

ORIGINAL ARTICLE

Suicidal behavior in individuals accused or convicted of child sex abuse or indecent image offenses: Systematic review of prevalence and risk factors

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Abstract

Objective: An emerging body of research indicates that child sex abuse (CSA) offenders are at high risk of suicide when their offenses come to light and that those accused of accessing indecent images of children (IIOC) are at particular risk.

Methods: We conducted a systematic review and narrative synthesis on suicide rates and risk factors in this population of offenders. A keyword search of bibliographic databases (PsycINFO, Ovid, MEDLINE, Embase, PILOTS, SCIE, the Cochrane Central Register of Controlled Trials [CENTRAL] and CINAHL) was conducted.

Results: Eighteen articles were included in the review, with eleven studies meeting criteria for quality assessment. The risk of suicide in perpetrators of CSA and IIOC might be over 100 times that of the general population, although estimates vary widely between studies. Several complex, interlinking factors were identified as associated with risk, including shame, unique demographic characteristics of the offenders, absence of prior criminal contact, and the impact of a criminal investigation.

Conclusions: The review identified factors that may have practical, clinical, and operational implications in the prevention of suicide in CSA and IIOC perpetrators. Exploring the impact of the investigation itself on suicide risk, including potential operational strategies and clinical input to reduce risk, should be a priority.

INTRODUCTION

Reducing the risk of suicide in high-risk groups is a key element of suicide prevention strategies worldwide. This includes individuals in contact with the criminal justice system (HM Government, 2012; King et al., 2015; Linsley et al., 2007) and, among them, perpetrators of child sex abuse (CSA) (Brophy, 2003; Linsley et al., 2007; Pritchard & King,

2005; Ward & Siegert, 2002). Law enforcement agencies worldwide are increasingly reporting cases where the CSA investigation has resulted in the subsequent suicide of the alleged perpetrator (Crowther, 2016).

CSA can include, but is not limited to, the inducement or coercion of children to engage in any unlawful sexual activity, the exploitative use of children in prostitution or other unlawful sexual practices, and the exploitative use of children in

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the production of indecent performances and materials (WHO, 2003). Internet offenses relating to the use of children in indecent materials is one form of CSA that has sharply increased in prevalence (Child Exploitation & Online Protection Centre, 2012; Merdian et al., 2009). In the UK, it is estimated that up to 500,000 men may have viewed IIOC (Bentley et al., 2016). Due to an increased drive to make arrests for such offenses, this particular offender group has had increased contact with the criminal justice system (National Crime Agency, 2016). Offenses in England and Wales increased by 69% between 2014/15 and 2015/16 (Bentley et al., 2016).

Chronic and acute stress, loneliness, isolation, depression, and hopelessness are all risk factors for suicide (Hawton & Van Heeringen, 2009). Individuals may experience such negative emotions when being investigated for a child sex crime and become at risk of suicidal behavior. In addition, with increasing prosecutorial zeal and stricter sentences for CSA and IIOC offenses, the likelihood of avoiding conviction could be perceived as relatively low, exacerbating feelings of hopelessness. The process of prosecution and conviction for this category of offense can be lengthy and involve extended periods on bail in the community, increasing the time over which someone may experience extreme fear and shame. Recent UK research exploring non-natural deaths following prison or police custody showed that 32% of suicides were related to sexual offenses (Phillips et al., 2016). Of these, three quarters were related to IIOC (Phillips et al., 2016). The authors also reported that up to 53% of sex offender deaths appeared to be specifically IIOC related.

Several studies have sought to understand the increased risk of suicide in those being investigated for IIOC offenses (Brophy, 2003; Hoffer & Shelton, 2013; Pritchard & King, 2005; Wild, 1988). To date, no systematic reviews have focused on exploring risk factors related to suicide in those alleged to have committed CSA, including IIOC offenses. We have conducted a systematic review of the international research literature to identify, first, the extent of suicide risk in perpetrators of CSA and IIOC, and, second, to identify factors associated with suicidal behavior in these populations. Here, we present a narrative synthesis of the findings of the review. The terms “child sexual abuse” (CSA), “child sexual exploitation,” and “child sex offender” are used interchangeably throughout the identified literature. For the purpose of clarity, CSA was used in this review as the umbrella term, with the exception of IIOC when referring to indecent image offenses.

METHODS

Search strategy and selection criteria

Bibliographic databases (PsycINFO, Ovid, MEDLINE, Embase, PILOTS, SCIE, CINAHL, and the Cochrane Central Register of Controlled Trials [CENTRAL]) were systematically

searched (see Appendix S1 for the search strategy) for all papers published in English from database inception to November 28, 2017. Databases were searched individually, and the results were combined before removing duplicates. Reference lists of all included studies were reviewed to identify further studies not identified from electronic searches. Authors were contacted if a selected paper was not available online.

Inclusion criteria

Studies were included if they met one or more of the following inclusion criteria: systematic reviews (with or without quantitative synthesis) of randomized controlled trials, quasi-randomized controlled trials, non-randomized controlled trials, prospective cohort studies, retrospective cohort studies, case-control studies, or reports published by professional organizations.

All studies must have provided data on at least prevalence of suicide, attempted suicide, or suicidal ideation in the CSA and/or IIOC population, and/or factors associated with these behaviors in perpetrators of CSA and/or IIOC.

A single reviewer (RK) screened titles of all studies, with all relevant studies further screened by their abstract against the inclusion criteria. Two reviewers (RK and AU) independently assessed full-text articles identified as potentially meeting inclusion criteria. Cohen's κ was run to determine the level of agreement between the two reviewers. There was a “very good” agreement ($\kappa = 0.829$, $p < 0.001$).

