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Running head: The needs of homicidally bereaved individuals.

Psychological interventions for individuals bereaved by homicide: a systematic review

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Abstract

Bereavement following homicidal loss is likely to impact on the individual's mental health. Individuals are at increased risk to develop symptoms of Post-traumatic stress disorder (PTSD), Complicated Grief (CG), and depression. Regardless the negative impact of such experiences, limited evidence-based regarding psychological intervention has been tested among this population.

The current systematic review (registered via PROSPERO) aimed to gather evidence about the psychological interventions available and report their effectiveness. Out of 77 records, seven met predefined inclusion criteria. Studies presented different methodologies, as well as tested different models and treatment conditions (including outcome measures). Thus, a narrative systematic review was conducted.

Studies included manualised interventions to deliver 1:1 and group sessions. Cognitive Behavioural Therapy (CBT), Restorative Retelling (RR), and Eye Movement Desensitization and Reprocessing (EMDR) were the main models used together with Psychoeducational elements about Trauma and Grief responses. Overall, symptoms of PTSD, CG and depression decreased significantly post-intervention. Follow-up measurements revealed sustained improvements regarding PTSD and depressive symptoms. Mixed results were reported regarding how individual (e.g., age, gender) and external factors (e.g., time since loss, relationship with the deceased) impact on symptom progression.

As a result of differences in methodologies and categorization of therapies, as well as methodological differences, small sample sizes (and limited statistical power), important questions remain unanswered. Further randomised controlled trials and *Expert Consensus* could be considered.

Key words: Homicide, Bereavement, Grief, Mental Health, Psychological Interventions.

Psychological interventions for individuals bereaved by homicide: a systematic review

Research has demonstrated that approximately 45% to 50% of individuals are likely to adjust relatively well following 'natural losses', showing healthy levels of psychological and physical functioning in the first 12 months post loss (Bonanno & Mancini, 2008). However, homicidal bereavement (i.e., loss due to murder or manslaughter) does not appear to follow this pattern. Homicide-related mental health difficulties are a serious problem worldwide, displaying high rates of lifetime incidence, high chronicity, and role impairment. Thus, given the scope of the problem and severity of its consequences, ensuring the availability of effective services for those bereaved by homicide is of significant public health and social importance. Nevertheless, a systematic review specifically on the efficacy of psychological interventions following homicidal loss has not yet been conducted. Consequently, it remains largely unclear which clinical models and interventions homicidally bereaved individuals benefit from.

Homicidally bereaved individuals are at greater risk of developing severe and prolonged psychological distress and mental health impairments (e.g., Boelen, de Keijser, & Smid, 2015; van Denderen, de Keijser, Kleen, & Boelen, 2015) when compared with individuals bereaved by non-violent losses (e.g., Kristensen, Weisaeth, & Heir, 2012). This may be a consequence of both, the particular characteristics of the homicide itself (i.e., sudden, unexpected, violent and premeditated), and the unusual post-loss reality, which often involves protracted legal procedures and media attention (Amick-McMullan, et al., 1989; Kaltman & Bonanno, 2003; Mezey, Evans & Hobdell, 2002; *names removed for masked review*). Recent qualitative studies have found that homicidally bereaved individuals perceive profound changes in their views of themselves and the world post-homicide, which may contribute to ongoing psychological distress (*names removed for masked review*; van Wijk et al., 2017). Recent developments in the field have demonstrated that homicidally bereaved individuals

are likely to report symptoms of posttraumatic stress disorder (PTSD; e.g., Rheingold, & Williams, 2015; van Denderen, de Keijser, Huisman, et al., 2016), depression (Rheingold & Williams, 2015; van Denderen, et al., 2015) and complicated grief (CG[1]; Rheingold & Williams, 2015; van Denderen, et al., 2015, 2016), which can impact many areas of their lives. For some individuals the co-occurrence of mental health difficulties remains clinically significant for many years after the loss (Murphy, 2003, *names removed for masked review*). Prolonged post-loss mental health difficulties have also been linked with the development of physical health impairments, such as sleeping and eating difficulties (Armour, 2012 Mastrocinque, et al., 2015; Miller, 2009; van Wijk et al., 2017; Rheingold et al., 2015), headaches, stomach complaints, bowel complaints, tiredness, and cardiac issues (van Wijk et al., 2017).

Some developments have been made, for example the GRIEF Approach Intervention takes a systemic, modular approach to tackling a range of mental health sequelae following from violent bereavements, and can be adapted according to the individual's particular areas of difficulty (Rheingold & Williams, 2018). Despite the enormous value of the research conducted previously, little is known about the efficacy of such interventions, and a reference to systematic, empirical research is seldom provided. Thus, this paper critically reviews the available evidence to investigate and report the efficacy of the evidence.

Methods

The systematic review protocol was published via PROSPERO prior to searches being conducted (registration number: CRD42016037229).

