

## Effects of suicide bereavement on mental health and suicide risk

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### Abstract

Between 60 and 500 million people are thought to experience suicide bereavement each year. Over the past decade increased policy attention has been directed towards suicide bereavement, but with little evidence to describe the effect of exposure or to provide appropriate responses. We used a systematic approach to conduct a narrative review of controlled studies measuring the effect of suicide bereavement on mortality, mental health and social functioning compared to other bereavements. We found 56 studies satisfying strict inclusion criteria. Results from these studies suggested that exposure to suicide of a close contact is associated with several negative health and social outcomes, depending on an individual's relationship to the deceased. These effects included an increased risk of suicide in partners bereaved by suicide, increased risk of requiring admission to psychiatric care for parents bereaved by the suicide of an offspring, increased risk of suicide in mothers bereaved by an adult child's suicide, and increased risk of depression in offspring bereaved by the suicide of a parent. Some evidence was shown for increased rejection and shame in people bereaved by suicide across a range of kinship groups when data were compared with reports of relatives after other violent bereavements. Policy recommendations for support services after suicide bereavement rely heavily on the voluntary sector, with little input from psychiatric services to address described risks. Policy-makers should consider how to strengthen health and social care resources for people who have been bereaved by suicide to prevent avoidable mortality and distress.

### Introduction

Suicide bereavement describes the period of grief, mourning and adjustment after a suicide death that is experienced by family members, friends, and any other contacts of the deceased who are affected by the loss. In the USA, individuals affected are described as suicide survivors or suicide loss survivors. As many as 7% of the population are exposed to bereavement by suicide each year (1). Data from surveys estimate that 60 people are

intimately affected by each suicide death, including nuclear and extended family, friends, colleagues, and classmates (2). Using WHO estimates of 1 million people dying by suicide annually (3), between 60 and 500 million people may be exposed to suicide bereavement each year.

Increased policy attention has been dedicated to suicide bereavement over the last decade, and suicide prevention strategies in a number of high-income countries (4;5) recommend support for people bereaved by suicide. However these policies cite little evidence to describe the nature or magnitude of the effects of suicide bereavement, and are vague about how extensively to offer support within the deceased's family and social circle. The repertoire of evidence-based interventions is also very restricted (6).

Factors that are thought to elevate the risk of suicidality and other adverse outcomes in the suicide-bereaved remain theoretical (see Figure 2). Relatives bereaved by suicide share familial environments and genetic risk for suicidal behaviour, mental illness and aggression (7) (8) (9). Theories of assortative mating (in the case of partners) (9), assortative relating (10) (in the case of friends) and shared environmental exposures (occupational, domestic, and recreational) apply to non-relatives, while factors relevant to both groups include social modelling (11), stigma (12) (13), and caregiver burden, particularly the strain of being 'on suicide watch' (14-16) (17). These factors are additional to the consequences of any loss, which are implicated in the increased risk of all-cause mortality after bereavement *per se*: psychological distress; loneliness; alcohol use; loss of a confidante; as well as changes in social ties, living arrangements, eating habits and economic support (18).

Given the number of people that can potentially be affected by suicide bereavement, it is important to be precise about its associated risks, particularly those relating to suicidality, and the interventions appropriate to mitigate such risks. Only one previous systematic review has been conducted, finding 41 studies, many of which had methodological shortcomings (12). Data from these papers showed no significant differences between people bereaved by suicide and those bereaved by other causes in relation to psychiatric disorders or suicide risk, but did show that specific components of grief, such as stigma, blame, and rejection, were more commonly reported by the suicide-bereaved (12). More recently, analyses of linked population registries have bypassed many of the methodological obstacles of survey study

designs, covering total population samples in Canada (17) and Scandinavia (8;9;19) (20) (16;21-27), while adjusting for pre-bereavement covariates without problems of recall.

To measure the impact of suicide bereavement, investigators need to be precise about exposure. In many studies, researchers use a family history of suicide as a proxy for suicide bereavement (16;21-27). Although results of these studies show that family history of suicide is linked with higher risks of adverse mental health outcomes, including suicidality, they account for genetic risk but not necessarily shared familial environment.

