Pathways to suicide among people with a diagnosed mental illness, Victoria, Australia

Authors:

Angela Clapperton⁽¹⁾, Stuart Newstead⁽¹⁾, Charlotte Frew⁽¹⁾, Lyndal Bugeja⁽²⁾, Jane Pirkis⁽³⁾.

(1) Monash University Accident Research Centre, Monash University, Melbourne Australia

(2) Department of Forensic Medicine, Monash University, Melbourne Australia

(3) Melbourne School of Population and Global Health, The University of Melbourne, Melbourne Australia

Corresponding author:

Angela Clapperton
Monash University Accident Research Centre
21 Alliance Lane,
Monash University 3800
Victoria, Australia
Phone: +61399051806
Email: angela.clapperton@monash.edu

Biographies:

Angela Clapperton

Angela Clapperton is a research fellow and PhD Scholar at the Monash University Accident Research Centre, Monash University. Angela has extensive experience using large injury-related data collections to investigate the burden of intentional and unintentional injury.

Stuart Newstead

Associate Professor Stuart Newstead works at the Monash University Accident Research Centre (MUARC). He is an Associate Director of MUARC where he leads the Centre's Injury Analysis and Data Team. He holds a PhD in Applied Statistics and is accredited by the Statistics Society of Australia.

Charlotte Frew

Dr Charlotte Frew is a research assistant at Monash University Accident Research Centre, Monash University. She has qualifications in law and a research doctorate in legal history.

Lyndal Bugeja

Associate Professor Lyndal Bugeja has a joint appointment at Monash Nursing and Midwifery and the Department of Forensic Medicine, Monash University. She has qualifications in criminology and a research doctorate in public health.

Jane Pirkis

Professor Jane Pirkis (PhD) is the Director of the Centre for Mental Health in the Melbourne School of Population and Global Health. She has undertaken a number of policy-relevant studies of suicide and suicide prevention, including profiling the epidemiology of suicide among the general population and at-risk groups.

Acknowledgements:

The authors wish to thank the Coroners Court of Victoria, Australia for establishing, and allowing the authors to access, the Victorian Suicide Register data and to the staff of the Coroners Prevention Unit for their invaluable contributions in collecting the data that underpins this research.

ABSTRACT

Background

People who have mental illness are at increased risk of suicide. Therefore, identifying 'typical' trajectories to suicide in this population has the potential to improve the effectiveness of suicide prevention strategies.

Aim

The aim of this study was to explore the pathways to suicide among a sample of Victorians with a diagnosed mental illness.

Method

Victorian Suicide Register (VSR) data was used to generate life charts and identify typical life trajectories to suicide among 50 Victorians.

Results

Two distinct pathways to suicide were identified: (1) where diagnosis of mental illness appeared to follow life events/stressors; and (2) where diagnosis appeared to precede exposure to life events/stressors. Some events acted as distal factors related to suicide, other events were more common as proximal factors and yet others appeared to act as both distal and proximal factors.

Limitations

The data source might be biased due to the potential for incomplete information, or alternatively, the importance of some factors in a person's life may have been overstated.

Conclusions

Strategies to reduce suicide need to consider the chronology of exposure to stressors in people's lives and clearly need to be different depending on whether proximal or distal risk factors are the target of a given strategy or intervention.

Introduction

Suicidal behaviour results from complex interactions between a range of risk factors and stressors spanning multiple domains of a person's life. Pathways to suicide can be examined by analysing the chronology of these factors and stressors in the lives of people who have died by suicide. An influential early study from the US examined these pathways by comparing life histories in three groups; a group who died by suicide; a group who had made a non-fatal suicide attempt; and a group who died of natural causes (Maris, 1981). The author concluded that developing life histories of people who have died by suicide is central to understanding suicide.

Although there is some conjecture regarding the contribution that mental illness makes to suicide risk (Hjelmeland & Knizek, 2017; Pompili, 2018), studies, at least in Western developed countries, have consistently shown that a high proportion of people who die by suicide have a diagnosed, or diagnosable mental illness at the time of death (Bertolote & Fleischmann, 2002; Isometsä, 2001). The most commonly recorded mental illness diagnoses in these populations are typically affective disorders, substance use disorders, and schizophrenia (Arsenault-Lapierre, Kim, & Turecki, 2004). A recent meta-review found borderline personality disorder, anorexia nervosa, depression and bipolar disorder had the highest calculated risks of suicide (Chesney, Goodwin, & Fazel, 2014) and an Australian study that examined suicide risk following recent exposure to 14 different stressors (of which mental illness was included) found mental illness to be the only stressor that significantly increased suicide risk for both males and females across all examined age groups (Clapperton, Newstead, Bugeja, & Pirkis, in press).

