A Review of the Prevalence of Psychosis in Sexual Homicide

Austin A. Lam, BSc, Stephanie R. Penney, PhD, and Alexander I. F. Simpson, MB, ChB, BMedSci

Despite a growing body of research on the association between psychosis and homicide and between psychosis and sexual offending, research on psychosis and sexual homicide is limited. The objective of this review was to estimate the prevalence of psychosis in sexual homicide and to explore the extent to which prior research has investigated symptoms of psychosis as a motivating or causal variable leading to incidents of sexual homicide. We hypothesized that psychosis is present in a minority of sexual homicide cases. Articles were identified by searching literature databases (i.e., PsycINFO, MEDLINE, EMBASE) and references of relevant articles. Eight studies were included. The overall prevalence of psychosis among individuals who committed sexual homicide ranged from 0 to 27 percent as measured in a broad array of diverse samples. Given that five of the eight studies reported psychosis rates to be five percent or less, our findings suggest that psychosis occurs in a minority of sexual homicide cases. None of the studies directly examined the causal or motivational properties of psychosis in driving these types of offenses, and this represents an important area of inquiry for future research.

J Am Acad Psychiatry Law 48(1) online, 2020. DOI:10.29158/JAAPL.003887-20

Sexual homicides, defined as homicides involving a sexual element or activity in the sequence of acts leading to death,[1] continue to be rare phenomena,[2,3] but they have profound emotional and psychological effects on victims' families and communities. Between 1991 and 1995 in the United States, less than 1.0 percent of all homicides could be considered possible sexual homicides based on their categorization as rape, other sex, or prostitution in conjunction with homicide.[3-5] Similarly, a study of 14,121 murders in the United States in which circumstances were known found that only 1.1 percent were sexual homicides.[6] In a Canadian context, between 1991 and 2001, 2.7 percent of homicides were found to be preceded by sexual assault.[7] Due perhaps to the infrequency with which they occur, the precursors, risk factors, and offender characteristics involved in sexual homicides remain poorly understood.[8]

Published online November 21, 2019.

Mr. Lam is a Research Trainee, Division of Forensic Psychiatry, Centre for Addiction and Mental Health, Toronto, Ontario, Canada. Dr. Penney is an Independent Scientist, Division of Forensic Psychiatry, Centre for Addiction and Mental Health, and Assistant Professor, Department of Psychiatry, University of Toronto, Toronto, Ontario, Canada. Dr. Simpson is Chief of Forensic Psychiatry, Centre for Addiction and Mental Health, and Head of the Division of Forensic Psychiatry, Department of Psychiatry, University of Toronto, Toronto, Ontario, Canada. Address correspondence to: Alexander I. F. Simpson, MB, ChB, BMedSci, Unit 3, Fourth Floor, Centre for Addiction and Mental Health, 1001 Queen St West, Toronto ON M6J 1H4, Canada. E-mail: sandy.simpson@camh.ca.

Disclosures of financial or other potential conflicts of interest: None.

Psychosis and Sexual Offending

Available evidence suggests that, compared to unaffected members of the general population, individuals with a psychotic disorder are at an increased risk to sexually offend,[9] and that individuals who have perpetrated sexual offenses are significantly more likely to have a psychotic disorder.[10] But discrepancies exist regarding the magnitude of this relationship as well as the actual prevalence of psychosis in instances of sexual offending. Some studies have found either a nil prevalence of psychotic disorders among men ($n = 113$) who committed sexual offenses and were referred to a residential treatment facility,[11] or low prevalence among men (1 of 45) who were convicted of pedophilic sexual offenses and were participating in residential or outpatient sex-offender treatment programs.[12] Other studies have reported that the majority of their subjects (10 of 11), consisting of

patients in a regional secure hospital unit who were convicted of sexual offenses, met criteria for a psychotic disorder.[13] Among restricted hospital inpatients with schizophrenia, 80 of 84 of the individuals were psychotic at the time of offense and half of them had delusions or hallucinations related to the offenses.[14] Alden and colleagues[9] concluded that men with psychosis and comorbid personality or substance use disorders had a six-fold increased risk to commit a physically aggressive sexual offense and a three- to five-fold increased risk to commit a non-physically aggressive sexual offense compared to men who had never been hospitalized in a psychiatric ward.