### **Methods:**

We used a systematic literature search of controlled studies, following PRISMA guidelines (28) to conduct a narrative review of evidence to measure the effect of suicide bereavement on mortality, mental health and social functioning. We aimed to examine the emotional experience of losing someone important, irrespective of whether they were related or not. Environmental exposure to suicide bereavement, namely that of a close relationship, was defined by self-report of a relationship to the deceased (in surveys) or a household variable for cohabitation (in routine datasets) (17) (8;9;19) (20). Consistent with the previous systematic review (12), we also aimed to compare this exposure to bereavement from other causes. We aimed to investigate this relation because any differences that arise from comparison with non-bereaved controls do not necessarily show outcomes specific to suicide bereavement but rather the negative sequelae that might be common to all bereavements (18). Comparisons with individuals bereaved by non-suicide traumatic death were regarded as particularly informative because they control for the violent and unexpected nature of the loss, delineating the specific effects of suicide, and potentially the role of suicide contagion. We therefore restricted our search to studies confirming a proximal relationship to the deceased, and those using bereaved rather than non-bereaved controls (see Search Strategy and Selection Criteria).

### **Results**

A total of 56 studies fulfilled our inclusion criteria (see Figure 1). Many of these had methodological shortcomings similar to those noted in the previous review (12); namely small sample sizes; selective and non-representative samples (e.g. from bereavement support groups or psychology classes); low participation rates; recall biases; unadjusted analyses; use

of unvalidated measures, and an admixture of different kinships (see Table). This body of evidence indicates that exposure to suicide bereavement is not a random event. The relatives and non-relatives of people who die by suicide differ from those not exposed to suicide bereavement on a range of socio-demographic and clinical characteristics, even before the bereavement (see **Panel 1**). Differences in physical health, such as tobacco use, physical inactivity, and adverse childhood experiences, are likely to be markers of pre-existing income inequalities, and are all associated with mental disorders. (17). This relation underlines the importance of controlling for the potential confounding effect of pre-bereavement psychopathology, suicidality and social functioning, as well as for family history of suicide, other history of suicide (or other) bereavements, and socio-demographic variables. Because of these issues, our discussion prioritises findings of studies that have appropriate adjustments.

### **Panel 1: Risk factors for suicide bereavement**

#### Relatives

- Mothers bereaved by the suicide of an adult son are more likely than mothers bereaved by the motor vehicle death of an adult son to have experienced separation experiences in their own early childhood (29).
- Parents bereaved by the suicide of a child have an excess of mental disorders, physical disorders, single status, and low income before their offspring's death compared with matched non-bereaved control parents and parents bereaved by accidental death (17).
- Tentative evidence suggests that school-age children bereaved by parental suicide might have a significant excess of behavioural and anxiety disorders (30) and of parental separation or divorce (31) before the death, compared to children bereaved by non-suicide death of a parent.
- Surviving parents of children bereaved by parental suicide had a significantly lower educational level than those of children bereaved by non-suicide parental death (32).
- Offspring of people who died by suicide had significantly elevated rates of any psychiatric disorder prior to the suicide, when compared to non-bereaved controls (7).

#### Non-relatives

- The partners and ex-partners of people who died by suicide had higher rates of depression and any psychiatric disorder prior to the suicide, when compared to non-bereaved controls (7).

### **The role of kinship**

The impact of suicide seems to vary according to kinship (33) and time since the bereavement (34;35). Several earlier studies used samples of heterogeneous relationships, which tended to show no differences in psychosocial outcomes between people bereaved by suicide and those bereaved by other mortality causes (15;33;36) (37). Such heterogeneity may have given rise to type II errors, particularly because kinship is suggested as a better predictor of outcome than is bereavement cause (33). We now summarise the findings from this study, subdivided by kinship. While the impact of suicide bereavement may also depend on the closeness or quality of the relationship (14;38), no identified studies employed validated measures of perceived closeness.

### **Adults bereaved by the suicide of a partner or ex-partner**

#### **Summary for partners bereaved by suicide:**

- Increased risk of suicide in the 2 years after a partner's suicide compared to partner's death from non-suicide causes (8) (9)
- No apparent differences in risk of admission for depression after spousal suicide in relation to spousal non-suicide death (19)
- No differences in spousal depression and other psychopathology compared to spouses bereaved by other violent and non-violent causes (39) (40) (41) (42;43) (44) (31)

### **Mortality**

Studies based on data from Danish registries show that exposure to a spouse or cohabitee's death in the last 2 years, especially if by suicide ( $p=0.01$ ), carries a high risk of suicide even when adjusted for previous psychiatric admission and offspring suicide (adjusted risk ratio (ARR)=21.69; 95% CI=11.10-42.37) (8). Risks were elevated in men ( $p=0.004$ ) and women

( $p=0.008$ ) (9), and were not explained by assortative mating using a proxy measure of psychiatric admission in both partners, suggesting that suicide contagion or grief responses were implicated (8).