Literature Search

A Preferred Reporting Items for Systematic Reviews and Meta-Analyses (Moher, Liberati, Tetzlaff, Altman, & Group, 2009; PRISMA) diagram was used to describe the systematic

[1] Other terminologies exist (e.g., traumatic grief). Authors will refer to Complicated Grief (CG) for the sake of consistency.

review process (Figure 1). Records were searched from the earliest indexed studies to January 2019 using core electronic databases: APA PsycNET [searches across PsycINFO, PsycEXTRA, PsycTESTS and PsycARTICLES], PubMed, The Cochrane Library [Cochrane Database of Systematic Review] and Web of Science). The following research terms were used: “Victim” OR “Victims” OR “Co-victim” OR “Co-Victims” OR “Covictim” OR “Covictims” OR “Survivor” OR “Survivors” AND “Homicide” OR “Homicides” OR “Homicidal” OR “Homicidally” OR “Murder” OR “Murders” OR “Wrongful Death” OR “Wrongful Deaths” OR “Killing” OR “Killings” OR “Manslaughter” AND “Traumatic Bereavement” OR “Traumatic Grief” OR “Mourning” OR "Mournings" OR “Traumatic loss” OR “Traumatic losses”. Additionally, the reference lists of all relevant papers and reviews concerning interventions for bereaved individuals were scanned and key researchers in the area contacted by email.

Inclusion/exclusion criteria

This review focused exclusively on homicidal bereavement. The population, exposure, comparison, and outcome of interest (PECO) framework used was as follows: *P:* homicidal bereaved individuals; *E:* psychological outcomes; *C:* pre and post-treatment measurements; *O*: effectiveness of psychological interventions.

Studies were included if they: (1) examined psychological interventions following an experience of homicidal bereavement - murder or manslaughter, (2) included a sample of at least 50% homicidally bereaved individuals, (3) included family members or others with a close relationship to the person who died (e.g., adoptive family, close friend), (4) included standardised outcome measures of mental health and grief, (5) included a comparison group or used pre- and post-treatment comparisons, and (6) were peer reviewed manuscripts written in English.

After removing duplicates, the first author screened titles and abstracts for all the eligible studies. Records that did not meet the inclusion criteria mentioned above were excluded. Two authors (*names removed for masked review*) discussed the inclusion and exclusion of 30 randomly selected papers, from any stage of the screening process, in order to assess reliability and consistency. Cohen's kappa indicated a substantial level of agreement between raters (k = .91, p = 0.001). Any disagreements were discussed with the additional authors until consensus was reached.

Quality assessment

Hawker's Checklist (Hawker, Payne, Kerr, Hardey, & Powell, 2002; supplementary table) was used to assess the methodological quality of all the papers included. This checklist includes a five-point *Likert scale* (ranging from 0 - poor quality to 4 four - good quality). This sought to limit bias that can occur while synthesising evidence.

Data Synthesis

The included records were highly diverse in terms of methodological designs, models of interventions and outcome measures. Thus, a narrative synthesis of the data was conducted (Centre for Reviews and Dissemination, University of York, 2008).

Results

Study characteristics

The initial search generated 127 articles. An additional 23 records were identified through other sources (paper reference lists, books). After removing 41 duplicates, titles and abstracts of 109 records were screened. 77 articles were identified for full-text reading and assessed for eligibility. Authors were emailed when unclear samples were reported (e.g., number of homicidally bereaved individuals, if a mixed sample). Following this review, 70 records were excluded, as they did not include at least 50% of individuals bereaved through homicide and/or they lacked a group comparator or pre-post treatment design.

This left seven studies which met the inclusion criteria and were included in the review. These studies were conducted in the United States (N= 5; Saindon, Rheingold, Baddeley, Wallace, Brown, & Rynearson, 2014; Salloum, Avery, & McClain, 2001; Salloum, 2008; Rheingold, Baddeley, Williams, Brown, Wallace, Correa, & Rynearson, 2015; Tuck, Baliko, Schubert, & Anderson, 2012), Japan (N=1; Asukai, Tsuruta, & Saito; 2011) and the Netherlands (N= 1; van Denderen et al., 2018), and were published in peer-reviewed journals between 2001 and 2018 (Figure 1). Study participants were referred by clinics, medical centres and victim support services (Asukai, et al., 2011; Rheingold et al., 2015; Saindon et al., 2014; van Denderen et al., 2018), advertised in community centres or media platforms (Salloum, et al., 2001; Salloum, 2008; Tuck, et al., 2012; van Denderen et al., 2018). Overall, studies targeted PTSD, CG and depressive symptoms.

Participants[2]

Overall, the number of participants included in the analyses were relatively small, ranging from eight to 89. Five studies included adult participants (18 to 80 years old; Asukai, Tsuruta, & Saito; 2011; Rheingold et al., 2015; Saindon, Rheingold, Baddeley, Wallace, Brown, & Rynearson, 2014; Tuck, Baliko, Schubert, & Anderson, 2012; van Denderen, et al., 2018). Two studies included children and adolescents (eight to 19 years old; Salloum, 2008; Salloum et., 2001). Participants were predominantly women, African-American or European-American (other backgrounds included Japanese and European) and from low-to-medium incomes. Most of the adult participants were married and college educated.