A literature review by Lewis and Dwyer,[15] showed men who commit sex offenses were found to be five times more likely to be diagnosed with a psychotic disorder than men with non-sexual offenses[16]; however, among those who commit sexual offenses, individuals with a psychotic disorder are not at a higher risk to sexually offend compared to those without a psychotic disorder.[15] This is consistent with the well-established view relating to psychosis and violence more broadly, namely that, although schizophrenia and other psychoses are statistically associated with violence, much of the excess risk appears attributable to other risk factors in the domains of personality and substance use disorders, poor social supports, criminal history, and paraphilic interests (the last for sexual offending in particular).[16]

Psychosis and Homicide

There is a well-developed literature documenting the prevalence of schizophrenia and other psychoses in groups of homicide offenders. While the prevalence of psychotic disorders is estimated to be approximately 1 to 2 percent of the population, patients with schizophrenia represent between 5 and 20 percent of all homicide offenders.[17-19] In a systematic review and meta-analysis, Nielssen and Large[20] reported that the annual rate of homicide among individuals with schizophrenia prior to treatment (i.e., first-episode) was roughly 15 times higher than the annual rate after treatment, and that almost half (39%) of all homicides committed by this group were committed prior to the initiation of treatment. A national consecutive case series of 5,884 homicides perpetrated in England and Wales from 1997 to 2006 revealed that approximately 10 percent of these offenses were committed by individuals with schizophrenia or psychosis, and that the rate of homicides committed by those with schizophrenia increased at 4 percent per year over this time period.[21]

An important finding of this study was that the rate of substance use increased at a magnitude similar to the rate of homicides perpetrated by those with psychosis, and the authors offered this as the most plausible explanation for the rise in homicides in this population over the study period. A recent literature review by Taylor and Kalebic[22] emphasized a similar point, namely that, although psychotic symptoms contribute to homicide, so do many of the variables that increase risk for homicide more generally, including substance use, trauma histories, and access to weapons. Thus, although psychosis does contribute to homicide, its effect is modest and partially mediated by other risk factors such as substance use comorbidity.[23] There was also consensus among the studies reviewed that individuals with major mental disorders, including psychosis, were substantially more likely to be victims of homicide than perpetrators. Additionally, obstacles to treatment access and failures in treatment adherence before a homicide offense were common themes.

Psychosis and Sexual Homicide

While there has been accumulating research on the prevalence of psychosis in homicide[20,22,23] and in sexual offenses,[14,15,24,25] there remains both an empirical and theoretical gap in knowledge regarding the relationship between psychosis and sexual homicide.[26,27] Specifically, little is known empirically about the prevalence of sexual homicides that are either temporally related to or directly motivated by symptoms of psychosis.

To date, just three review articles on sexual homicide have included studies incorporating information on the role and prevalence of psychosis among these offenders. Morgenbesser and Kocsis[27] included three articles in their review that examined psychosis as a factor; two studies reported that a considerable number of individuals who committed sexual homicide were diagnosed with a psychotic disorder, whereas the third study did not. Meloy[3] noted that most sexual homicides do not involve individuals who were psychotic at the time of the offense, but rather those who showed high rates of characterological disturbance (e.g., psychopathic and narcissistic personality disorders). Similarly, Myers *et al.*[28] pro-

vided an overview of serial sexual homicides from a psychiatric perspective, noting that sexual sadism and other forms of characterological disturbance (e.g., psychopathy), rather than psychosis, appear to be the chief etiological factors driving these offenses. Even when psychosis is diagnosed, symptoms may manifest in parallel (i.e., temporally proximal to or concurrent with) and be unrelated to the motivational process driving the sexually violent behavior.[29,30] The review by Myers *et al.* raises doubts about "our tendency to view serial sexual homicides as the product of 'madness' [as] an attempt to reassure ourselves that we are incapable of such evil" (Ref. 28, pp 449–50).

Psychotic Motivation

Bloom and Schneider[31] outlined potential scenarios of sexual offending (not necessarily sexual homicide) motivated by psychosis. The first is characterized by erotomanic delusions that the victim is in love with the perpetrator, or that the victim has actually consented to the sexual activity. The second scenario describes sexual offending as the result of behavioral disinhibition secondary to symptoms of psychosis or mania, substance use, or to an organic or dementing neurological condition. Finally, sexual offending is presumed to arise from impaired judgment resulting from these same psychiatric conditions.

In a similar vein, Drake and Pathé[16] developed a typology for individuals with schizophrenia who engage in sexual offending (again, not necessarily homicide): individuals with preexisting paraphilia(s); individuals with no preexisting sexual pathology but whose deviant sexuality first arises from symptoms specific to mental illness or its treatment; individuals whose deviant sexuality arises out of more generalized antisocial behaviors; and individuals with other conditions, including dementia and acquired brain injuries. Their framework, like that of Bloom and Schneider,[31] outlines what may be distinct motivations for sexual offending and, importantly, distinguishes offending that is motivated by psychotic illness versus other risk factors (e.g., sexual deviance, antisociality) that are present in combination with psychosis.