### Mental health

Risk of hospitalisation for depression after spousal suicide (ARR=3.41; 95% CI=1.69-6.90;  $p<0.001$ ) does not seem to differ from the risk associated with spousal non-suicide bereavement (ARR=2.46; 95% CI=1.86-3.25;  $p<0.001$ ), as confidence intervals overlap (19). Neither analysis of US (40;41) nor European (42-44) survey data showed differences in levels of depression or psychopathology in widows bereaved by suicide versus widows bereaved by non-suicide violent causes, but findings were not adjusted for pre-bereavement psychopathology. Similarly, comparison of longitudinal data from the USA for spouses or ex-spouses bereaved by suicide to data for those bereaved by non-suicide or non-homicide death found no differences on a range of validated measures of depression and other psychopathology at 1 month, 6 months, 13 months and 25 months after the death (31). Direct comparison with spouses bereaved by accident in a US population showed no differences in grief scores reported 2-4 years after the loss (39).

Older adults bereaved by the suicide of their elderly spouse had higher scores for anxiety, a significantly delayed decline in depressive symptoms and a significantly greater decrease in obsessive thinking scores when compared to those bereaved by natural death, but findings were not adjusted for past psychiatric history (45) (46).

### **Parents bereaved by offspring suicide**

#### **Summary for parents bereaved by offspring suicide**

- No apparent differences in risk of parental suicide after the suicide of offspring of any age in relation to offspring non-suicidal death (9)
- Increased risk of maternal suicide after the suicide of an adult child, in comparison to the non-suicide death of adult offspring (20)
- No apparent differences in risk of parental admission for depression after offspring

suicide in relation to risk after offspring non-suicide death (19)

- Higher risk of hospitalisation for mental illness among parents bereaved by the suicide of offspring of any age than for parents bereaved by motor vehicle crash, but higher risk of depression in parents bereaved by motor vehicle crash (17).

### Mortality

Analysis of data from Danish registries shows that exposure to the suicide death of an adult child significantly increases a parent's risk suicide (adjusted odds ratio (OR) =2.54; 95% CI=1.78-3.64;  $p<0.01$ ) although estimates overlap with the elevated risk demonstrated for parents bereaved by non-suicide death (adjusted OR=1.40; 95% CI=1.08-1.81;  $p<0.01$ ), suggesting no differences. However, direct comparison of suicide-bereaved mothers with mothers bereaved by non-suicide causes shows that risk of suicide is significantly higher for mothers bereaved by suicide ( $\chi^2=7.30$ ;  $p<0.01$ ) (20). Extension of analysis of these registries to offspring of any age showed that parents' recent exposure to the suicide of a child of any age was associated with a slightly higher risk of suicide (ARR=2.31; 95% CI=1.23-4.34) than that for non-suicide death of a child (ARR=1.90; 95% CI=1.51-2.40), however the difference was not statistically significant once it was adjusted for lifetime parental admission for psychiatric care (9). The author of the article, Agerbo, suggested that parental psychopathology may act as both mediator and confounder (9), which may identify mentally-ill parents bereaved by a child's suicide as a high-risk group.

### Mental health

It is hypothesised that the death of an adolescent or young child has worse outcomes than the loss of a child who has reached independence (20). Danish registry data show that the risk of parental hospitalisation for depression associated with the suicide of offspring of any age (ARR=1.95; 95% CI=1.30-2.92;  $p<0.01$ ) does not appear to differ from that for offspring non-suicide death (ARR=1.11; 95% CI=0.91–1.35; NS), as confidence intervals overlap (19). Comparison of Norwegian survey data showed no differences in grief or distress scores between parents bereaved by the suicide of offspring aged up to 29 versus parents bereaved by accidental death of a child up to 18 (47). Data based on Canadian registries, adjusted appropriately, showed no excess risk of suicide attempts, specific mental disorders,

relationship breakdown, or financial hardship in parents bereaved by the suicide of offspring of any age compared to parents bereaved by motor vehicle crash (17). However, although rates of psychiatric hospitalisation were significantly higher in the suicide-bereaved parents ( $p=0.049$ ), rates of depression were significantly higher in the parents bereaved by motor vehicle crash (17). These differences are consistent with other less rigorous studies finding evidence for worse outcomes in parents bereaved by violent non-suicide deaths compared to suicide bereavement. Analysis of a cohort of US parents bereaved by suicide and one of parents bereaved by violent causes showed an excess risk of PTSD in parents bereaved by homicide at various follow-up periods using an unvalidated measure of PTSD based on DSM-III-R PTSD criteria (48) (49) (50), but was not adjusted for past psychiatric history.