Characteristics of bereavement and relationship with the deceased

Time since loss varied. Among the studies which included adults, time since loss ranged from two months to 28 years. The majority of the participants were parents of the victim (other relatives included romantic partner and sibling). Some were witness to the homicide or

[2] Authors reported different degrees of detail about the participants' demographics and characteristics of bereavement.

aftermath (Rheingold, et al., 2015; Saindon, et al., 2014; Salloum, 2008). Participants reported having positive relationships with the deceased (Rheingold et al., 2015; Saindon, et al., 2014; Salloum, 2008). Children and adolescents (Salloum, et al., 2001; Salloum, 2008) were more likely to have lost a family member (e.g., parent, uncle, aunt or cousin) or friend.

Victim-Perpetrator relationship

Only two studies have considered the victim's gender: victims were reported to be both males (Tuck, et al., 2012) and females (van Denderen, et al., 2018). The perpetrator was suggested to be known to the victim, but unknown to the participants, as reported in one study (Tuck, et al., 2012).

Mental health, substance misuse and violence

Participants did not report having any mental health difficulties or substance misuse prior to the loss. Pre-intervention, some participants were on stable doses of medication[3] (Asukai, et al., 2011)and others reported taking psychotropic medication for depression, anxiety and mood swings (at pre-intervention and follow-ups; Tuck, et al., 2012). Some participants reported prior mental health support: one engaged with therapy while participating in a retreat and four were seeing a counsellor/therapist at the follow-up assessment (Tuck, et al., 2012).

The majority of children and adolescents were exposed to violence prior to the incident, as well as during the intervention (Salloum, et al., 2001; Salloum, 2008).

Psychological models and treatment conditions

Overall, interventions comprised psychoeducational elements including trauma and grief components, as well as relaxation techniques. Nevertheless, studies all tested different interventions, except for two that explored Restorative Retelling (RR) models. Group (Rheingold et al., 2015; Saindon et al., 2014; Salloum, et al., 2001; Salloum, 2008; Tuck et al., 2012) and individual (Asukai et al., 2011; van Denderen et al., 2018) interventions were

[3] Five (out of 15) participants were receiving pharmacological treatment of selective serotonin reuptake inhibitors and five others reported having taken hypnotics.

delivered. Most of the interventions occurred on a weekly-basis consisting of between eight to 16 sessions (Asukai et al., 2011; Rheingold et al., 2015; Saindon et al., 2014; Salloum, et al., 2001; Salloum, 2008; van Denderen et al., 2018). Tuck et al. (2012) developed an intensive retreat programme which lasted for two days. All of the included studies reported having used manualised therapy interventions or interventions that were adapted from previous models.

Interventions for adults. Asukai and colleagues (2011) delivered an intervention adapted from Shear's model of grief (Shear, Frank, Houck, & Reynolds, 2005) with modified techniques of prolonged exposure (PE) for PTSD (Foa, Hembree, & Rothbaum, 2007). Fifteen individual sessions were delivered (90 minutes weekly). The intervention combined grief-focused elements derived from cognitive behaviour therapy (CBT) with modified PE, including *in vivo* and imaginal exposure, coupled with conversations exploring memories and feelings about their loss. Pre and post-intervention measurements were conducted, as well as three follow-ups (at three, six and 12 months following the intervention) to evaluate symptoms of PTSD, CG and depression.

Rheingold et al. (2015) conducted a pre-/post-trial using an RR group intervention approach (Rynearson et al., 2006), which lasted for 10-sessions (2-hours per week). The intervention included psychoeducational elements, exposure and imagery techniques (e.g., death, negative and positive memories), as well as symptom management (relaxation training). The intervention targeted grief, PTSD and depressive symptoms. Pre and post-measurements and a 12-month follow-up were conducted.

Saindon and colleagues (2014) delivered the same RR group intervention (Rynearson, 2001; Rynearson & Correa, 2008) performed by Rheingold et al. (2015). This uncontrolled trial aimed to target the individual's tolerance to the intervention and evaluate symptom recovery

(i.e., depressive, CG, avoidance and intrusion). Pre- and post-intervention measurements were recorded.

Tuck et al. (2012) tested the feasibility and acceptability of a two-day group retreat intervention - TOZI Healing Retreat©. It included psychoeducational elements on trauma, complicated grief and the judicial process. Additionally, guided imagery exercises were implemented. The retreat aimed to decrease distress (PTSD, depression), and increase general well-being and spirituality. This exploratory study included pre and post-intervention assessments (28 hours post-intervention, at six weeks, 12 weeks, and 30 months post-intervention).

van Denderen et al. (2018) conducted a randomized controlled trial to target CG and PTSD. Individual treatment was delivered (eight sessions). The intervention included psychoeducational elements about homicidal loss and sources of support. The eye movement desensitization and reprocessing (EMDR) sessions followed a standardised Dutch treatment protocol (De Jongh & Ten Broeke, 2003). The CBT followed previous evidence (Boelen, De Keijser,Van den Hout, & Van den Bout, 2007) and aimed to identify, challenge and change potential negative cognitions related to the loss. Outcome measures were completed at pre-treatment, post-treatment and at a six month follow-up.