Quality scales

Quantitative and qualitative studies were assessed for quality of reporting using the Kmet et al., (2004) Quality Assessment Criteria. Two reviewers (RK and AU) independently rated studies for quality; disagreements were resolved through consensus and/or discussion with a third reviewer (FF).

RESULTS

Study selection

Eighteen papers were found to meet inclusion criteria for the review (see Figure 1). Thirteen studies presented primary empirical data on the prevalence of suicide, attempted suicide, or suicidal ideation in perpetrators of CSA or IIOC.

Study characteristics

The selected papers were published between 1988 and 2014 (none were identified between 2015 and 2017). Fifteen of the

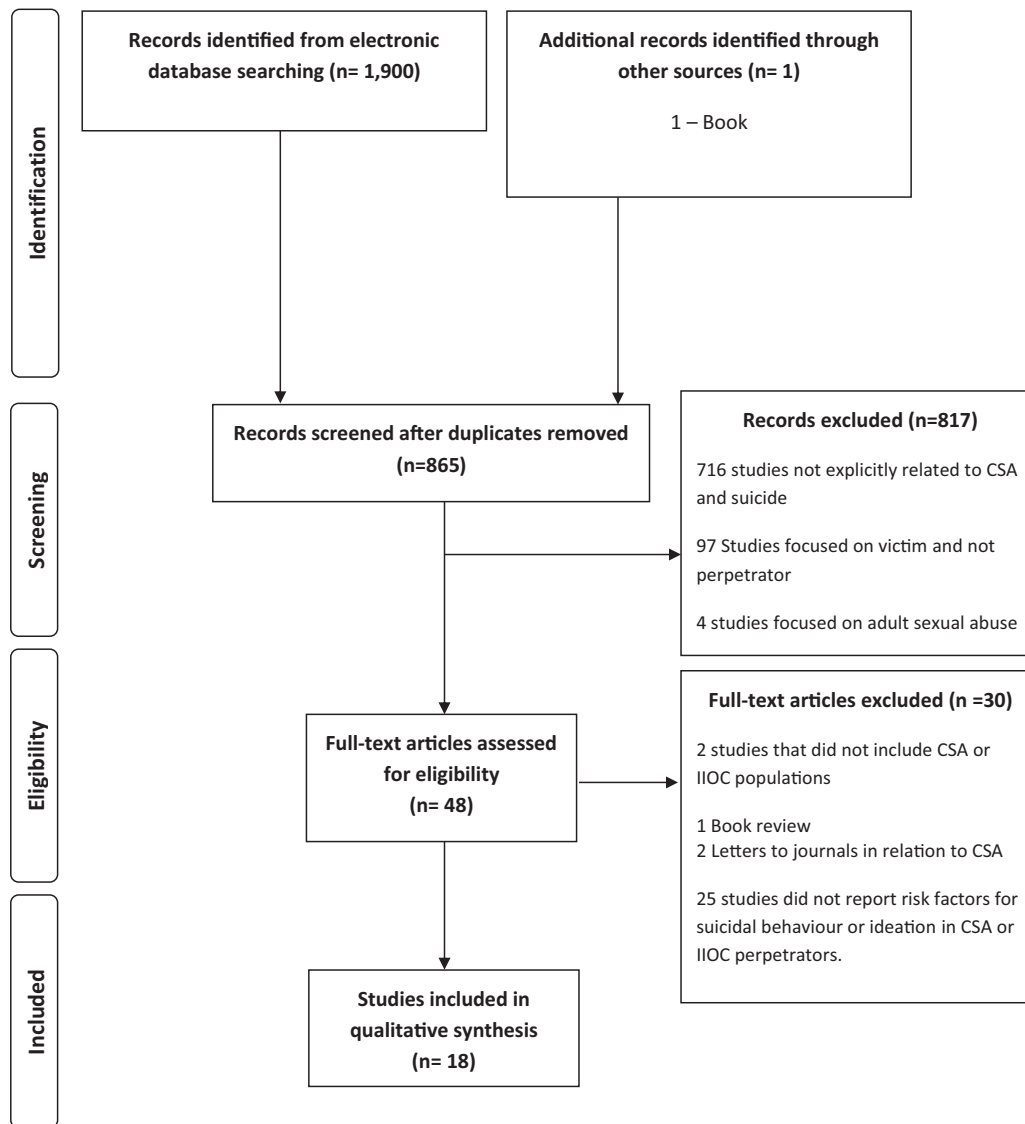


FIGURE 1 Study selection flow chart

papers were published after 2000. The studies were primarily conducted in the USA ($n = 10$), with the remainder in the UK ($n = 3$), Ireland ($n = 2$), Denmark ($n = 1$), Australia ($n = 1$), and Poland ($n = 1$). Six studies made specific reference to perpetrators of IIOC, while the remaining eleven focused on CSA more generally. All studies which included a focus on suicidal behavior in perpetrators of IIOC were from the USA ($n = 6$) and employed mixed ($n = 2$) or literature review ($n = 4$) methodologies.

The characteristics of the included study are summarized in Table 1.

Quality review

Qualitative papers

These papers were assessed using the Quality Assessment Criteria (Kmet et al., 2004). The selected studies ($n = 4$),

undertaken predominately in the 1990s, included case study and case report methodologies. The methodological quality of these papers was relatively poor. On a scoring scale of 0–1, the median quality score was 0.37 (range: 0.25–0.60). No papers scored over 0.75, and three papers scored below 0.50. The main limitation identified was the lack of a clearly described verification procedure to establish credibility.