### **Offspring bereaved by parental suicide**

#### **Summary for parental suicide**

- Indirect evidence for increased risk of offspring admission for depression after maternal suicide in relation to non-suicide death, but no apparent differences in risk after paternal suicide in relation to paternal non-suicide death (19)
- Risk of more severe depressive symptoms in schoolchildren after a parent's suicide compared to parental cancer death (51)

Children losing a parent to suicide share familial loading for psychiatric disorder and suicidality, and, in addition to their own mourning, may also experience a change in quality of their parenting while the surviving parent grieves, including a fear of further abandonment (32). Danish registry data permit indirect comparison of parental suicide bereavement with parental non-suicide bereavement. When adjusted for family psychiatric history, the suicide of a mother was associated with a significantly higher risk of hospitalisation for depression in offspring of all ages (ARR= 2.04; 95% CI=1.40-2.95;  $p<0.001$ ) when compared to no such exposure. Conversely risk of admission for depression was non-significantly lower in offspring bereaved by maternal non-suicide death (ARR=0.78; 95% CI=0.59–1.03; NS) compared to no such exposure. As these confidence intervals do not overlap, maternal suicide bereavement may confer an excess risk of depression compared to maternal non-suicide bereavement but would require direct testing. Confidence intervals for the elevated risk of offspring admission for depression after paternal suicide (ARR=1.68; 1.19-2.36;  $p<0.01$ )



overlap with those for the non-significant reduction in risk associated with paternal non-suicide death (ARR=0.96; 95% CI=0.74–1.24; NS), so risks might be assumed to be similar (19).

Survey methods in a US state show that schoolchildren bereaved by suicide reported more severe depressive symptoms after a parent's death than do those bereaved by a cancer death, but this was not adjusted for pre-bereavement baselines (51). Other studies with relatively small sample sizes of offspring aged up to 25 have shown no differences, for example in grief, mental health, and child and family functioning among suicide-bereaved children and those bereaved by parental death due to accidents (32) (7;52).

### **Sibling suicide**

#### **Summary for suicide of a sibling**

- No apparent difference in risk of admission for depression after sibling suicide in relation to sibling non-suicide death (19).

Danish data show that, after adjustment for family psychiatric history, the confidence intervals for risk of admission for depression in siblings bereaved by suicide (ARR=2.12; 95% CI=1.28-3.48;  $p<0.01$ ) overlap with those for sibling non-suicide death (ARR=1.09; 95% CI=0.80–1.48; NS), so risks might be inferred to be similar (19). In an international twin study, Segal compared reports from twins bereaved by a co-twin's suicide (aged  $\geq 15$ ) to reports from twins bereaved by a twin's non-suicide death. The group of suicide-bereaved twins reported a significantly increased frequency of suicidal ideation ( $p<0.01$ ) and suicide attempts ( $p<0.01$ ) in the immediate aftermath of the death(53). Findings are tentative, given the unadjusted analysis and the use of unvalidated measures, but within-group comparison noted that monozygotic twins bereaved by suicide had a higher risk of suicide attempt than did dizygotic twins bereaved by suicide (17% versus 0%;  $p<0.01$ ) (53). This finding provides further support to a genetic basis for suicidal behaviour, additive to the risks associated with shared familial environments.

### **Policy implications**

This review notes several adverse outcomes associated with suicide bereavement; notably depression, and fatal and non-fatal suicide attempt. Risk seems to differ by kinship group, with partners and mothers of people who die by suicide being the only group with clear evidence for increased suicide risk (8) (9). These findings are striking because policies for suicide prevention tend to regard people bereaved by suicide as one unitary group (4;5). Psychiatric illness seems to explain any increased risk of suicide among parents (9); findings that help to identify sub-groups of individuals in need of targeted support after suicide. The real concern is that although systems are in place to manage the suicide risk of suicide-bereaved people in treatment for mental health problems, it is unclear how non-clinical populations of affected peers and relatives might best be screened or offered support, particularly in situations where they do not share the deceased's family doctor. Furthermore, the scarce evidence for effective interventions does not provide an evidence-base for choosing whether a focus on primary or secondary prevention is more appropriate.