Interventions for children and adolescents. Salloum, et al. (2001) and Salloum's (2008) studies included a school-based intervention (eight to 10 sessions) focusing on grief and trauma. This intervention was based on a previous framework developed by Salloum and Vincent (1999). Sessions explored areas such as family, safety, memories, spirituality, emotions, anger management, coping strategies, and PTSD using developmentally appropriate techniques (e.g., play, drama, discussion, drawing, storytelling, and writing). Pre- and post-intervention assessments were conducted to measure the progression of PTSD.

Training, supervision and independent audits

Most of the authors explicitly provided some information regarding the training and supervision received by the practitioners (Asukai, et al., 2011; Rheingold et al., 2015; Saindon et al., 2014; van Denderen et al., 2018; Salloum, 2008). In two studies (Asukai, et al., 2011; Tuck et al., 2012) the practitioners acted as Therapists/Psychologists and researchers simultaneously, which could bias the findings.

Outcome measures

Varied outcome measures were used, as mentioned above (Table 1). Overall, studies targeted PTSD symptoms (Asukai et al., 2011; Rheingold et al., 2015; Saindon et al., 2014; Salloum, et al., 2001; Salloum, 2008; Tuck et al., 2012; van Denderen et al., 2018), CG (Asukai et al., 2011; Rheingold et al., 2015; Saindon et al., 2014; van Denderen et al., 2018) and depression (Asukai et al., 2011; Rheingold et al., 2015; Saindon et al., 2014; Tuck et al., 2012). Authors provided different degrees of information regarding the participants' demographics and bereavement characteristics.

Outcome variables

As previously stated, studies presented very dissimilar designs, methodologies and psychological models of intervention, which has compromised the synthesis of the results. The main intervention outcomes[4] (PTSD, CG and depression) were described.

PTSD. All studies measured PTSD symptoms. Pre- and post-intervention assessments (Asukai, et al., 2001; Rheingold et al., 2015; Saindon et al., 2014; Salloum et al., 2001; Salloum, 2008; van Denderen, et al., 2018) reported that individuals presented lower PTSD symptoms post-intervention. These studies reported statistically significant differences with moderate to very high effect sizes. Intervention outcome at 12-month follow-up (Asukai, et al., 2001; Rheingold et al., 2015) revealed sustained improvements (moderate to large effect

[4] Tuck et al. (2012) reported General and Spiritual well-being, Motivation to forgive and Religious coping mean scores. However, due to the small sample size (N=8) and the fact that those variables could not be compared against the included studies, this was not considered in the current review.

sizes). van Denderen, et al. (2018) reported that PTSD symptoms remained stable between post-intervention and follow-up at six months. Tuck et al. (2012) described a decrease in PTSD mean scores post-intervention (28-hours, six weeks, 12 weeks and 30 months after the intervention).

CG. Mixed results were found. Asukai, et al. (2001), van Denderen, et al. (2018) and Saindon et al. (2014) reported a statistically significant decrease in grief responses from pre- to post-intervention measurements (low to moderate effect sizes). Rheingold et al. (2015) described no differences. Testing at six- and 12-month follow-up showed that improvements were not sustained (Asukai, et al., 2001; Rheingold et al., 2015; van Denderen, et al., 2018). van Denderen, et al. (2018) reported that CG significantly increased between post-intervention and six-month follow-up. Tuck et al. (2012) reported overall greater grief resolution post-intervention (28-hours, 12 weeks and 30 months after the intervention). Rheingold et al. (2015) described decreased death imagery symptoms post-intervention (moderate effect size), but this was not maintained at 12-months follow-up.

Depression. Depression symptoms significantly decreased from pre- to post-treatment (Asukai, et al., 2001; Rheingold et al., 2015; Saindon et al., 2014; small to large effect sizes), as well as at 12-month follow up (Asukai, et al., 2001; Rheingold et al., 2015; large effect sizes). Furthermore, depressive mean scores decreased after the retreat. Symptoms increased over time (from the 28-hours assessment to six weeks, 12 weeks and 30 months after the intervention; Tuck et al., 2012).

Other factors

Some studies hypothesised that internal and external factors could impact on the individuals' symptoms progression.

Gender. No differences were found regarding the sex of the participants and the progression of symptoms (Salloum et al., 2001; Salloum, 2008; van Denderen et al., 2018).

However, Rheingold et al. (2015) noted a significant gender interaction concerning the display of CG symptoms over time (pre-post treatment; p = 004). Follow-up pairwise comparisons revealed reduced complicated grief symptoms for females (p = .003), suggesting that they benefitted more from the intervention than males on this outcome.

Age. Only the studies that included children and adolescents controlled for age (Salloum, 2008). There were no statistically significant differences in the mean PTSD scores for younger versus older children (p = .218). However, older children scored slightly lower than younger children at post-intervention. There was an interaction effect of gender and developmental status regarding PTSD scores (p = .032). Older girls reported greater adjustment post-intervention (p = .022; η2 = .053), indicating that they benefitted more.