Quantitative papers

These papers were assessed using the Quality Assessment Criteria (Kmet et al., 2004). The selected studies ($n = 7$) consisted of epidemiological studies and case record reviews.

Study reporting quality varied greatly. On a scale of 0–1, the median quality score was 0.82 (range 0.64–1.00). Five papers scored over 0.75.

TABLE 1 Study characteristics

Author(s), Date, and Country	Population (CSA and/or IIOC)	Quality Rating (higher rating indicates higher quality)	Description of Sample and Method	Main Findings
Wild (1988) UK	CSA	0.45	Retrospective case review of men under investigation for CSA who died by suicide.	Nine out of 546 men died by suicide or attempted suicide after the initiation of prosecution for CSA.
Walford et al., (1990) Ireland	CSA	0.20	Retrospective case study review of two fathers who died by suicide after the revelation that they had sexually abused their own or others' children.	In both cases, the fathers died by suicide after exposure of their abuse and facing the subsequent threat of legal proceedings.
Carrey (1994) USA	CSA	0.25	Three retrospective case studies of males who had committed CSA and subsequently attempted or completed suicide.	Perpetrator and victims of CSA are at risk of suicide due to the complexity of emotions involved, including guilt.
Pritchard and Bagley (2001) UK	CSA	0.91	An epidemiological analysis of a two-year cohort. Within a population of 2.4 million, 374 individuals were identified as CSA offenders and included in the sample.	Seven (1.87%) out of 374 men died by suicide. Suicides occurred either around the time of the disclosure of the CSA or at the time of trial or legal proceedings. These men were reported to have no history of previous convictions for violence.
Brophy (2003) Ireland	CSA	0.73	Case and police file review. 7008 men were identified as under investigation for sexual offenses between 1990 and 1999. These cases were then reviewed for evidence of suicide outside of prison.	32 cases of suicide outside of prison were identified. Sex offenders who offended against children specifically were reported to be 230 times more likely to die by suicide than the general population.
Pritchard and King (2004) USA	CSA	0.86	An epidemiological analysis comparing "mental disorder-related" suicide rates with "child sex abuse-related" suicides of victims and perpetrators of child sex abuse. This was based upon an examination of all Coroners' inquest files over a six-year period ($n = 1017$).	The suicide rate in CSA perpetrators was more than three times the male "mental disorder-related" rate. Intra- and extra-familial perpetrator suicide rates were 25 and 78 times the "general population suicide rate," respectively.
Pritchard and King (2005) UK	CSA	0.77	An epidemiological approach using a six-year cohort study. 374 child sex offenders were identified.	16 out of 374 CSAs went on to die by suicide. 15 of the suicides occurred among the "sex-only" offender group (as opposed to "multi-criminals"), who were 183 times more likely to die by suicide than the male general population.
Byrne et al., (2009) USA	CSA and IIOC	NA	Literature review exploring suicide risk in sex defendants on pre-trial supervision at the "federal" level.	A CSE perpetrator population, which consisted mostly of child pornography (IIOC) cases, might be characterized by a potentially higher suicide risk profile than that of an earlier generation of such defendants.
Hoffer et al., (2010) USA	CSA and IIOC	NA	Literature review exploring the issues surrounding CSAs who die by suicide after learning they are under criminal investigation.	For CSA, the investigation may be the trigger which results in suicide.

(Continues)

TABLE 1 (Continued)

Author(s), Date, and Country	Population (CSA and/or IIOC)	Quality Rating (higher rating indicates higher quality)	Description of Sample and Method	Main Findings
Webb et al., (2012) Denmark	CSA	1.00	A nested case-control study of more than 27,000 Danish adults during 1981-2006 charged with committing forms of violent or sexual offenses.	Men charged with rape or other non-consensual sexual acts against adults had a higher risk of suicide than those charged with sexually abusing children. Both populations had a higher suicide rate than men charged with all other sexual acts combined.
Byrne, Rebovich, et al., (2012) USA	CSA and IIOC	NA	A mixed-methods approach evaluating an intervention for sex offenders ($n = 103$). Analysis included reviewing case reports, structured observations, and semi-structured interviews.	The evaluation provided preliminary support for the intervention, describing a "generally positive" impact on defendants' daily functioning, awareness, trust, and self-regulation. There were no suicides in sex crime defendants (including IIOC) referred to the program.
Hoffer et al., (2012) USA	CSA and IIOC	NA	An operational handbook for law enforcement based on a review by the FBI of 106 cases of CSA's who died by suicide.	CSAs, including IIOC perpetrators, are at greater risk of suicide than the general population.
Walter and Pridmore (2012) Australia	CSA	0.6	Analysis of the public record for accounts of suicide by men who had been, or were about to be, investigated for CSA. The authors aimed to explore suicide in the absence of mental health issues (other than pedophilia). Case history analysis was used.	20 men with no apparent mental disorder died by suicide shortly after legal or public exposure. Threat of this exposure may be a significant trigger for suicide in CSA offenders.
Byrne, Pattavina, et al., (2012) USA	CSA and IIOC	NA	Literature review on sex crime defendants who died by suicide, including those involved in CSA.	The authors found evidence for an increased risk of suicide in perpetrators of CSA but commented that a lot is unknown about the extent of the suicide problem. They concluded that further empirical research on the nature and extent of this problem is needed.
Jeglic et al., (2013)	CSA	0.64	Analyzed the rates of non-fatal suicide attempts among a sample ($n = 3030$) of imprisoned male sex offenders, identified from public records.	The authors found that 14% of sex offenders in the study sample had made a suicide attempt at some point in their lives. No difference was identified in risk of suicide between CSA offenders and adult sex offenders.
Hoffer and Shelton (2013) USA	CSA and IIOC	NA	Mixed-methods study of 106 male CSAs who died by suicide, which included review of case records, death investigation reports and autopsy reports, analysis of suicide notes, and interviews with family members.	Individuals convicted of CSAs, including those involved in IIOC offenses, are at greater risk of suicide than other offender populations. 26% of the sample had died by suicide within 48 hours of being made aware of the investigation