This review also shows numerous similarities between outcomes in people bereaved by suicide and those bereaved by sudden violent death, with many studies showing no differences on several validated measures of grief intensity, stress reactions, and psychopathology (7) (33;43) (34) (35) (36) (37)(39) (40) (41) (42;44) (47) (49) (54) (55) (56) (57) (58) (59) (60) . Results of one registry-based study showed significantly higher rates of depression in parents bereaved by motor vehicle crash than in those bereaved by suicide, with the authors suggesting that the suicide deaths may have been more anticipated than the accidental deaths (17). Caregivers of suicidal people describe many years of being on "suicide-watch", with 79% of the suicide decedents in one US sample having given clear signs of intent to family members by means of expressing suicidal thoughts or plans, or by previous attempts (14;15). Almost half of suicide-bereaved parents in a Swedish sample had worried about their child's suicide risk during the year before their death (16), and qualitative research has documented the relief from this anxiety that some carers experience following a suicide (14;15).

Although it is well-established that the majority of people who die by suicide have a diagnosable mental disorder (61) similar proportions of psychiatric disorders seem to occur in adults dying by accidental death (7). Similarities extend to suicide and accident prevention strategies in which there are cost-effectiveness advantages in tackling common risk factors

(62). Given the many parallels between suicide bereavement and that by accidental death, and the possibility of complicated grief arising from any bereavement (63), cause of bereavement may not be as good a determinant of the need for intervention as much as are difficulties coping *per se* (32). Even so, the very specific circumstances of the suicide of a loved one suggest that tailored responses will be most acceptable to bereaved people, particularly interventions to address associated stigma. Although, at present, support services following suicide bereavement are concentrated in the voluntary sector, adverse outcomes are often within the remit of psychiatric services. Policy-makers will need to strengthen the responses of health and social care services to this group if they are to mitigate the clear risks of suicide and depression. Such efforts have the potential to minimise distress, improve productivity, and contain costs of health care treatment.

### **Remaining gaps in knowledge**

#### **Cross-cultural comparisons**

Only two of the studies satisfying inclusion criteria were conducted outside the US or Europe, and results of these studies showed few differences between Japanese family members bereaved by suicide and by other violent deaths (57;58). Given culture-specific responses to suicide, findings from specific settings are unlikely to be generalizable elsewhere. Studies that used non-bereaved controls (see Appendix \*\*\*) suggest tentatively that in communities in India (64), Hong Kong (65;66), Australia (11), China (67) and in Inuit communities (68) traumatic bereavement (including suicide bereavement) is associated with a higher risk of depression, poor social functioning, and suicide attempt. However region-specific studies that use appropriate controls are needed.

#### **Stigma**

Many studies of risks for self-reported stigma are flawed by methodological problems, particularly in investigators using unvalidated measures, convenience samples, and mixtures of kinships, and not testing a main hypothesis. Studies using validated measures show that experiences of stigma, shame and lying about the cause of death are not unique to suicide, with such reactions found to some degree in all bereavement groups, particularly those due to violent deaths (39) (69) (59) (70). It appears that people who are bereaved by suicide report

higher scores on dimensions such as stigma, responsibility, shame, and rejection (69) (34) (59), (70). Specific comparison with violent causes of death indicate that people bereaved by suicide report significantly higher scores on rejection (39) and shame (59) (34), although these analyses were not fully adjusted.

Evidence for a differential loss of support seems contradictory (39) (59), as does that for social functioning (30) (33) (71;72), and there is a clear need for further studies that use validated measures of perceived social support and social functioning. Objective measures of how much help is offered to bereaved individuals, and of their degree of self-isolation, will also help determine whether feelings of shame in individuals bereaved by suicide lower their awareness of the help available, and where the avenues for intervention might lie. The scope of this review did not allow inclusion of qualitative articles, from which great insights are to be gained. We also did not include studies of the views of others towards people bereaved by suicide, which could help to determine whether certain kinships are perceived to need more support than others.

### **Suicide contagion**

Despite great interest in measuring the role of imitative suicidal behaviour among young people (11), we excluded many studies of adolescent populations due to their use of non-bereaved controls (see online supplement). Results from surveys in one US state indicate that the peers of adolescents who died by suicide had an increased risk of mental health problems but not suicide attempts (38) (73) (74) (75) (76). Analysis of a larger, nationally representative US sample showed an increased risk of suicidal thoughts and attempts in adolescents after the suicide of a peer (77) (78), although similar studies using adult samples (1) highlight the possibility of residual confounding due to gender, age and relationship status. Although such studies contribute to our understanding of adolescent suicidality, future studies that use control groups composed of individuals bereaved by violent death will help distinguish between the environmental risks associated with traumatic bereavement and risks associated with suicide contagion.