This typology may be anchored in the broader literature on psychosis and violence and, specifically, whether and how psychotic symptoms motivate violence. The few studies that have inquired directly about psychotic motivations for violence report varying estimates with respect to the proportion of individuals who are judged to offend as a direct result of their illness. For example, Taylor *et al.*[32] reviewed the records of 1,740 high security hospital patients, and judged that more than 75 percent of those with psychosis offended as a result of their symptoms (delusions). Buckley *et al.*[33] noted that the relationship between such symptoms and violence may be accounted for, in part, by insight deficits. Beck[34] analyzed the records of 90 forensic patients hospitalized after an incident of serious violence in the community and reported that delusions of threat and persecution were frequently (49% of cases) present at the time of violence and played a "driving" role in the behavior; however, violence rarely occurred in the absence of substance use.[34] Recently, and in contrast to these findings, Peterson *et al.*[35] compared the causal influences of violent offending between mentally disordered ($n = 111$) and non-disordered ($n = 109$) parolees, finding that only 5 percent of offending in the former group could be directly attributed to symptoms of psychosis. In contrast, 90 percent of the offenders in this group (as well as two thirds of the non-disordered offenders) had engaged in criminal behaviors motivated by hostility, disinhibition, and emotional reactivity, as well as co-occurring substance use.

Objective

The objective of this review was to estimate the prevalence of psychosis in sexual homicide and explore the extent to which prior research has investigated symptoms of psychosis as a motivating or causal factor in sexual homicides. We hypothesized that psychosis is present in a minority of sexual homicide cases.

Method

Original studies focusing on the connection between psychosis and sexual homicide were considered for this review. We sought studies published in English. We searched electronic databases and reference lists of relevant articles to identify studies. The search was conducted in PsycINFO, MEDLINE, and EMBASE.

The search terms used in all databases were: [psychosis or psychotic, schizophrenia or schizophrenic, delusion, hallucination], and [sexual assault or sexual

Table 1 Data from Studies That Reported the Percentage of Participants Diagnosed with Psychosis Among Individuals who Committed Sexual Murders

Study (By order of % diagnosed with psychosis)	Diagnosis of Psychosis (%)	Sample Size (n/N)[a]	Sampling Method	Sample Source	Information Source
Langevin *et al.*[38] (2003)	27.3%	9/33	Convenience	Cases referred to the Clarke Institute of Psychiatry[b]	Standard tests and interviews
Revitch[45] (1965)	20.9%	9/43	Convenience	Primarily from the New Jersey Diagnostic Center[c]	Not stated
Firestone *et al.*[44] (1998)	14.6%	7/48	Convenience	Cases from the Sexual Behaviors Clinic, Royal Ottawa Hospital	Standard tests and interviews
Warren *et al.*[36] (1996)	5.0%	1/20	Population-based	FBI's National Center for the Analysis of Violent Crime	Multiple sources, including police investigation reports, psychiatric reports, and interviews with the offender
Hill *et al.*[46] (2007)	3.0%	5/166	Convenience	Reports by forensic psychiatrists in Germany	Assessments by forensic psychiatrists
Oliver *et al.*[49] (2007)	2.3%	1/44	Convenience	Sex offender treatment programs in prisons	Interviews and file reviews
Folino[37] (2000)	0%	0/16	Population-based	Files from the Judiciary Department of La Plata, Argentina	File reviews
Rosman & Resnick[50] (1989)	0%	0/16	Convenience	Available literature and unpublished clinical cases	Case reviews

[a] n = number of individuals diagnosed with psychosis and N = number of individuals who committed sexual homicides.
[b] Former name.
[c] Source(s) not stated for the other cases.

crime or sex offense] and [homicide or murder]. A search strategy was developed by the first author and used consistently in all databases. Seventy articles were identified in the search. Titles and abstracts were reviewed for relevance to psychosis and sexual homicide, at which point 50 articles were excluded. Twenty articles received a full-text review, and their references were searched for any additional articles. Twelve articles were ultimately identified as having results pertinent to the connection between psychosis and sexual homicide. Any articles that used the same dataset were counted only once, resulting in a total of eight studies included in the final review. Where more than one article drew from the same dataset, for the purpose of compiling prevalence figures (as seen in Table 1), we used the data from the article that was designed to examine the characteristics of individuals who committed sexual homicide as opposed to the characteristics of subgroups (e.g., where the victims were adults versus children), or the study that was published more recently and with a larger sample size. We still described the results from the other articles that drew from the same dataset in the below results section; however, they are not used in Table 1 for the purpose of arriving at a prevalence range.

