensic psychiatric hospital treatment. The cases were gathered from the National Institute for Health and Welfare's archive, which includes all forensic psychiatric reports of patients committed to forensic psychiatric hospital treatment in Finland. The information on the relationship between the patient and the homicide victim was compiled from the forensic psychiatric reports, taking in both information the patient had revealed during the investigation and salient details gathered from the police and judicial process case files.

The cases in which the patient and the homicide victim were completely unknown to each other were classified as stranger homicides. To compare our results to the results of previous studies, we also collected cases for an additional analysis in which the patient had been in contact with the victim for a maximum of 24 h, and thus they might have gotten to know each other somewhat and the homicide might not have been a completely random event.

We also formed a comparative study group of perpetrators who had committed homicide but were not classified as having been suffering from psychosis (other mental disorders were not excluded) and were sentenced to prison. Since these subjects were not committed to go through the forensic psychiatric examination and would

thus not have been discovered from the forensic examination files, this comparative study group was gathered from the Finnish Homicide Monitor database of the Institute of Criminology and Legal Policy at the University of Helsinki and consisted of homicides investigated by the Finnish police during the years 2003 to 2014.<sup>12</sup> In this database, the relation of the perpetrator to the victim was based on the information retained during the criminal investigation performed by the police. This comparative study group was divided into subgroups of victims who were complete strangers to the perpetrator, victims who were in contact with the perpetrator for less than 24 h and those who knew the perpetrator for longer than that. To verify that our method of classifying the relationship of the perpetrator and victim is similar to the one used by the Institute of Criminology and Legal Policy, we also ran our own study sample through their register and ended up with the exact same number of stranger victims with both methods.

The stranger homicide incidence rate was calculated using Finnish population averages of the study years, assuming a Poisson distribution and reported as per 100 000 person-years. The data for the calculations for the entire population by sex for the analysis years were obtained from Statistics Finland.

The present study was approved by Finland's National Institute for Health and Welfare. The study was register based, and none of the subjects were contacted in any way. In Finland, no ethical statements, other than the evaluation performed by the Finnish National Institute for Health and Welfare, are required for register-based studies.

## Results

The study group of forensic psychiatric patients consisted of 389 individuals, of whom 345 were male (88.7%) and 44 female (11.3%). Altogether, these patients had committed 414 homicides, since 21 patients had 2 victims and 2 had 3 victims. In all but one case, in which the perpetrators had multiple victims, the homicides had been committed prior to the patient being committed to forensic psychiatric treatment. This one forensic psychiatric patient was discharged and then relapsed into psychosis during which he committed a new homicide during follow-up and was returned to forensic psychiatric treatment.

Forty (9.7%) of the homicide victims were complete strangers to the perpetrator. There was only one case by an offender with psychosis in which there were several stranger victims. In this one case, a single perpetrator killed 3 strangers with a firearm; in all the other cases there was one stranger casualty per perpetrator. One victim was a police officer on duty who went to the perpetrator's apartment. One male victim was sleeping in the perpetrator's ex-girlfriend's apartment, and one victim was pointed out to the perpetrator as a pedophile. In other cases, the homicide victim was a random

person who the perpetrator encountered in public. Two casualties were a consequence of a fire started by the perpetrator. In 3 cases the victims were casualties in car collisions that the perpetrator caused, and in two cases the perpetrator ran over the victim by car. In 8 cases the perpetrator used a firearm, in 18 cases another weapon, and in 7 cases physical violence.

In 15 (3.6%) cases the victim was not a complete stranger, but the perpetrator had known the victim for less than 24 h. It was mainly in these cases that the perpetrator and the victim had been using alcohol for some hours before the homicide. In two of these cases the victim and the perpetrator were—due to drunkenness—briefly held in the same jail by the police, in which the homicide took place. One victim was in hospice in a general hospital and was transferred to the same room with the perpetrator, where the homicide took place. In 12 of these cases, the homicide was committed with a weapon and in 3 by means of physical violence.

In the rest of the 359 (86.7%) forensic psychiatric cases the perpetrator knew the person killed. In 119 cases the victim was a biological relative of the perpetrator. In 11 cases, the perpetrator had been in a relationship with the victim, and in 61 cases the relationship was still ongoing at the time of the homicide. In 168 cases the perpetrator knew the victim in another way. In 3 of these cases the relationship was based on the victim's profession (one of the victims was a nurse tending to the offender), and in 4 of the cases on a rental contract. The relationships between the victims and the perpetrators suffering from a psychotic illness are described in [table 1](#).