### **Future work**

Future quantitative studies will be of greatest value if they assess the risks associated with bereavement due to suicide stratified by kinship, distinguishing clearly between a family history of suicide and direct experience of a bereavement reaction, and between exposure to fatal and non-fatal suicide attempt. This last distinction is important because of the interest in assessment of the differential effects of exposure to a range of suicidal behaviours and to irresponsible suicide-reporting in the media (11). Although analyses based on national registries may represent the most rigorous studies available (17;19) (8;9;20), overcoming their drawbacks in lacking adequate measures of relationship quality or social functioning will be important.

Research instruments that capture the concept of grief might require further development since they show contradictory findings when used in the same controlled comparisons (39) (70). Revised instruments will need to account for shifts in disease classifications in relation to grief. In DSM-5 the 6-month 'bereavement exclusion' was removed, allowing depression to be diagnosed 2 weeks after a bereavement; prompting accusations of the medicalization of grief (79). Greater consistency in the measurement of grief will help investigators both to compare outcomes between groups, and to compare the results of different studies.

This work might help to develop interventions to reduce risk of adverse outcomes, and increase understanding of the factors that explain or modify the above risks. Evidence suggests that these include gender (50); baseline depression (80); past psychiatric history (7) (17); family psychiatric history (9); perceived social support (50); and imitative behaviour (8). Age at bereavement seems to modify risk in children (22) but not adults (19). Risk might also vary by closeness to the deceased but no studies used validated measures of closeness; identifying another research instrument required for future work. Finally longitudinal work should identify the time points during which risks are greatest and when support is most acceptable, guiding the targeting of interventions.

## **Conclusions**

In this review we have outlined several negative outcomes specific to suicide bereavement, including an increased risk of suicide in partners bereaved by suicide; of admission to psychiatric care in parents bereaved by offspring suicide; of suicide in mothers bereaved by an adult child's suicide; and of depression in offspring bereaved by parental suicide. The

range of kinships affected suggests that all members of the immediate family might need screening and appropriate support. Gaps in knowledge about the effect of peer suicide should be addressed, and investigators should delineate how extensively to offer support within the deceased's social circle. This review has also indicated the many similarities between outcomes in people bereaved by suicide and those bereaved by sudden violent death in relation to grief intensity, stress reactions, and psychopathology. Some investigators suggest that higher rates of depression in parents bereaved by vehicular deaths are explained by suicide bereavement being more anticipated than death caused by an accident. The improvements we suggest in approaches to measuring the impact of suicide bereavement will refine knowledge of the sub-groups in greatest need, and for the time points during which people are at greatest risk. An important next stage is to identify approaches to screening this population, and to trial interventions to address their increased risk of early mortality and psychological distress.

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**Conflict of interest statement:**

All authors declare that they have no conflicts of interest.

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## Figures, boxes & appendices

### Search strategy and selection criteria

We searched MEDLINE for papers published from 1 January 1946 to 22 October 2013, using the following exploded Medical Subject Headings (MeSH) terms to define exposure: ‘suicide’, ‘bereavement’, ‘genetic predisposition to disease’ and ‘family characteristics’; and the equivalent key words ‘familial’, ‘genetic predisposition’, and ‘family history’ (for inclusion of very recently published papers). We defined the group of interest with the exploded MeSH terms ‘grief’, ‘friends’, and ‘family’, the unexploded term ‘survivors’, and an equivalent key word search. We restricted the search to articles published in English. We tested the search strategy by ensuring that it retrieved a set of key papers (see Appendix \*). We repeated the search with minor variations specific to the search terms used for that database on PsycINFO (1806 to 22 October 2013), EMBASE (1980 to 22 October 2013), and CINAHL Plus (1937 to 22 October 2013). We also conducted secondary searching of references cited in identified articles and reports known to the reviewers, with additional references suggested by experts in the field. Inclusion criteria were: exposure to suicide bereavement (as defined by participants) or to the suicide of a household member (confirmed by use of a household variable in routine datasets); controlled studies using a bereaved comparison group; and the existence of primary data. The paper selection flow chart, including exclusion criteria, is shown in Figure 1. We extracted data from full-text articles with use of a proforma (see online supplement) based on STROBE criteria (81). We assessed risk of bias in individual studies independently, both at the study and outcome level, including any apparent selective reporting of outcomes within studies. Disagreements were resolved by consensus between authors. We used this assessment of bias in the interpretation of each study’s findings. Because of the heterogeneity of study populations, kinship relationships, and outcome measures in the 56 papers identified, we used a narrative approach to synthesise findings.