In addition to mental illness, there are other factors and stressors that have consistently been found to be associated with suicide. Some of these are distal factors which imply underlying vulnerability, while others are proximal factors and are seen as potential precipitants

and triggers for suicide. Some examples of other widely accepted risk factors are previous suicide attempts (Beautrais, 2002; Haw, Bergen, Casey, & Hawton, 2007), physical illness (Harris & Barraclough, 1997), social isolation (Beautrais, 2002; Wyder, Ward, & De Leo, 2009), family history of suicide (Agerbo, Nordentoft, & Mortensen, 2002), relationship separation (Ide, Wyder, Kolves, & De Leo, 2010; Stack & Scourfield, 2015) and substance use (Poorolajal, Haghtalab, Farhadi, & Darvishi, 2016). The likelihood of suicide or suicidal behaviour has also been shown to increase with an increasing number of risk factors (Mościcki, 1997). Despite this, there is a lack of research detailing the chronology of other potential risk factors and stressors that people with mental illness experience prior to suicide and how these interact with, precipitate or follow a diagnosis of mental illness.

The life charts method allows identification of life trajectories to suicide, taking into account the chronology, and combinations of factors that may contribute to suicide. Prior studies have used this method to examine pathways to suicide among Australian male farmers (Kunde, Kolves, Kelly, Reddy, & De Leo, 2017), lesbian and gay Australians (Skerrett, Kolves, & De Leo, 2016) and English adolescents (Fortune, Stewart, Yadav, & Hawton, 2007).

The objective of this study was to explore the pathways to suicide among Victorians with a diagnosed mental illness by using the generation and analysis of life charts. Given previous studies have successfully used this method to identify specific pathways to suicide among specific populations it was hypothesised that we would be able to identify ‘typical’ trajectories to suicide among people with mental illness.

Methods

Data source and variables

The Victorian Suicide Register (VSR) was established by the Coroners Prevention Unit (CPU) which is a specialist investigative service of the Coroners Court of Victoria (CCOV). It

is a state-based surveillance system that contains detailed information on all suspected suicides that have occurred since 2009 in Victoria, Australia. The VSR coders typically have access to the entire coronial file, containing the coronial brief, forensic medical and scientific reports (i.e., autopsy and toxicology reports), and the coroners' finding(s) when coding data into the VSR. The VSR is supported by a coding manual, data dictionary and quality framework (Sutherland et al., 2018).

Almost all available VSR variables were utilised for this study with the exception of the method specific details of the suicide and toxicology information. All coded and text based information regarding socio-demographic characteristics of the deceased, and any information pertaining to the deceased's experiences of physical injury or illness, mental illness, and personal, interpersonal and situational or contextual stressors were included. In addition, all information about service contacts was included, as were indicators of intent (including previous suicide attempt/s or instance/s of self-harm).

Case inclusion criteria

A death was included if it occurred in Victoria between 1 January and 31 December 2013, the Coroner determined that the intent of the deceased was suicide, and the deceased had a diagnosed mental illness at any time over the 12 months prior to the date of death. From this initial group of 252 cases, a random sample of 20% of cases was selected for detailed analysis.

Data analysis

The life chart template for this study was informed by previous research conducted in England (Fortune et al., 2007) and Australia (Kunde et al., 2017; Skerrett et al., 2016). The first author read all VSR records for the sample to identify themes occurring and a life chart template was formulated which included the following categories: history of mental illness and mental health service use, attachment, intimate relationships, social circumstances, employment,

education, physical health, substance use, financial events, forensic or legal events, previous self-harm (included prior suicide attempts and non-suicidal self-harm), exposure to suicide, and a residual category for other relevant information such as information about the personality of the deceased. Any event mentioned in an individual's VSR record that was relevant to any of the life chart categories was then plotted onto the individual's life chart. For this study, any substance use mentioned in the VSR was plotted on the life chart under the category "substance use". If evidence of a diagnosis of psychoactive substance use disorder was also present it was recorded in the "history of mental illness and mental health service use" life chart category. Throughout the text, the phrase "substance use" is used when referring to cases where substance use has been flagged as a stressor in the absence of a diagnosed disorder due to psychoactive substance use.