The incidence of complete stranger homicides committed by perpetrators with psychosis was 0.022 in 100 000 person-years (95% CI = 0.016 to 0.030). When those who had been in contact with the victim for 24 h or less were included the incidence was 0.031 in 100 000

person-years (95% CI = 0.023 to 0.040). These results are shown in [table 2](#).

In the comparative study group of subjects who had committed homicide and were not known to have been suffering from a psychotic illness and therefore not committed to forensic psychiatric treatment, there were 1077 homicide victims. The victim knew the perpetrator in 896 (83.2%) of the cases. Of these victims, 84 (7.8%) were complete strangers to the perpetrator, and 97 (9.0%) of the victims the perpetrator knew for less than 24 h. The incidence of complete stranger homicides in this comparative study group was 0.13 in 100 000 person-years (95% CI = 0.10 to 0.16). When those who had been in contact with the victim for 24 h or less were included the incidence was 0.28 in 100 000 person-years (95% CI = 0.24 to 0.33). These results are also shown in [table 2](#).

These numbers show that the incidence of homicides targeted at previously unknown victims is 6.5-fold higher for perpetrators without psychosis than perpetrators with psychosis (0.13 vs 0.02). This gap grew even wider to 9.3-fold when the victims known for less than 24 h were included (0.28 vs 0.03).

## Discussion

Among offenders without psychosis, 7.8% of homicides were targeted at complete strangers and 9% were targeted at victims known for a maximum of 24 h. For offenders with psychosis, 9.7% were targeted at complete strangers and 13.3% at victims known for a maximum of 24 h. The findings for offenders with psychosis are in line with previous studies.<sup>9,10</sup>

The incidence of homicides committed by individuals with psychosis and targeted at strangers was 0.022 per 100 000 person-years when strangers were classified as not previously known at all, and 0.031 when the victims were known for less than 24 h. This translates into one stranger homicide (known for less than 24 h) committed by an individual with psychosis per 3.3 million person-years, which is over 4-fold higher as compared to the latest meta-analysis, even though the latter also included homicide attempts, making the actual difference even

**Table 1.** The Relationships of the Victims to the Perpetrators, in the Cases Where the Perpetrator Suffered From a Psychotic Illness

	Perpetrator Was Male	Perpetrator Was Female	Total
Partner	53	8	61 (15%)
Ex-partner	10	1	11 (3%)
Father	16	—	16 (4%)
Mother	34	2	36 (9%)
Own child	9	22	31 (7%)
Sibling	20	—	20 (5%)
Grandparent	4	—	4 (1%)
Other relative	11	1	12 (3%)
Other acquaintance	159	9	168 (41%)
Victim known < 24 h	14	1	15 (4%)
No previous contact	35	5	40 (10%)
Total	365 (88%)	49 (12%)	414

**Table 2.** Incidences of Homicides Targeted at Strangers per 100 000 Person-Years by Perpetrators With Psychosis in Finland Between 1980 and 2014, and by Perpetrators Without Psychosis in Finland Between 2003 and 2014

	Victim Unknown (95% CI)	Victim Known < 24 h (95% CI)
Perpetrator with psychosis	0.022 (0.016 to 0.030)	0.031 (0.023 to 0.040)
Perpetrator without psychosis	0.13 (0.10 to 0.16)	0.28 (0.24 to 0.33)

more marked.<sup>11</sup> The lifetime prevalence of any psychotic disorder in Finland is 3.1%,<sup>13</sup> which is roughly in line with other Western European countries such as Sweden 2.8%<sup>14</sup> and Germany 4.5%.<sup>15</sup> Thus the higher rate of stranger homicides detected in this study cannot be due to a higher prevalence of psychoses in Finland as compared to the other countries in the previous meta-analysis.

A part of the difference might be explained by methodological differences and a part by differences in overall homicide rates, although the gap between Finland and other Western countries has been declining over the years, especially after 1995.<sup>7,16</sup> One important aspect is also the prevalence of comorbid substance use disorders among individuals with psychosis, which may affect target selection and differ between countries. The effect of substance use disorders on target selection is a matter that has not—to our knowledge—been researched thoroughly, a notable gap in the literature that calls for new research efforts.