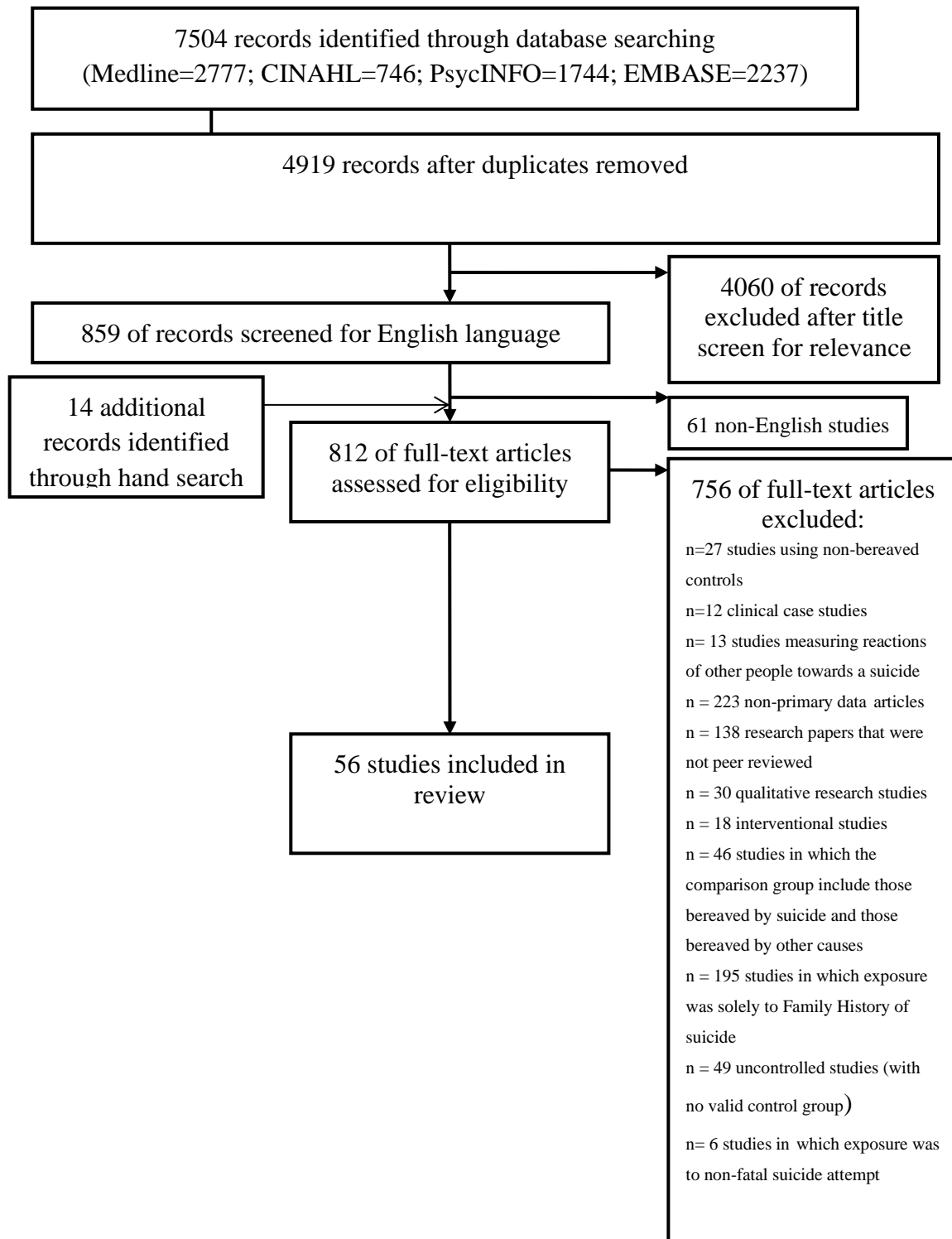


Figure 1: Paper selection flow chart



### **Key messages**

- Suicide bereavement may be considered as part of the spectrum of inequalities in health. The following have been shown to be risk factors for exposure to suicide: low income; mental and physical health problems, alcohol abuse, lower educational attainment, and family disruption.
- Compared to non-suicide deaths, suicide bereavement is associated with an increased risk of:
  - suicide in suicide-bereaved partners
  - psychiatric admission in parents bereaved by offspring suicide
  - suicide in mothers bereaved by an adult child's suicide
  - depression in offspring bereaved by parental suicide
- There is some evidence for greater rejection and shame reported by people bereaved by suicide, compared to other violent deaths, across a range of kinship groups.
- Sequelae of suicide bereavement share some similarities with those of bereavement due to accidental death, suggesting that both bereaved groups might benefit from increased support.
- Given the extent and magnitude of the risks associated with suicide bereavement, current reliance on the voluntary sector may be inappropriate.