(Continues)

TABLE 1 (Continued)

Author(s), Date, and Country	Population (CSA and/or IIOC)	Quality Rating (higher rating indicates higher quality)	Description of Sample and Method	Main Findings
Krasowska et al., (2013) Poland	CSA	NA	Literature review exploring impulsivity in sex offenders, including perpetrators of CSA.	Pedophilic child molesting and rapes are the most frequent sexual crimes. Behavioral manifestations of impulsivity (substance abuse, suicide attempts) appear to be common in sexual offenders.
Stinson and Gonsalves (2014) USA	CSA	0.82	Analyzed rates of suicide attempts and self-injurious behaviors in a sample of 1184 psychiatric inpatients, 462 of whom were sexual offenders.	Between-group comparisons revealed significant differences in history of suicide attempts and self-harm behaviors, with sexual offenders having greater rates of both. No significant difference in risk was identified between those committing sex offenses against adults compared with CSAs

The main limitation identified was the lack of a clear description of how confounding variables were controlled for, with only one study explicitly stating how this was achieved (Webb et al., 2012). Three studies reported some estimate of variance for the main results (Jeglic et al., 2013; Pritchard & Bagley, 2001; Webb et al., 2012), and five used an appropriate sample size for the methodological approach (Jeglic et al., 2013; Pritchard & Bagley, 2001; Pritchard & King, 2004; Stinson, & Gonsalves, 2014; Webb et al., 2012). Subject characteristics were clearly described in all the quantitative studies.

Literature reviews and mixed methodologies

The identified literature reviews ($n = 4$) did not employ a systematic approach and were automatically considered to be of low quality as the AMSTAR checklist (2007) could not be applied. Mixed-methods studies could not be assessed for quality as there was no appropriate quality rating scale.

Risk and nature of suicidal behavior

Heterogeneity in study methodology and populations precluded formal meta-analysis. Therefore, a narrative synthesis of the key domains of suicide risk in perpetrators of CSA and IIOC offenses is presented, as well as a summary of findings relating to CSA offenders' risk of suicidal behavior in comparison with the general population, other offenders, and/or psychiatric patients (Table 2).

Earlier studies examining suicide risk adopted a qualitative stance, focusing on case studies and case reviews (Normand and Carrey, 1994; Walford et al., 1990; Wild, 1988). The majority of papers which included empirical data identified an increased risk of suicide in CSA offenders compared with the general population and/or other sexual offenders. In four studies undertaken during the early 2000 s, the researchers adopted an epidemiological approach. Pritchard and Bagley (2001) identified seven individuals who died by suicide within a CSA cohort ($n = 374$) in the south of England, that is, 1.87% of the study population, which they reported as 110 times the general population risk of suicide (although the current authors' recalculation of their figures suggested the excess risk was just over half that—see Table 2). Brophy (2003) compared suicide risk in 432 men in Ireland under investigation for sexual offenses against under-17-year-olds, in whom there were 18 suicides over 10 years, with that of males in the general population. While the author was unable to conduct a statistical comparison, there was a clear very major excess of suicides in the CSA group (one in 24 dying by suicide). Pritchard and King (2004) reported that the suicide rate in CSA perpetrators was more than three times that of

TABLE 2 Summary of findings of studies of relative risk of suicidal behavior in child sexual abuse offenders

Author(s), (Date), and Country	Offender Group	Comparison Group	Comparative Risk of Suicide/Suicidal Behavior	Comments
Pritchard and Bagley (2001) England	Male CSA offenders identified from police and official records over two years ($N = 374$). Suicides $N = 7$ (1.87%) that is, 0.94% per year.	Male general population suicides 0.016% per year	“Suicide risk 110 times male general population rate” according to the authors.	Current authors’ calculation is relative risk of 58 times the male general population risk.
Brophy (2003) Ireland	Male CSA offenders under investigation over 10 years ($N = 432$). Suicides $N = 18$ that is, 1/24	Males in the general population. Suicide 1/5524 (annual figure)	Clear major excess risk of suicide in the CSA offenders	The authors state: “The numbers found in this study are insufficient for reliable statistical analysis”
Pritchard and King (2004) England	Male CSA perpetrators ($N = 434$) over six years (estimated from number of convicted CSA offenders $\times 2.5$ to account for under-reporting of intra-familial abuse). Suicides $N = 16$ Annual rate = 613 per 100,000.	Males in the general population. Suicides $N = 757$ Annual rate = 15.3 per 10,000 Male “Mental disordered-related individuals” ($N = 15,325$) Suicides $N = 167$ Annual rate = 192 per 100,000.	Excess risk in CSA offenders = 40 Excess risk in CSA offenders relative to mentally disordered individuals = 3.2	Marked extrapolation used by the authors to estimate the total number of CSA perpetrators
Pritchard and King (2005) England	“Sex-only” CSA offenders.* ($N = 94$). Suicides $N = 15$ Annual rate = 2720 per 100,000. “Multi-criminal” CSA offenders.* ($N = 93$). Suicides $N = 1$ Annual rate = 179 per 100,000. (*Both groups identified from police records).	Males aged 15+ in the general population. Suicides $N = 762$ Annual rate = 14.8 per 100,000	Excess risk in “Sex-only CSA offenders” = 183 Excess risk in “Multi-criminal CSA offenders” = 12.5 Excess risk in “Sex-only CSA offenders” compared with “Multi-criminal CSA offenders” = 15	
Webb et al., (2012) Denmark	CSA offender suicides ($N = 39$) identified from national registers between 1981–2006	Matched living males in general population ($N = 262$)	OR = 4.5 [3.2, 6.3] OR (adjusted for psychiatric admission and social risk factors) = 1.5 [1.1, 2.3] [vs. OR = 5.2 [3.6, 7.5] (adj. OR = 1.9 [1.3, 2.9]) for rape offenders ($N = 34$ vs. 228 controls) and 5.6 [3.1, 10.2] (adj. OR = 3.0 [1.5, 5.8]) for individuals convicted of other non-consensual sexual acts against adults ($N = 13$ vs. 77 controls)]	