Relationship proximity and quality. Rheingold et al. (2015). identified that a more positive relationship with the deceased was associated with greater post-treatment symptom severity regarding complicated grief (p = .033; 95% confidence interval [CI]= 0.09, 1.89), PTSD (p =.025, 95% CI=0.21, 2.99) and hyperarousal (p =.018, 95% CI=0.11, 1.12). The quality of the relationship did not predict intrusive thoughts, avoidance nor depression. Nevertheless, no time effects were found (pre- and post-intervention) by type of relationship (child vs. adult child) for depression, CG, PTSD, overall PTSD symptoms. Asukai et al. (2011) also reported that the relationship to the deceased did not impact treatment efficacy (d = 1.72). Mothers who had lost a child reported as much improvement as individuals who lost other relatives.

Time since loss. Studies did not find statistically significant differences between time since loss and response to intervention (Rheingold et al., 2015; Salloum et al., 2001; Salloum, 2008; van Denderen et al., 2018).

Type of death. Rheingold et al. (2015) found no significant time effects (pre- and post-intervention) by type of death for any symptoms measured. However, statistically

significant effects for type of death emerged across time: homicidally bereaved individuals reported higher PTSD symptoms (p = .028), avoidance (p = .024) and hyperarousal (p = .016) compared with those grieving following a loss by suicide or accident.

Witnesses vs. Non-witnesses. Salloum (2008) reported that children who have witnessed the homicide or aftermath displayed greater overall PTSD symptoms. However, there were no statistically significant differences between witnesses and non-witnesses on pre and post-intervention symptoms (p = .056, η^2, .041). However, statistically significant differences were found regarding PTSD scores over time for children who did not witness the homicide (p = .001, d = .68).Only children who have not been exposed to the homicide reported symptoms below the clinical range post-intervention.

Recruitment strategy. No statistically significant differences were found regarding treatment efficacy and recruitment strategy (self-referred vs. individuals approached by researchers; van Denderen et al., 2018).

Discussion

To the best of our knowledge, this review is the first review describing the main psychological interventions following homicidal loss, and reporting the efficacy of theevidence. Most notably, the lack of tailored evidence-based interventions and comparable methodological designs was apparent. Results should be interpreted with caution. Nevertheless, it is hoped this review will become a useful tool for research, practice and policy (Table 2).

Accumulating evidence has demonstrated that individuals who have lost a loved one through homicide are at increased risk of developing serious mental health difficulties (Rheingold & Williams, 2015; van Denderen, et al., 2016; van Denderen, 2015). A recent longitudinal qualitative study (*names removed for masked review*) has reported that individuals present different psychological needs over time (i.e., in the aftermath of the homicide, months, years later). Thus, psychological interventions need to be empirically validated in order to ensure best practice, assist clinicians and researchers, as well as inform the intervention decisions of those bereaved by homicide.

Regarding the model of intervention performed in the included studies, CBT or RR and EMDR were effective. However, it was not possible to identify which elements of the interventions performed were the most effective. Psychoeducational elements about symptoms and coping strategies seem to be advised. Indeed, all the studies have included this modality. This is in line with previous studies, demonstrating that this was a useful strategy, as it gives the individuals the opportunity to understand and see their psychological symptoms normalised (*names removed for masked review*).

Overall, PTSD, complicated grief and depression symptoms statistically significantly decreased from pre to post-intervention and follow-ups among those who engaged with group

(most of the studies included) and individual sessions. This was true for adults, children and adolescents. Effect sizes ranged from small to large.

Only three studies included follow-up measurements, which does not allow for the measurement of the interventions long-term effects. Mixed results were found; two studies reported sustained changes at the 12-month follow-up regarding PTSD symptoms (Asukai, et al., 2001; Rheingold et al., 2015). However, results from the controlled trial suggested that individuals might require longer periods of intervention (van Denderen, et al., 2018). Sustained improvements were reported for depression symptoms at the 12-month follow-up with large effect sizes (Asukai, et al., 2001; Rheingold et al., 2015). Further research should consider exploring the comorbidity between symptoms (depression, anxiety, PTSD, grief responses), as this is a common pattern among this population (Maercker & Znoj, 2010; McDevittMurphy, Neimeyer, Burke, Williams, & Lawson, 2012).

Evidence found that complicated grief symptoms did not improve (sustained improvements were not reported) therefore, individuals might require additional support. Thus, it might be case that other treatment modalities need to be explored in order to elicit long-term change. For example, research on meaning-making suggests that traumatic bereavements (not homicides exclusively) have an impact on the individual's ability to fully process their experience of loss, which is likely to lead to distress and maladjustment (e.g., Jordan & Neimeyer, 2003). Therefore, it might be important to identify the individuals' traumatic narratives (e.g., death imagery) and allow for meaning reconstruction in clinical settings (Rynearson, 2001).

Other important factors can inform interventions. The gender of children and adolescents did not impact on the PTSD symptoms progression (Salloum, et al., 2001; Salloum, 2008), however, women reported a greater reduction of complicated grief symptoms over time than men (Rheingold et al., 2015). Perhaps unsurprisingly, the proximity to the person who died

(Asukai, et al., 2011; Rheingold et al., 2015) indicated poorer adjustment. However, unclear results were found regarding the type of relationship (e.g., parent, partner) with the person who died and symptom progression. Time since loss does not appear to be a factor that impacts on how symptoms (low to severe) change over time (Rheingold et al., 2015; Salloum et al., 2001, 2008, van Denderen, et al., 2018). Previous research has demonstrated that time per se does not alleviate the issues associated with the maladaptive responses to the loss (e.g., Lichtenthal et al., 2004).