Results

The studies' findings speak to the association between psychosis and sexual homicide. No study directly measured or examined psychosis as a motivating or causal factor for sexual homicide. Data from the studies are summarized in Table 1.

Overall, the prevalence of psychosis among individuals who committed sexual homicide ranged from 0 to 27 percent as measured in an array of diverse samples. As shown in Table 1, all but two studies were convenience samples of referrals for forensic psychiatric assessment (e.g., for criminal responsibility) or treatment, and thus carry the risk of being biased by the referral process. The convenience-sample studies found a percentage range of psychosis of 0 to 27 percent. The two population studies of Warren *et al.*[36] and Folino[37] found a percentage of psychosis of 5 percent and 0 percent, respectively.

Langevin[38] examined data from more than 2,800 cases, collected since 1973, that had been referred to the (formerly named) Clark Institute of Psychiatry for assessment or treatment by a variety of sources, including the court system, defense counsel, parole or review board, and correctional services.[39] Those who had sexually assaulted and killed or at-

tempted to kill were identified. Information came from standard tests and interviews. Significantly more individuals who committed sexual homicides were diagnosed with psychosis (27.3%; 9 of 33 individuals) compared with individuals who committed non-homicidal sexually aggressive offenses (18.8%; 15 of 80 individuals) and individuals who committed non-homicidal sexual offenses, not necessarily sexually aggressive (12.9%; 79 of 611 individuals). All were male. Another comparison group, individuals who committed non-homicidal sadistic offenses, was described to have similar levels of psychosis as the individuals who committed sexual homicides (30.4%; 7 of 23 individuals).[38]

Building on the same dataset, Langevin and colleagues[40] compared offenders who had committed sexual murders ($n = 13$) with offenders who had committed either non-sexual murders ($n = 13$) or sexually aggressive offenses that were non-homicidal ($n = 13$). All were male. The number of cases varied for some analyses due to missing information. Of the individuals who had committed sexual homicides, 6 of 12 cases (50%) were psychotic at the time of offense, and 7 of 11 cases (64%) were found not guilty by reason of insanity (NGRI). In contrast, 3 of 11 (27%) offenders with non-sexual homicides were psychotic at the time of offense and 3 of 13 (23%) were deemed NGRI, while none of the offenders with non-homicidal sexual offenses were judged to be psychotic at the relevant time or adjudicated NGRI (compare to Novak *et al.*[41]). Finally, in another study, Langevin[42] investigated the characteristics of subgroups (i.e., where the victims were adults versus children). Among individuals who had committed sexual homicides against adults, 21.7 percent (5 of 23 individuals) were diagnosed with schizophrenia; in contrast, none of those who committed sexual homicides against children were diagnosed with schizophrenia ($n = 15$).[42]

Firestone and colleagues[43] examined individuals, all male, who engaged in sexual homicides and compared this group with individuals who had engaged in non-homicidal incest offenses. The data came from the research unit of the Sexual Behaviors Clinic at the Royal Ottawa Hospital, which has been collecting information on patients since 1982 using standard tests and interviews. The study identified 48 men who committed sexual homicide: eight were convicted of murder and mutilation, 20 of murder, and 20 of attempted murder. Significantly more individuals who engaged in sexual homicides were diagnosed with psychosis (14.6%; 7 of 48 individuals) than individuals with non-homicidal incest offenses (0%). Drawing from the same database for a different article, Firestone *et al.*[44] noted that individuals who committed sexual homicides against children had a greater incidence of psychosis (11.8%; 2 of 17 individuals) than individuals who committed non-homicidal child molestation (2.9%; 1 of 35 individuals). While this is somewhat at odds with the findings of Langevin *et al.* reported above,[42] they are congruent with findings documenting nil or low rates of psychosis among incest and non-homicidal forms of sexual offending.

In a study by Revitch,[45] 43 cases of sexual murders and attempted sexual murders were analyzed; most of the data were obtained through the New Jersey Diagnostic Center (other sources were not identified). Revitch[45]did not explicitly state whether the 43 cases were systematically identified from the dataset or if they were selected as a convenience sample. Sources of information were also not identified (e.g., patient interviews or file reviews). Nine of the 43 cases were diagnosed with schizophrenia (20.9%). Given the dated nature of this study, however, it cannot be ascertained whether these diagnoses would reflect current diagnostic criteria for schizophrenia.