(Continues)

TABLE 2 (Continued)

Author(s), (Date), and Country	Offender Group	Comparison Group	Comparative Risk of Suicide/Suicidal Behavior	Comments
Jeglic et al., (2013) USA	CSA offenders (within wider sex offender sample of 3030). Attempted suicide = 14% of overall sample n/N not reported for CSA offenders	Adult sex offenders (within wider sex offender sample of 3030) n/N not reported for adult sex offenders	The authors state: "No significant differences between those who made attempts and those who did not in terms of average ages of their victims [...] or whether the nature of the index offense was child molestation or adult sexual assault."	Numbers necessary for statistical analysis not reported.
Stinson and Gonsalves (2014) USA	Sex offenders (N = 412), including CSA offenders (N = 260) in forensic hospital (2005–2010)	Male psychiatric inpatient with no sex offense history (N = 765)	The authors reported a small but significant difference in history of suicide attempts between sex and non-sex offenders ($\chi^2 = 3.83, p = 0.05$, <i>Cramer's V</i> = 0.06).	Suicidal behavior could have occurred at any time in the offenders' lives.
	Attempted suicide in sex offender sample = 38.5% (N not reported in relation to CSA subsample)	Prior attempted suicide = 33%	There were no significant differences between subgroups of sex offenders with regards to history of suicide attempts. However, offenders against children and adults (37.8%) were significantly more likely to have a history of self-harm than child-only offenders (2.2%); $\chi^2 = 6.30, p < 0.05, \Phi = 0.16$.	Non-contact offenders were classed in the study as "non-sex offenders"

the male "mental disorder-related" rate in their study area of the south of England. Additionally, suicide rates in intra- and extra-familial perpetrators were 25 and 78 times higher than the "general population suicide rate," respectively. A six-year cohort study of individuals involved in CSA by Pritchard and King (2005) in the same area indicated that individuals who were "sex-only" offenders were 183 times more likely to die by suicide than males aged 15 years and over in the general population. Perhaps counterintuitively this group had a considerably greater suicide risk than CSA offenders who had been involved in other types of crimes.

Walter and Pridmore (2012) utilized a case study approach to explore suicide in the absence of mental health issues in individuals responsible for pedophilia and identified 20 case histories of men with no apparent mental disorder who died by suicide shortly after exposure or threatened public exposure and/or early or potential legal proceedings.

Several American studies have highlighted the increased risk of suicide in CSA offenders when in contact with law enforcement. Hoffer et al., (2012) reviewed Federal Bureau of Investigations' (FBI) case records, identifying 106 cases in which CSA offenders died by suicide. The authors concluded that CSA offenders should be treated as potentially volatile and at high risk of suicide. Hoffer and Shelton (2013) reviewed CSA investigations conducted over a 13-year period (1998 to 2010) by the FBI. They reported that 79% of CSA offenders who died by suicide were child pornography traders, so identifying an increased risk of suicide in those who distribute IIOC. They also highlighted the role of the criminal investigation in intensifying this risk.

Three further studies identified no elevated risk of suicide or attempted suicide in CSA offenders compared with those who committed sexual abuse offenses against adults. Webb et al., (2012) undertook a nested case-control study of more than 27,000 adults in Denmark and found increased risk of death by suicide in men charged with CSA compared to the general population for men charged with CSA (4.5, 95% CI 3.2–6.3), which was reduced after controlling for psychiatric admission (including alcohol and drug disorders) and for social risk factors (1.5, 95% CI 1.1–2.3). However, the excess risk in the CSA offenders was comparable to the risk in rape offenders and those charge with other non-consensual sexual acts against adults (see Table 2). Stinson and Gonsalves (2014) identified no significant difference in either suicide attempt history or number of suicide attempts between offenders against adults and offenders against children in their sample of psychiatric inpatient sex offenders. They did, however, report that these individuals engaged in both suicide attempts and self-harm behaviors more frequently than a matched non-offending psychiatric comparison group (27% vs. 18%, respectively) and that offenders against children and adults were significantly more likely to have a history of self-harm than child-only offenders. Jeglic et al., (2013) undertook an analysis of 3030 convicted sex offenders and found that 11%

had made a suicide attempt prior to incarceration, 0.5% during incarceration, and 2.5% made suicide attempts both prior to and during incarceration. However, they found no difference in attempt rate between perpetrators of CSA and adult sex offenses. This may be due to the stigma attached to sex offenses in general, leading to increased risk regardless of the type of sex offense. Nevertheless, all three studies identified an elevated risk of suicide in perpetrators of CSA compared with the general population. None of these studies differentiate between CSA and IIOC offenders.