Finally, homicidally bereaved individuals (when compared with individuals who faced other traumatic bereavements) demonstrated greater PTSD symptoms (Rheingold et al., 2015). Witnessing the homicide or aftermath also negatively impacted on symptom progression (Salloum, 2008), which might highlight the potential need for prolonged support.

The differences in methodologies and the categorization of therapies in combination with the small sample sizes and limited statistical power mean that important questions remain unanswered and some limitations need to be reflected upon.

Six out of the seven included records performed uncontrolled clinical trials. These trials are unquestionably crucial to explore the relatively new study area of bereavement following homicidal loss. The included studies shed light on the clinical effect of some interventions, identified the suitability of the psychological models for this population, as well as highlighted the most common mental health difficulties reported by the participants. However, controlled clinical trials are recommended by most of the institutions that govern the ethics and the practice of clinical research and should be considered in the future, as they are likely to provide more generalized and accurate findings.

All of the studies used self-report measures rather than structured clinical interviews or other biomedical procedures to estimate psychological difficulties. Previous evidence has already shown that self-report measures can overestimate symptoms (Engelhard et al., 2007). Most of

the included records performed different psychological modalities of intervention, study designs and intervention conditions, which biases comparisons. Females were overrepresented in all samples. Biases could have emerged, as the studies did not consider other help-seeking behaviours (informal support, drug-based treatments), overall mental/physical health, as well as other traumatic experiences pre-homicide.

Strengths and limitations of this review

The number of included studies (seven) and the differences between them is a clear limitation of this study, as only limited generalizations can be made. Furthermore, the literature lacks clarity when defining the population in study (i.e., mixed samples of individuals bereaved by different types of traumatic deaths), which led to the exclusion of several studies. This review also excluded homicides committed in the context of collective homicides (e.g., terrorist attacks, wars). Other research (e.g., Layne, Kaplow, & Youngstrom, 2017; Neimeyer, Burke, Mackay, & van Dyke Stringer, 2010; Rynearson, 2006; Rock, 1998) was not included, as it did not meet the inclusion criteria, yet the work developed by those authors provides relevant findings. Finally, only studies from the USA, Japan and the Netherlands written in English were included. Thus, findings can to a limited extent be generalised. Table 3 presents the key points of the current systematic review.

Future Research

Randomised clinical trials which include clear terminology and study designs should be developed in the future. Longitudinal mixed methods approaches are likely to generate rich and in-depth findings. Studies could consider adjustment indicators to measure coping resources and resilience patterns for instance, as this might offer relevant figures to consider in clinical settings. Finally, generating expert consensus (professionals and people with personal experience) regarding what is most effective to those who have experienced

homicidal loss using a *Delphi technique* could bring some clarity to this relatively new field of knowledge.

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Figure 1.
PRISMA Flow Diagram