While these studies suggest a modest association between psychosis and sexual homicide, other studies do not support the connection. Hill and colleagues[46,47] examined psychiatric court reports for 166 men who committed sexual homicide between 1945 and 1991. The largest proportion of the forensic reports were written by a former director of the Institute for Sex Research and Forensic Psychiatry at the University Medical Center Hamburg-Eppendorf, and the other reports were written by forensic psychiatrists ($n = 20$) from other universities or forensic hospitals in Germany. Only 5 of 166 men (3.0%) who had committed sexual homicides were diagnosed with psychosis; 2 were diagnosed with schizophrenia, and 3 were diagnosed with an acute psychotic disorder. Using the same data to look at the characteristics of subgroups (i.e., where the victims were adults versus children), Spehr *et al.*[48] observed that 2.9 percent (1 of 35) and 4.0 percent (4 of 100) of men who committed sexual homicides against children and against adults, respectively, were

diagnosed with schizophrenia and other psychotic disorders.

Oliver and colleagues[49] examined a sample of 112 individuals who committed rape and 58 individuals who committed sexual murders drawn from 55 different sex-offender treatment programs operating at seven prison establishments in England between 1998 and 2002. The data came from a combination of interviews and file reviews. Among males who committed sexual homicide, 2.3 percent (1 of 44) exhibited a delusional disorder compared with 1.7 percent (1 of 58) for men who committed non-homicidal rape.

Warren and colleagues[36] examined case files from the FBI's National Center for the Analysis of Violent Crime, with information drawn from a variety of sources, including police investigation reports, psychiatric reports, and interviews with the offender. Cases of sexual homicides were identified ($n = 20$, all male); only one individual exhibited psychotic symptoms. The authors concluded that "[the] willingness to commit crimes for sexual gratification stems from character pathology rather than psychosis" (Ref. 36, p 973). Similarly, among 16 Argentinian males who committed sexual homicide (representing 7% of a representative homicide sample from 1988 to 1996), none were diagnosed with psychosis.[37]

Rosman and Resnick[50] looked at necrophilia cases obtained from available literature and through unpublished cases from the authors' colleagues. Fourteen individuals were categorized as having engaged in necrophilic homicide.[50] We included this study because the authors defined necrophilic homicide as "murder to obtain a corpse for sexual purposes" (Ref. 50, p 154). Among these 14 individuals, none were psychotic. Finally, a case study by Morrison[51] involving stalking and subsequent sexual homicide concluded that the 33-year-old male did not exhibit a psychotic disorder given the "organized crime scene behaviors" (Ref. 51, p 729), although organization does not preclude psychosis.

Discussion

From our review, psychosis is present in a minority of sexual homicide cases. No study has directly measured or examined psychosis as a motivating or etiological factor for sexual homicide. Existing studies report either the presence of psychotic symptoms at the time of the index offense or a lifetime diagnosis of a psychotic illness in persons convicted of sexual homicide. Although some studies have commented on the motivational role, or lack thereof (e.g., Warren *et al.*,[36]), of psychosis, the findings from these studies were associations and cannot speak directly to causation. Importantly, however, in five of the eight studies in our review, the presence of psychosis was reported to be 5 percent or less, including the two population-based sampling method studies that appear to be relatively unbiased or to have drawn from unselected case series. The absence of psychosis in most sexual homicides would seem to indicate that psychotic motivation for sexual homicide is an unlikely phenomenon. The three studies that reported prevalence rates of psychosis to be more than 5 percent were from case series of persons referred to psychiatric facilities primarily for legal reasons. This may have weighted the results toward finding higher rates of serious mental illness, including psychotic disorders.

To date, few review articles have examined the literature on the presence of psychosis in sexual homicides. Meloy[3] concluded that most sexual homicides do not involve individuals who were psychotic at the time of the offense, and our literature review generally aligns with this view. Myers *et al.*[28] concluded that sexual sadism and personality disorders are the most clinically relevant factors; even when psychosis is diagnosed, some claim that the psychosis may simply run concurrent to and be unrelated to the etiology of sexually sadistic behaviors.[29] Put otherwise, symptoms of psychosis may be incidental to the sexual homicide, whereas paraphilic interests (primarily in the domain of sexual sadism) compose the "etiological work."[30] To an extent, our findings confirm Myers' doubts regarding the motivational role of psychosis in most sexual homicides, although it may have an important role in a small minority of cases.