Criminal charges

Three empirical studies categorized the types of charges against CSA suspects and perpetrators who subsequently went on to die by suicide. IIOC offenses were the most commonly cited charges. Hoffer and Shelton (2013) reported that 79% of CSA offenders who died by suicide were child pornography traders/collectors. Authors of three literature reviews also reported a higher risk of suicide in those charged with IIOC offenses compared with other CSA offenses (Byrne et al., 2009; Bryne et al., 2012; Hoffer et al., 2010).

Perpetrator characteristics

All studies focused only on suicide risk in males. The age of the perpetrators at the time of completed suicide ranged from 24 to 71 years (mean = 44) (Byrne, Pattavina, et al., 2012; Hoffer & Shelton, 2013; Hoffer et al., 2012; Walford et al., 1990; Walter & Pridmore, 2012). CSA perpetrators were less likely than other offenders to be from minority ethnic backgrounds and were more likely to be Caucasian (Byrne et al., 2009; Byrne, Pattavina, et al., 2012; Hoffer & Shelton, 2013; Hoffer et al., 2012). Offenders were also found to be more likely to be married, have children, and be educated to a college degree level (Byrne et al., 2009; Hoffer & Shelton, 2013; Hoffer & Shelton, 2013; Hoffer et al., 2012). Walter and Pridmore (2012) reported that the majority of perpetrators were employed in professional roles shortly before their deaths, with many in positions of trust (e.g., teachers, nurses, prosecutors, surgeons). These findings differ from a recent systematic review of near-lethal suicide attempts in prisoners in general, which found the majority who attempted suicide were single and with poor educational qualifications (Marzano et al., 2016).

Suicide methods

Data on suicide methods were provided in six studies. Self-inflicted gunshot was the most frequently adopted method in

three studies (Hoffer & Shelton, 2013; Hoffer et al., 2012; Walter & Pridmore, 2012), which may reflect the majority of published research originating from the United States, where there is relatively easy access to firearms. One study from Ireland cited self-inflicted gunshot and hanging as the methods used (Walford et al., 1990). Two studies cited hanging as the most frequent method, one in Ireland (Brophy, 2003), the other in the UK (Wild, 1988).

Time between awareness and suicide

Four studies identified distinct high-risk periods for suicide during the criminal investigation process. Pritchard and Bagley (2001), Pritchard and King (2004), and Pritchard and King (2005) reported that suicides occurred close to the time of the disclosure of the CSA offense or at the time of the trial or legal proceedings. Hoffer and Shelton (2013) found that in cases in which suicide occurred, in 26% the offender died within 48 hours of becoming aware of the criminal investigation and in 55% the suspect died within the first month of becoming aware of a criminal investigation.

Criminal history

Absence of a criminal history is common among CSA offenders, including those who die by suicide. Byrne et al., (2009) reported that 79.9% of CSA defendants had no prior criminal conviction. Byrne, Pattavina, et al., (2012) found that only 10% of sex crime defendants (made up mostly of CSA perpetrators) had a prior felony arrest ($n = 12$). Pritchard and King (2004) reported that the majority of CSA offenders who died by suicide had only previous convictions against children and no convictions for other types of offenses. Pritchard and Bagley (2001) found that there appeared to be an increased risk of suicide in those who had no history of violence, as six out of seven deaths in their study involved men who did not have a previously documented history of violence or previous conviction for a violent offense. Hoffer et al., (2012) and Hoffer and Shelton (2013) reported that less than half of the 106 cases they analyzed had a recorded criminal history.

Mental disorder

Two studies highlighted the low prevalence of prior psychiatric admissions in convicted sex offenders who either died by suicide or made suicide attempts (Jeglic et al., 2013; Webb et al., 2012). A single study assessed mental health diagnosis in relation to risk of suicide in CSA offenders specifically (Wild, 1988). The authors identified depressive illness and/or alcoholism as a major predisposing risk factor in four

out of six incidents where the CSA perpetrator had died by suicide. No other studies included in the review identified mental health diagnosis as a major risk factor for suicide in the CSA population. Where identified, its impact was considered to be relevant to suicide in a small proportion of the population. Byrne et al., (2012) reported that, despite nearly a third of their sample receiving a diagnosis of major depression post-conviction, only 10% of sexual offenders receiving an intervention had a mood disorder or other mental health diagnosis which was classified as "severe." Walter and Pridmore (2012) did not identify any cases of completed or attempted suicide in CSA offenders that appeared to be directly linked to the presence of diagnosable mental health disorder. The authors attributed suicides or suicide attempts to acute stressors relating to the criminal investigation, such as threat of public exposure and legal sanction. Pritchard and King (2004) reported that, unlike victims of CSA, perpetrators of CSA had not been seen by psychiatric services prior to dying by suicide.

Byrne, Rebovich, et al., (2012) reported that 25% of their sample of CSA offenders met diagnostic criteria for adjustment disorder, a transient condition arising in response to stressful life circumstances. It was surmised that this diagnosis arose from perpetrators' recent involvement in the criminal justice system and the uncertainty surrounding pending court appearances (Byrne, Rebovich, et al., 2012).

Psychological factors

The role of shame

Hoffer et al., (2010) found that many individuals investigated on CSA charges, particularly those relating to IIOC, experience high levels of fear, anxiety, shame, and helplessness during the course of an investigation. Brophy (2003) found that shame and "catastrophic loss of standing and irreparable damage to one's reputation" were most closely linked to the offender's subsequent suicide. Hoffer et al., (2012) described the impact of a CSA charge becoming public knowledge and subsequently tainting the opinions of family, friends, and co-workers as the major contributory factor.