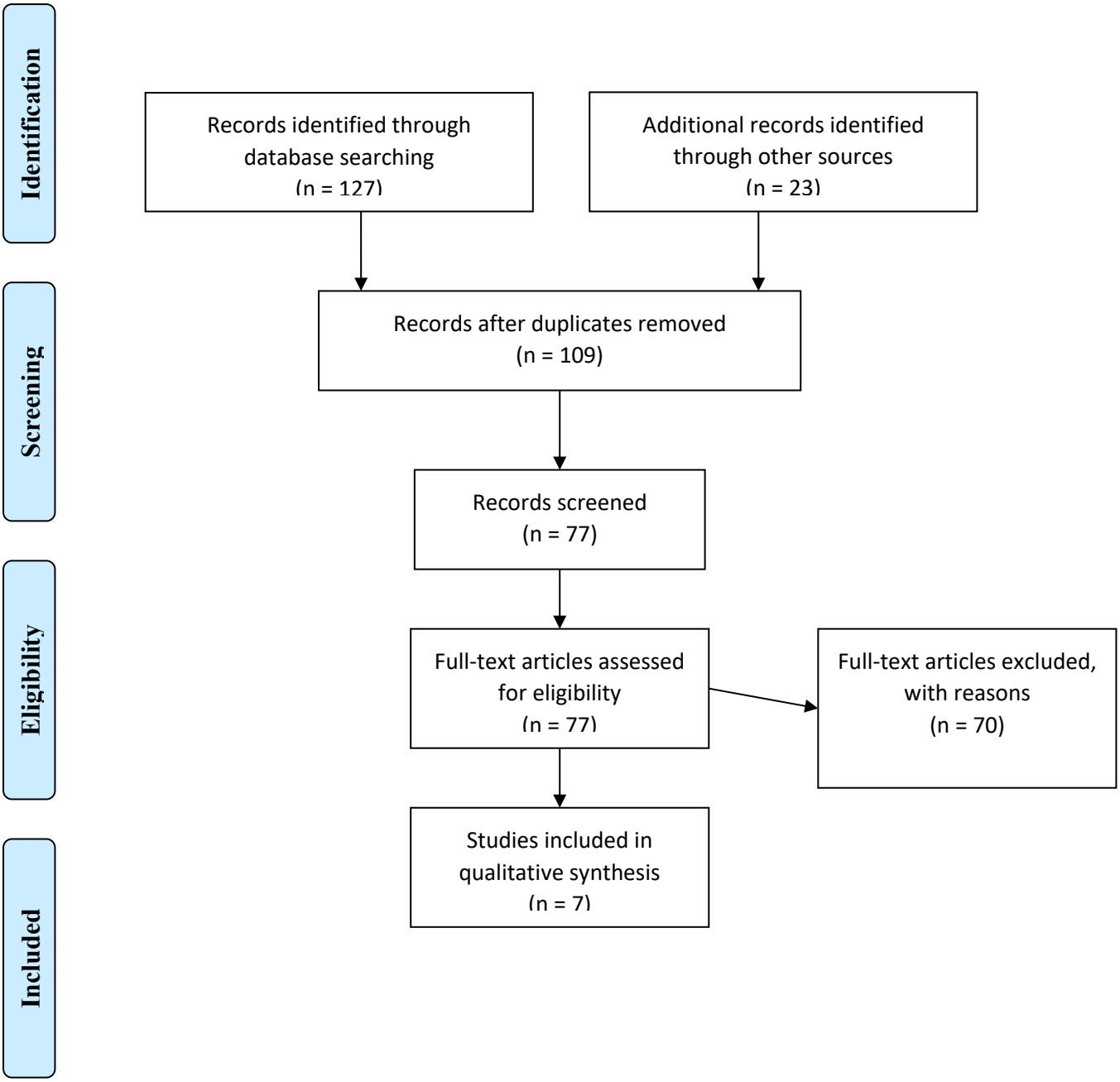

Table 1. Included records.

Records	Intervention models	Outcome measures	Main findings	
			ADULTS	
Asukai, et al., 2001	Uncontrolled trial using a model of grief with modified techniques of prolonged exposure Individual intervention	PTSD CG Depression	**Pre- to post-intervention (N = 13)** Symptoms reduction on the following symptoms: CG ($p < .001$); Intrusions, Avoidance and Hyperarousal ($p < .001$); Depression ($p < .01$) **Intervention outcome at 12-month Follow-up (N = 13)** Sustained improvements: CG ($d = 1.72$); Intrusion ($d = 1.97$); Avoidance ($d = 1.87$); Hyperarousal ($d = 1.62$); Depression ($d = 0.99$) No statistically significant main effect of time: CG	PTSD on the Clinician-Administered; PTSD Scale for DSM-IV; Complicated Grief; Impact of Event Scale-Revised (IES-R); Center for Epidemiologic Studies Depression Scale
Rheingold et al., 2015	Uncontrolled trial using a RR model Group intervention	PTSD CG Depression DI	**Pre- to post-intervention (N = 73)** Symptoms reduction[5] on the following symptoms: PTSD ($p < .001$; $d = .46$); Intrusions ($p < .001$; $d = .44$); Avoidance ($p = .001$; $d = .33$); Hyperarousal ($p < .001$; $d = .42$); DI ($p < .001$; $d = .31$ **Intervention outcome at 12-month Follow-up (N = 11)** Sustained improvements: PTSD ($p < .001$; $d = 1.21$); CG ($p < .001$; $d = 1.21$); Depression ($p = .006$; $d = .97$) No statistically significant main effect of time: CG	Demographics/loss characteristics; Relationship quality; Complicated grief - CGA-SR; Beck Depression; Inventory; Impact of events scale-revised; Death Imagery Scale
Saindon et al., 2014	Uncontrolled trial using a RR model Group intervention	Avoidance Intrusion CG Depression	**Pre- to post-intervention (N = 51)** Symptoms reduction[6] on the following symptoms: Avoidance ($p < .05$; $\eta^2 = .04$); Intrusions ($p < .05$; $\eta^2 = .022$); CG ($p < .05$; $\eta^2 = .35$); Depression ($p < .05$; $\eta^2 = .23$)	Beck Depression Inventory; Impact of Events Scale; Inventory of Traumatic Grief; Demographics and loss characteristics;

[5] There were significant interactions effects of baseline severity symptoms (above vs. below median by time (pre- vs. post-intervention) for depression ($p = .002$); PTSD ($p = .021$) avoidance ($p < .001$); intrusions ($p = .040$), hyperarousal ($p = .003$) and DI ($p < .05$).

[6] There were significant interactions effects of baseline severity symptoms (above vs. below median by time (pre- vs. post-intervention) for depression ($p < .001$; $\eta 2 = .25$); avoidance ($p = .008$; $\eta 2 = .17$) and CG ($p = .032$; $\eta 2 = .12$) and marginally interaction effects for Intrusions ($p = .054$; $\eta 2 = .10$).