**Figure 2:**

**Genetic and environmental contributions to suicide risk in relation to suicide bereavement**

<b>Relatives</b>	Genetic risk (direct inheritance)	Shared familial environment	Other environmental risk (including contagion)	Effects of any bereavement (eg grief, loneliness; alcohol use; loss of a confidante; economic changes)	Specific effects of suicide bereavement
<b>Non-relatives</b>	Assortative mating  Assortative relating	Shared domestic, occupational or recreational environment			

## Appendix 1: Search strategy

### Test for search strategy

The search strategy was tested by ensuring it had retrieved a set of known key papers spanning 35 years. These were as follows:

1. De Groot et al 2013 Course of bereavement over 8-10 years in first degree relatives
2. Dyregrov K. Nordanger D. Dyregrov A. 2003 Predictors of psychosocial distress after suicide, SIDS and accidents
3. Brent et al 1996 The impact of adolescent suicide on siblings and parents: a longitudinal follow-up
4. Cvinar 2005 Do suicide survivors suffer social stigma: a review of the literature *Perspectives in Psychiatric Care* 41(1): 14-21
5. Jordan 2001 Is suicide bereavement different? A reassessment of the literature *Suicide Life Threat Behav.* 31(1):91-102
6. Bailey et al 1999 Survivors of suicide do grieve differently: empirical support for a common sense proposition
7. Harwood, D., Hawton, K., Hope, T., & Jacoby, R. 2002. The grief experiences and needs of bereaved relatives and friends of older people dying through suicide: a descriptive and case-control study. *Journal of Affective Disorders*, 72, (2) 185-194
8. McNiel DE. Hatcher C. Reubin R 1988 Family survivors of suicide and accidental death: consequences for widows
9. Melhem et al 2008 Antecedents and sequelae of sudden parental death in offspring and surviving caregivers
10. McIntosh (1993) Control group studies of suicide survivors: a review and critique. *Suicide Life Threat Behav.* 23(2):146-61
11. Seguin M et al (1995) Parental bereavement after suicide and accident: a comparative study *Suicide Life Threat Behav.* 25(4):489-92
12. Agerbo (2005) Midlife suicide risk, partner's psychiatric illness, spouse and child bereavement by suicide or other modes of death: a gender specific study.

13. Qin P, Agerbo E and Mortenson PB (2002) Suicide risk in relation to family history of completed suicide and psychiatric disorders: a nested case-control study based on longitudinal registers. *Lancet* 360: 1126–1130.
14. Qin P, Agerbo E and Mortenson PB (2003) Suicide risk in relation to socioeconomic, demographic, psychiatric, and familial factors *Am J Psychiatry*
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**b) Search strategy used in Medline (similar to those used in PsycINFO, EMBASE, and CIHAHL)**

1. exp Suicide/
2. suicid\*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept, rare disease supplementary concept, unique identifier]
3. 1 or 2
4. exp Bereavement/
5. bereav\*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept, rare disease supplementary concept, unique identifier]
6. grief.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept, rare disease supplementary concept, unique identifier]
7. griev\*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept, rare disease supplementary concept, unique identifier]
8. 4 or 5 or 6 or 7
9. exp Family/
10. family.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept, rare disease supplementary concept, unique identifier]
11. exp Friends/

12. friend.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept, rare disease supplementary concept, unique identifier]
13. relativ\*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept, rare disease supplementary concept, unique identifier]
14. Survivors/
15. survivor\*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept, rare disease supplementary concept, unique identifier]
16. 9 or 10 or 11 or 12 or 13 or 14 or 15 (**exposed group**)
17. 3 and 8 (**exposure to suicide bereavement**)
18. exp Genetic Predisposition to Disease/
19. exp Family Characteristics/
20. Familial.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept, rare disease supplementary concept, unique identifier]
21. Family history.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept, rare disease supplementary concept, unique identifier]
22. genetic predisposition.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept, rare disease supplementary concept, unique identifier]
23. 18 or 19 or 20 or 21 or 22
24. 3 and 23 (**exposure to family history of suicide**)
25. 17 or 24 (**both exposures**)
26. 16 and 25 (**both exposures AND group of interest**)

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