Hoffer and Shelton (2013) analyzed suicide notes in CSA alleged perpetrators. The most frequently cited reason for the suicide in such notes was the child sex crime investigation itself. Analysis of the notes revealed common themes, including presence of cognitive distortions and feelings of burdensomeness, shame, and self-blame (Hoffer & Shelton, 2013). Hoffer and Shelton (2013) also observed that 68% of individuals who died by suicide had left a suicide note, which is a substantially higher proportion than that of people dying by suicide in the general population, (Callanan & Davis, 2009; O'Donnell, Farmer & Catalan, 1993; Foster, 2003).

Cognitive distortions

A number of studies identified the impact of cognitive distortions of alleged perpetrators of CSA and IIOC in their offending behavior, including denial, rationalization, and minimization (Hoffer & Shelton, 2013; Hoffer et al., 2012; Hoffer et al., 2010; Hoffer et al., 2012). For example, Hoffer et al., (2010) described the importance of understanding the internal conflict experienced by the offender in order fully to understand their risk of suicide. Since most perpetrators of CSA do not have an extensive or relevant criminal history, this is likely to be their first contact with law enforcement and therefore the first time their cognitive distortions have been challenged.

Suicide stressors

A single study identified 224 potential stressors leading to suicide in suspected perpetrators of CSA (Hoffer & Shelton, 2013). This was based on analysis of suicide notes, case records, and interviews with law enforcement personnel and family members. The most common stressors reported were criminal/legal problems relating to the investigation (100%), physical illness (39%), job-related stress (23%), marital problems (17%), financial strain (9%), mental health problems (5%), recent change in family dynamics (3%), and death of a relative/friend (2%). These findings highlighted the broad impact of the investigation on the perpetrator and the subsequent effects this can have on their ability to cope.

Theoretical understanding

Hoffer and Shelton (2013) used Joiner's (2005) theoretical model of suicide to highlight the elements potentially involved in creating elevated suicide risk in those being investigated for CSA/IIOC offenses. They argued that at the moment offenders become aware of an investigation, an acute crisis is triggered and the individual experiences (1) lack of belonging (they know that their sexual interest in children is not acceptable to society); (2) burdensomeness (they are likely to feel stigmatized and experience extreme shame); and (3) acquired capability (an individual's fear of death may be weakened when they are exposed to provocative life experiences, e.g., the investigation). They concluded that a CSA/IIOC offender may have particularly strong vulnerability for suicide, which is likely to be exacerbated by the increased presence of acute environmental stressors.

Krasowska et al., (2013) explored impulsivity in sexual offenders and reported that "child molesters" appear to be significantly more impulsive, not only in comparison with the general population, but also in comparison with perpetrators

of non-sexual crimes. This impulsivity may subsequently manifest itself behaviorally in a suicidal act, increasing the likelihood that a perpetrator of CSA/IIOC may die by suicide. The authors of some studies have theorized that resiliency (or lack of it) may be a factor that distinguishes sex crime defendants, including CSA/IIOC perpetrators who attempt suicide, from those who do not (Hoffer & Shelton, 2013; Hoffer et al., 2010).

Interventions/Management of individuals at risk

A single study in the USA explored the impact of the delivery of a therapeutic intervention (“Sharper Future”) in managing suicide risk in perpetrators of CSA, including those with IIOC offenses (Byrne, Rebovich, et al., 2012). The treatment program included a joint health and criminal justice multidisciplinary approach to provide crisis intervention, psychological therapy, and imprisonment preparation. The evaluation provided preliminary support for the effectiveness of the Sharper Future program in reducing suicide by sex crime defendants (including IIOC perpetrators) referred to the program, as there were no suicides in the intervention group during a 5-year, post-intervention period.

DISCUSSION

Summary of findings

Following a systematic review of the international research literature, 18 studies were identified as presenting data and/or information in relation to the suicide risk of perpetrators of CSA. All studies identified an increased risk of suicide in perpetrators of CSA compared with that observed in the general population. Some studies identified a heightened risk of suicide in perpetrators of IIOC specifically, compared with other sex offenders. The risk of suicide in this population is clearly extremely high.

This review has highlighted the paucity of research investigating factors which are likely to contribute to an increased risk of suicide in perpetrators of CSA, especially those involved in IIOC offenses. However, several risk factors have been found relating to suicide risk in IIOC perpetrators, including becoming aware of a criminal investigation, male gender, age between mid-thirties and early fifties, Caucasian, educated to a college degree level, employed in a professional role, married with children, limited or no previous contact with the criminal justice system, and being an IIOC trader or receiving a criminal charge of possession (including distribution). The highest risk periods for suicide were within 48 hours to one month of perpetrators becoming aware of a

law enforcement investigation. There appeared to be a heightened risk of suicide when the threat of public exposure or the reality of the legal process was crystallized for the individual, for example, at arrest, charge, trial, and conviction. As a result of complex electronic forensics procedures and evidence gathering in an IIOC investigation, the length of time between significant legal milestones can be considerable; therefore, suicides may also occur substantially later than the first month.

The role of shame and stigma in IIOC offenses was highlighted in a number of studies as a risk factor in suicide. IIOC offenders are more likely than other offenders to be employed in a professional role and belong to a higher socioeconomic class; this may exacerbate the feeling of shame, leading offenders to see themselves as a burden to society with little to contribute. This experience may lead to an increased risk of suicide, as the individual feels less able to connect with and seek support from potentially supportive social networks, limiting the ability for this to act as a protective factor against suicide. Additionally, their existing support networks may be less supportive because of the nature of the offense and associated stigma.