Records	Intervention models	Outcome measures	Main findings	
Tuck et al., 2012	Uncontrolled TOZI Healing Retreat	PTDS CG Depression Well-being Religious coping Forgiveness	**Pre-intervention to 30 months[7] (N = 8)** Improvement on main domains: general & spiritual wellbeing, PTSD, grief, forgiveness, hopefulness, religious coping; exception of depression. *General wellbeing*: 56.75 to 67.21; *Spiritual Wellbeing:* 100.63 to 104.71; *Grief responses*: 59 to 64.43; *Motivation to forgive*: 37.13 to 33; *Religious positive coping*: increased over time and only returning to baseline at T5; *Religious* negative coping: decreased over time and remained below baseline score	General Well-Being Scale; Center for Epidemiological Studies Depression Scale3; IES-R; PTSD Checklist–Civilian Version; The Texas Revised Inventory of Grief; Spiritual Well-Being Scale; Herth Hope Index; Trait Forgivingness Scale; Transgression-Related Interpersonal; Motivations Inventor; Single-Item Forgiveness Scale; Religious Coping Scale; Inventory of complicated grief (ICG)
van Denderen, et al., 2018	Randomized controlled trial using EMDR and CBT models	PTSD CG	**Pre- to post-intervention (N = 85)** Symptoms reduction on the following symptoms: CG ($p < .001$); PTSD (($p < .001$) **Intervention outcome at 6-month Follow-up (N =85)** Sustained improvements: PTSD ($p = .13$); CG ($p > .05$)	Impact of event scale (IES)
			CHILDREN AND ADOLESCENTS	
Salloum et al., 2001	Uncontrolled trial Grief and trauma-based model	PTDS	**Pre- to post-intervention (N = 37)** Symptoms reduction on the following symptoms: Clinical PTSD symptoms decreased (20 to eight children; $p = 0.13$) Reexperiencing ($p = .000$); Avoidance ($p = .003$); Arousal ($p = .114$)	Child Posttraumatic Stress Reaction Index
Salloum, 2008	Uncontrolled trial Grief and trauma-based model	PTDS	**Pre- to post-intervention (N = 89)** Symptoms reduction on the following symptoms: PTSD ($p < .001$; $d = .49$); Clinical PTSD symptoms decreased from severe to moderate (from 56 to 37 children) Reexperiencing ($p < .001$; d = .45); Avoidance ($p < .001$; d = .38); Arousal ($p = .009$; .34)	Child Posttraumatic Stress Reaction Index

[7]Mean scores from the pre-intervention and follow-up at 30 months were presented. For more detail see Tuck et al. (2012).

Table 2. Implications for Research, Practice and Policy.

Implications for Research	Implications for Practice and Policy
• Clearer terminology when defining the population in study. • Clinical interviews based on DSM-V (or equivalent instruments) to evaluate symptoms should be considered. • Research among non-treatment seeking individuals might highlight potential differences regarding clinical and demographic factors, promoting greater consilience across stages of treatment and inform about barriers faced by individuals when searching or attending psychological interventions. • Consider including coping and resilience secondary measures to inform treatment efficacy. • Further research on potential mediators of intervention effectiveness: relationship with the victim and offender, all support received since the homicide (i.e., psychological and/or drug-based treatments), other traumatic events pre-homicide, time since loss, overall health pre-homicide. • Randomised mixed methods approaches. •	• Making the academic/clinical knowledge available for the public domain might increase social awareness and empathy. • Providing specialised training for those who work with homicidally bereaved individuals. • Developing awareness among policy-makers about the importance of offering (specific) psychological interventions for those individuals. • Generating expert consensus (professionals and people with personal experience) regarding what is most effective to those who experienced homicidal loss using a *Delphi technique* could bring some clarity to this relatively new field of knowledge.

Table 3. Key points of the systematic review.

- This review suggests that homicidal bereaved individuals benefit from psychological intervention post-homicide.
- The psychological intervention models used were CBT, RR EMRD. Psychoeducational elements were included in all the studies reviewed. This systematic review is under-powered to provide insights about what psychological models are likely to be 'more effective'.
- Included studies differ in sample size, research designs and intervention outcomes, not allowing for general and robust conclusions.
- Mixed samples (i.e., different causes of violent deaths) are not always clearly described across the literature.
- Important variables, such as experiences of support (past or at the time of the interventions), experiences of trauma/violence pre-loss were not considered.

*Supplementary table***.** Quality assessment based on Hawker, et al. checklist (2002).

	Asukai, Tsuruta, & Saito (2011)	**Rheingold, Baddeley, Williams, Brown, Wallace, Correa, & Rynearson (2015)**	**Saindon, Rheingold, Baddeley, Wallace, Brown, & Rynearson (2014)**	**Salloum, Avery, & McClain (2001)**	**Salloum (2008)**	**Tuck, Baliko, Schubert, & Anderson (2012)**	**van Denderen, (2018)**
Criteria							
Abstract and title	4	4	3	3	4	3	4
Introduction/ aims	3	4	4	4	4	3	4
Method and data	4	4	3	4	4	2	4
Sampling	2	3	3	3	4	2	4
Data analysis	2	4	4	4	4	2	4
Ethics and bias	4	3	3	1	3	3	4
Results	2	4	3	4	4	2	4
Transferability or generalizability	2	3	3	3	3	1	3
Implications and usefulness	3	4	3	4	4	2	4
Total Score (%) (Max = 36)	26	33	29	30	34	20	35

Legend: Good = 4; Fair = 3; Poor = 2; Very poor = 1; Lower scores = poor quality.