Psychosis contributes to 5 to 10 percent of all homicides,[20,52] underscoring the modest role that psychosis plays in incidents of extreme violence. Findings for sexual homicide, although more limited in scope, appear to align with this research. They are also consistent with the growing literature on the connection between psychosis and general violence, which has demonstrated that psychosis infrequently and inconsistently precedes violent incidents among mentally disordered offenders and former psychiatric inpatients,[53] and that other risk factors in the domains of substance misuse and personality pathology must be considered.

Nevertheless, clarifying the extent to which psychosis is present in sexual homicide is important in terms of identifying reliable risk factors for this serious type of offending, informing broader public safety discussions on the role of mental illness in the commission of violence, and evaluating criminal responsibility. From a clinical perspective, an understanding of the association between psychosis and sexual homicide can more optimally inform assessments of risk for future offending, given that psychosis might be involved in a distinct minority of cases and that these individuals would thus have correspondingly different treatment needs to prevent future offending.[22]

As noted, research to date has provided data on the association between psychosis and sexual homicide, but not regarding the motivational or etiological role of psychosis. Bloom and Schneider[31] presented a theoretical framework outlining possible routes through which psychosis may motivate sexual offending. Although they were not concerned specifically with sexual homicide, their scenarios provide a possible framework for future investigations on psychotic motivation for sexual homicide. Importantly, two of the scenarios in our above summary discuss the possible mediating role of substance use (i.e., as impairing judgment or disinhibiting behavior). This is an area that would benefit from more research given that the likelihood of general violence among those with serious mental illness is heightened in the presence of substance use[54], and that a history of substance use increases recidivism rates among individuals who committed sex offenses.[55] Comorbid substance use among those with schizophrenia who committed sexual offenses also contributes to sexually inappropriate behaviors through disinhibition, interpersonal impairment, and attenuating appropriate social and sexual functioning.[16]

In addition to the role of substance use, it would be useful to investigate how psychosis interrelates with other contributing factors to sexual homicide specifically, such as sexual deviance[56] and fantasy.[57,58] Smith and Taylor,[14] for example, noted that elements of premorbid sexual deviance prior to the index sexual offense (not necessarily sexual homicide) may become incorporated into the psychotic symptoms that subsequently develop. Correspondingly, Greenall and Jellicoe-Jones' thematic analysis[24] highlighted a sexual homicide case where psychotic content became incorporated into the sexual fantasy. Future research directions may investigate the motivational role of sexually themed delusions and hallucinations[59] and how psychotic phenomena may interact with premorbid sexual deviance to potentiate long-standing sexual preoccupations, fantasies, and urges for gratification.[25]

There are limitations to our findings. First, none of the included studies directly measured or examined the motivational role of psychosis; available data speak only to the association between psychosis and sexual homicide. Second, the paucity of literature on sexual homicide in relation to psychosis, including small sample sizes and convenience sampling, limits the strength of our conclusions. Related to this limitation is that some of the included studies are dated, with the oldest study published in 1965. In general, dated studies with insufficiently rigorous or questionable methodology were not included. Third, only a minority of the studies (2 of 8), were considered to have used a population-based sampling method. Finally, some studies used cases referred to psychiatric facilities; this may have biased the findings to have inflated rates of serious mental illness, including psychosis.

Conclusion

The studies reviewed suggest that psychosis is an uncommon clinical feature among those who commit sexual homicide. The absence of psychosis in most sexual homicides seems to suggest that psychotic motivation for sexual homicide is an unlikely phenomenon, consistent with emerging literature on psychotic motivation for general violence and criminal offending. No study to date has specifically examined the motivational role of psychosis for sexual homicide and more investigation on this topic is required.

References

1. Douglas JE, Burgess AW, Burgess AG, Ressler RK: Crime Classification Manual: A Standard System for Investigating and Classifying Violent Crimes. San Fransisco: Jossey-Bass, 1992
2. Chan H-C, Heide KM: Sexual homicide: a synthesis of the literature. Trauma Violence Abuse 10:31–54, 2009
3. Meloy JR: The nature and dynamics of sexual homicide: an integrative review. Aggress Viol Behav 5:1–22, 2000
4. Federal Bureau of Investigation: Crime in the United States 2009: Uniform Crime Reports. Washington, DC: Government Printing Office, 2009
5. Greenall PV: Understanding sexual homicide. J Sex Aggression 18:338–54, 2012
6. Federal Bureau of Investigation: Crime in the United States 2004: Uniform Crime Reports. Washington, DC: Government Printing Office, 2005
7. Kong R, Johnson H, Beattie S, Cardillo A: Sexual offences in Canada. Juristat: Canadian Centre for Justice Statistics 23:1–16, 2003