The experience of shame appears to be intensified when cognitive distortions that allowed an individual to continue their offending behavior are challenged, with consequent increased feelings of self-loathing and self-hatred. A lack of previous contact with the criminal justice system, specifically for IIOC perpetrators, may mean that their cognitive distortions have not been exposed to challenge until they come into contact with law enforcement. It may be that these distortions are not well-established and more likely to break down at the point of contact with law enforcement, intensifying the risk of suicide as they fail to function in protecting the individual's positive sense of self. The impact of the criminal investigation itself on the well-being of the alleged perpetrator was identified as a risk factor in almost all studies exploring CSA and IIOC perpetrator suicide. This appeared most prominent in contexts where the threat of exposure to social networks and wider society was high.

A further striking finding was that previous psychiatric disorders appear to play a relatively insignificant role in suicide in this population, in contrast to suicide in the general population.

Limitations of the review

A limitation of the review was the small proportion of methodologically high-quality studies. The lack of an appropriate quality assessment tool for the literature reviews and mixed-methodological studies is another limitation. Paucity of studies and low quality of several of them limit the validity and generalizability of the research findings and our ability to

reach comprehensive conclusions about factors relating to suicide risk.

Another limitation of the review is that only English-language papers were included. Consequently, culturally specific risk factors which could further help to inform the management of suicidal risk in specific CSA offender populations may not have been identified.

Clinical implications

The rate of suicide in CSA and IIOC offenders is considerably elevated in comparison with the general population and with other offender groups in some studies. It appears that risk is acutely heightened during critical periods of a criminal investigation, such as arrest, charge, and trial. This highlights the challenges faced and support needed in guiding individuals through this type of criminal investigation. Enhanced input should be considered during periods in an investigation and prosecution process where the threat of public exposure is heightened or likely. In designing interventions, account should be taken of the complex factors and cognitive distortions that appear to increase suicide risk, and the fact that social support systems may not necessarily provide a protective function. The review highlights a potentially important role for mental health services in working in partnership with custodial staff and law enforcement to reduce the risk of suicide. We suggest that clinicians should particularly target the shame and feelings of burdensomeness that offenders commonly experience. There also appears to be a need for a clear referral pathway for those in crisis, who are experiencing an acute adjustment reaction and are not already known to statutory services. The low frequency of major mental health difficulties may, however, limit the willingness of mental health professionals to be involved in care, but the extremely high risk of suicide is a clear reason for the necessity of their involvement.

Future research

Based on the findings of this review, several suggestions can be made about the direction of future research on suicide risk in perpetrators of CSA and IIOC offenses. While it is acknowledged that assuring the well-being of CSA and IIOC perpetrators may be politically controversial, creating difficulty in accessing research funding, the number of individuals dying, and the wider impact on families and social networks, highlight a pressing need for further methodologically robust research that explores factors relating to suicide risk in CSA and IIOC offenders. There appears to be merit in research that differentiates between different types of CSA offenders, as risk factors may vary between offender groups

and therefore different management and interventions may need to be developed.

The majority of studies in the review were case studies or based on analyses of epidemiological data. Longitudinal, retrospective, and/or qualitative studies may shed further light on the role of specific factors relating to risk of suicide, the attitudes and responses of both law enforcement personnel and mental health agencies working with these offenders, and what forms of intervention might be effective in this context. The evaluation of interventions to improve well-being in perpetrators of IIOC would be a valuable avenue of research, as only a single study appears so far to have addressed this clinical need.

CONCLUSIONS

The review has identified risk factors that may have practical, clinical, and operational implications in the identification and management of the extremely high suicide risk in perpetrators of CSA and IIOC. CSA offenders, and more specifically IIOC perpetrators, are dying by suicide at an alarming rate and, in the context of increased law enforcement activity, are likely to experience increased contact with the criminal justice system and public exposure in the future. Despite a limited number of empirical research studies, several factors have been identified that appear to be associated with elevated risk of suicide in this offender group. These factors include the intensity of shame and stigma, the impact of the criminal investigation, and the unique demographics and socioeconomic status of this group compared with other people dying by suicide. The current research highlights that social support systems which are often considered protective in the general population may not be so in the CSA offender group and that this is likely to be influenced by the experience of shame and high levels of burdensomeness felt on public exposure.

Given the paucity of published literature in the area, it is important that further high-quality research into understanding the increased threat of suicide in perpetrators of CSA and IIOC is conducted to inform treatment, prevention, and policy decisions. It is suggested that exploring the impact of the investigation itself on the risk of suicide, including potential operational strategies, attitudes of professionals, and clinical input, should be a priority. The review highlights the potential for increased co-working between law enforcement, custodial staff, and mental health services to develop a pathway to identify risk of suicide and support CSA and IIOC offenders throughout and after an investigation.

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AUTHOR CONTRIBUTIONS

All persons who meet authorship criteria are listed as authors, and all authors certify that they have participated sufficiently in the work to take public responsibility for the content, including participation in the concept, design, analysis, writing, or revision of the manuscript. In particular, RK, AU, FF, LM, and KH conceived the study and developed the basis for the protocol. RK and KH finalized the study protocol. RK and AU took part in searching, identifying, and assessing studies. RK carried out the narrative synthesis and wrote the initial version of the manuscript. AU, FF, LM, and KH contributed to the interpretation of results and revision of the article. All authors approved the final article.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

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