As the prevalence of psychotic disorders in Finland is 3.1%,<sup>13</sup> but the incidence of homicides targeted at strangers, depending on how strangers were classified, was only 6.5–9.3-fold lower (not 32-fold lower) for individuals with psychosis vs individuals without psychosis, this means that individuals with psychosis were responsible for a 3- to 5-fold higher relative proportion of overall stranger homicides than individuals without psychosis. However, from a victim's perspective, it is still statistically more likely to get killed by an unknown person without psychosis than an individual with psychosis. Thus, it is imperative to combat factors contributing to mental illness, substance abuse, and antisocial behavior to most effectively reduce the number of homicides. Since homicides committed by individuals with psychosis are often related to their mental disorder, they are preventable by improving access to treatment and treatment compliance.<sup>6,17,18</sup>

When interpreting our results and thinking of ways to prevent these tragedies, it should be noticed that the risk and contributing factors for committing stranger homicides in these groups may differ significantly. In the present study, we did not have information on contributing factors, but it can be generally thought that stranger homicides committed by individuals with psychosis are more likely to have been triggered by psychotic delusions, hallucinations or paranoid fears, or a lack of understanding of the consequences or nature of their actions. Previous studies have reported that most of the homicides committed by individuals with psychosis in Finland have been motivated by psychotic symptoms, and yet, on the other hand, patients with schizophrenia and a dual diagnosis of antisocial personality disorder have been found to be less driven by psychotic symptoms and more by substance abuse and conflicts with the victims than their non-antisocial counterparts.<sup>16</sup> There is a need for further studies to research the differences

in motives and contributing factors on the background of stranger homicides committed by perpetrators with or without psychosis.

A clear challenge for the study was to try and sufficiently classify the relationship between the victim and the perpetrator, which was not an easy task. We classified as a stranger killing a homicide in which the perpetrator denied knowing the victim in advance during the judicial process or the forensic psychiatric examination, and in which no evidence of prior acquaintance emerged during the judicial process. Despite this rigorous approach, it is possible that the victim and the perpetrator had known each other, but the perpetrator was trying to keep this fact a secret. It also needs to be noted that information from forensic psychiatric examinations was available for perpetrators with a psychotic disorder but not for perpetrators without, for whom acquaintance was only deduced from police files; this could have led to slight skewedness. However, we ran our sample through the same register and ended up with the same total number of homicides classified as stranger homicides both from police files and the forensic psychiatric examination files; this is, therefore, unlikely to have caused a major skewing effect.

In general, it is very difficult to reliably determine the level of acquaintance between two people using the data sources available, which is why we ended up using an arbitrary time limit (24 h) that has been used before in the literature. In many cases, the victim and perpetrator had had prior contact a long time prior to the homicide, but this could have been only for a small while and was sometimes little more than a fleeting encounter the quality of which could not be assessed. If that contact had happened over 24 h before the homicide, and even though the victim and perpetrator did not actually know each other in any other way, the homicide was not classified as a stranger homicide.

### Strengths/Limitations

The strengths of this study include the fact that the homicide clearance rate in Finland is very high, no less than 98% between the years 2009 and 2014,<sup>19</sup> so it is likely that most of the Finnish homicides were included and the victims and the perpetrators identified. In addition, a forensic psychiatrist read through all of the forensic psychiatric examinations to extract the needed information. An additional strength is the substantial follow-up time and the large number of homicides captured in the data set.

A weakness of the study is that some of the perpetrators did not undergo a forensic psychiatric examination, so this group might hide some individuals who, in fact, were psychotic, although this is likely to be a rarity. It is thus possible that individuals with psychosis were actually responsible for an even higher number of the homicides and also stranger homicides than is presented here. It needs to

be noted that the data for the perpetrators without psychosis were recorded from a shorter and more recent time interval, although the time intervals for both groups fully overlapped. However, according to Finnish register-based studies and reports especially homicides among men have reduced during the more recent years of the study period, which may have a skewing effect on the results.<sup>16</sup> Also, the information on the level of acquaintance of the victim and the perpetrator for the individuals with psychosis was based on information recorded in the forensic psychiatric examination report and thus is mostly derived from the perpetrator. It is possible that the perpetrator may have misreported the level of acquaintance on purpose. We are not aware of any prior research on whether individuals with or without psychosis are more likely to try to mislead investigators on the level of acquaintance, and thus the direction of skewedness possible arising from this phenomenon is unknown. Also, unfortunately, we were not able to study situational factors or the phenomenology related to the offenders in more detail.

## Conclusion

In this study, we show that individuals with psychosis are relatively more likely to kill a stranger than individuals without psychosis. According to earlier studies, the incidence of homicides committed by individuals suffering from schizophrenia is not a constant but is rather a reflection of the social circumstance of the relevant society in general.<sup>4</sup> Thus, when considering ways in which to reduce the number of homicides committed by individuals suffering from mental disorders, emphasis should, of course, be given to developing psychiatric care, but also in preventing social decline and marginalization, which would reduce the number of homicides in general.

More research is needed to delve into the reasons why different individuals commit homicide and to recognize and reduce risk factors, which would also work to reduce stigma. As the results of this article show, the life saved with these efforts could be that of anyone.

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