8. Beauregard E, Martineau M: A descriptive study of sexual homicide in Canada: implications for police investigation. Int'l J Offender Ther & Comp Criminol 57:1454–76, 2013
9. Alden A, Brennan P, Hodgins S, Mednick S: Psychotic disorders and sex offending in a Danish birth cohort. Arch Gen Psychiatry 64:1251–8, 2007
10. Fazel S, Sjöstedt G, Långström N, Grann M: Severe mental illness and risk of sexual offending in men: a case-control study based on Swedish national registers. J Clin Psychiatry 68:588–96, 2007
11. Dunsieth NW Jr, Nelson EB, Brusman-Lovins LA, *et al*: Psychiatric and legal features of 113 men convicted of sexual offenses. J Clin Psychiatry 65:293–300, 2004
12. Raymond NC, Coleman E, Ohlerking F, *et al*: Psychiatric comorbidity in pedophilic sex offenders. Am J Psychiatry 156:786–8, 1999
13. Craissati J, Hodes P: Mentally ill sex offenders: the experience of a regional secure unit. Br J Psychiatry 161:846–9, 1992
14. Smith AD, Taylor PJ: Serious sex offending against women by men with schizophrenia: relationship of illness and psychotic symptoms to offending. Br J Psychiatry 174:233–7, 1999
15. Lewis ET 3rd, Dwyer RG: Psychosis and sexual offending: a review of current literature. Int'l J Offender Ther & Comp Criminol 62:3372–84, 2018
16. Drake CR, Pathé M: Understanding sexual offending in schizophrenia. Crim Behav & Ment Health 14:108–20, 2004
17. Wallace C, Mullen PE, Burgess P, *et al*: Serious criminal offending and mental disorder: case linkage study. Br J Psychiatry 172:477–84, 1998
18. Simpson AI, Skipworth J, McKenna B, *et al*: Mentally abnormal homicide in New Zealand as defined by legal and clinical criteria: a national study. Aust N Z J Psychiatry 40:804–9, 2006
19. Fazel S, Grann M: Psychiatric morbidity among homicide offenders: a Swedish population study. Am J Psychiatry 161:2129–31, 2004
20. Nielssen OB, Large M: Rates of homicide during the first episode of psychosis and after treatment: a systematic review and meta-analysis. Schizophr Bull 36:702–12, 2010
21. Swinson N, Flynn SM, While D, *et al*: Trends in rates of mental illness in homicide perpetrators. Br J Psychiatry 198:485–9, 2011
22. Taylor PJ, Kalebic N: Psychosis and homicide. Curr Opin Psychiatry 31:223–30, 2018
23. Fazel S, Gulati G, Linsell L, *et al*: Schizophrenia and violence: systematic review and meta-analysis. PLoS Med 6:e1000120, 2009
24. Greenall PV, Jellicoe-Jones L: Themes and risk of sexual violence among the mentally ill: implications for understanding and treatment. Sex Relation Therapy 22:323–37, 2007
25. Smith AD: Motivation and psychosis in schizophrenic men who sexually assault women. J Forensic Psychiatr 11:62–73, 2000
26. Carter AJ, Hollin CR: Characteristics of non-serial sexual homicide offenders: a review. Psychol Crime & L 16:25–45, 2010
27. Morgenbesser LI, Kocsis RN: Sexual homicide, in Serial Murder and the Psychology of Violent Crimes. Edited by Kocsis RN. Totowa, NJ: Springer, 2008, pp 103–17
28. Myers WC, Reccoppa L, Burton K, McElroy R: Malignant sex and aggression: an overview of serial sexual homicide. J Am Acad Psychiatry Law 21:435–51, 1993
29. MacCulloch M, Snowden P, Wood P, Mills H: Sadistic fantasy, sadistic behaviour and offending. Br J Psychiatry 143:20–9, 1983
30. Dietz PE: Mentally disordered offenders: patterns in the relationship between mental disorder and crime. Psychiatr Clin North Am 15:539–51, 1992
31. Bloom H, Schneider RD: Mental Disorder and the Law: A Primer for Legal and Mental Health Professionals, Second Edition. Toronto: Irwin Law, 2017
32. Taylor PJ, Leese M, Williams D, *et al*: Mental disorder and violence: a special (high security) hospital study. Br J Psychiatry 172:218–26, 1998
33. Buckley PF, Hrouda DR, Friedman L, *et al*: Insight and its relationship to violent behavior in patients with schizophrenia. Am J Psychiatry 161:1712–4, 2004
34. Beck JC: Delusions, substance abuse, and serious violence. J Am Acad Psychiatry Law 32:169–72, 2004
35. Peterson J, Skeem JL, Hart E, *et al*: Analyzing offense patterns as a function of mental illness to test the criminalization hypothesis. Psychiatr Serv 61:1217–22, 2010
36. Warren JI, Hazelwood RR, Dietz PE: The sexually sadistic serial killer. J Forensic Sci 4:970–4, 1996
37. Folino JO: Sexual homicides and their classification according to motivation: a report from Argentina. Int'l J Offender Ther & Comp Criminol 44:740–50, 2000
38. Langevin R: A study of the psychosexual characteristics of sex killers: can we identify them before it is too late? Int'l J Offender Ther & Comp Criminol 47:366–82, 2003
39. Langevin R, Paitich D, Orchard B, *et al*: Diagnosis of killers seen for psychiatric assessment: a controlled study. Acta Psychiatr Scand 66:216–28, 1982
40. Langevin R, Ben-Aron M, Wright P, *et al*: The sex killer. Ann Sex Res 1:263–301, 1988
41. Novak B, McDermott BE, Scott CL, Guillory S: Sex offenders and insanity: an examination of 42 individuals found not guilty by reason of insanity. J Am Acad Psychiatry Law 35:444–50, 2007
42. Langevin R: An actuarial study of recidivism risk among sex killers of adults and children: could we have identified them before it was too late? J Forensic Psychol Pract 6:29–49, 2006
43. Firestone P, Bradford JM, Greenberg DM, Larose MR: Homicidal sex offenders: psychological, phallometric, and diagnostic features. J Am Acad Psychiatry Law 26:537–52, 1998
44. Firestone P, Bradford JM, Greenberg DM, *et al*: Homicidal and nonhomicidal child molesters: psychological, phallometric, and criminal features. Sex Abuse 10:305–23, 1998
45. Revitch E: Sex murder and the potential sex murderer. Dis Nerv Sys 26:640–8, 1965
46. Hill A, Habermann N, Berner W, Briken P: Psychiatric disorders in single and multiple sexual murderers. Psychopathology 40: 22–8, 2007
47. Koch J, Berner W, Hill A, Briken P: Sociodemographic and diagnostic characteristics of homicidal and nonhomicidal sexual offenders. J Forensic Sci 56:1626–31, 2011
48. Spehr A, Hill A, Habermann N, *et al*: Sexual murderers with adult or child victims: are they different? Sex Abuse 22:290–314, 2010
49. Oliver CJ, Beech AR, Fisher D, Beckett R: A comparison of rapists and sexual murderers on demographic and selected psychometric measures. Int'l J Offender Ther & Comp Criminol 51:298–312, 2007
50. Rosman JP, Resnick PJ: Sexual attraction to corpses: a psychiatric review of necrophilia. J Am Acad Psychiatry Law 17:153–63, 1989
51. Morrison KA: A case of stalking in the workplace and subsequent sexual homicide. J Forensic Sci 52:726–30, 2007
52. Penney SR, Prosser A, Grimbos T, *et al*: Time trends in homicide and mental illness in Ontario from 1987 to 2012: examining the effects of mental health service provision. Can J Psychiatry 63: 387–94, 2018
53. Skeem J, Kennealy P, Monahan J, *et al*: Psychosis uncommonly and inconsistently precedes violence among high-risk individuals. Clin Psychol Sci 4:40–9, 2016
54. Van Dorn R, Volavka J, Johnson N: Mental disorder and violence: is there a relationship beyond substance use? Soc Psychiatry Psychiatr Epidemiol 47:487–503, 2012
55. Peugh J, Belenko S: Alcohol, drugs and sexual function: a review. J Psychoactive Drugs 33:223–32, 2001

56. Hill A, Habermann N, Berner W, Briken P: Sexual sadism and sadistic personality disorder in sexual homicide. J Pers Disord 20:671–84, 2006
57. Maniglio R: The role of deviant sexual fantasy in the etiopathogenesis of sexual homicide: a systematic review. Aggress Viol Behav 15:294–302, 2010
58. Prentky RA, Burgess AW, Rokous F, *et al*: The presumptive role of fantasy in serial sexual homicide. Am J Psychiatry 146: 887–91, 1989
59. Blom JD, Mangoenkarso E: Sexual hallucinations in schizophrenia spectrum disorders and their relation with childhood trauma. Front Psychiatry 9:193, 2018