Following the creation of the life charts for each case by the first author, two authors independently reviewed the life charts and generated potential trajectories to suicide through categorisation of the cases in a meaningful way, placing emphasis on the chronology of stressors and major events in the individual's lives. These same authors then met to discuss and finalise the groups. The two authors then independently classified each of the cases into the defined groups with an initial concordance of 92%. Discrepancies were resolved through discussion. Typical life charts for each group were created as a visual illustration of the representative features of the lives of the individuals in each group. Typical rather than actual charts were created for ethical reasons and the charts do not contain any identifiable information).

Results

The study sample comprised 50 cases. The mean age was 47.7 years (range 20-77 years) and males accounted for 66.0% of cases (n=33). The 50 cases were representative of the 252

cases of suicide from which they were selected (i.e., all suicides occurring in 2013 among persons with a diagnosed mental illness - mean age of 45.7 years and 63.6% male).

Cases were found to group, in the first instance, into those whose diagnosis of mental illness appeared to follow life events or stressors (n=20) and those whose diagnosis appeared to precede exposure to stressors and life events (n=30). A number of quite distinct life trajectories were then identified within these original two groups (three in the first group and four in the second). Typical life charts created for each group are presented in Figures 1-7.

Diagnosis of mental illness following life events or stressors

Group 1: (n=12, mean age 38.6 years, 58% female). This was the largest of all groups and consisted of people who were diagnosed with mental illness following experience of violence, abuse and/or bullying as shown in Figure 1. Almost all (n=11) of these cases had diagnosed depression, sometimes with co-morbid anxiety and/or post-traumatic stress disorder. Five of these individuals had been sexually abused as children (most commonly at approximately 11-12 years of age), three had been bullied in their teenage years and four were exposed to other violence or abuse (e.g., emotional or physical abuse, intimate partner violence). Among cases where time frames were specified (n=8), the experience of violence/abuse/bullying occurred between 7 and 37 years prior to suicide (average 19 years). The life course of most of these individuals was characterised by multiple inpatient admissions (n=9) and 58% had made at least one suicide attempt in the year prior to their death (n=7). All experienced at least one significant stressor in the weeks prior to suicide, most commonly work-related issues (n=6) and/or relationship separation (n=5).

Group 2: (n=4, mean age 47.5 years, 75% male). As shown in Figure 2, these individuals all had a significant experience of loss such as the death or absence of a parent or the death of a child. A diagnosis of mental illness (most commonly depression, n=3) was made

in the years following the experience of this loss. All of these individuals then experienced another loss as one of the final recorded stressors prior to suicide, either a relationship separation or the death of a family member or close friend. Prior suicide attempts were a feature in the life course of most individuals in this group.

Group 3: (n=4, mean age 62.5 years, 75% male). These individuals were all diagnosed with depression after a significant physical injury or illness (Figure 3). Chronic pain as a result of injury or illness was mentioned for three of these individuals. All experienced further stressors prior to suicide. Stressors related to substance use (often prescription medications) and financial issues (as a result of being unable to work) were present in the years preceding suicide for some of these individuals. For three individuals with this life trajectory, the most proximal event to suicide was the loss of a partner (either through death or separation).

Diagnosis of mental illness preceding life events or stressors

Group 4: (n=7, mean age 63.9 years, 71% male). This group consisted of people with (usually) long-standing depression that was typically fairly stable until the person experienced a significant issue that affected their physical health, either illness or injury (Figure 4). Following this physical health issue, there were often other stressors, and exacerbation of the mental illness and related symptoms prior to the suicide. In all cases in this life trajectory, the individuals had been diagnosed with depression and some also had a co-morbid diagnosis of anxiety.

Group 5: (n=8, mean age 52.8 years, 88% male). The typical life chart for this group closely resembled that for the previous group. In this case, people with (usually) long-standing mental illness seemed fairly stable with regards to their mental health until a significant stressor (other than a physical injury or illness) seemed to precipitate the exacerbation of their mental illness and related symptoms prior to the suicide (Figure 5). The most common stressors that

seemed to precipitate worsening mental health were relationship separation (63%) and work-related issues (50%). Seven of the eight cases had been diagnosed with depression (88%), sometimes with co-morbid anxiety.

Group 6: (n=7, mean age=48.9 years, 57% male). This group consisted of people diagnosed with long-term schizotypal, schizophrenia and delusional disorders, often with psychosis, who appeared to be experiencing active psychosis at the time of their death (Figure 6). In most cases, the period prior to suicide was characterised by exposure to multiple stressors such as relationship separation, isolation, homelessness, and police issues. Previous suicide attempts and recent episodes of non-concordance with treatment were present in five out of the seven cases.

Group 7: (n=8, mean age 34.0 years, 75% male). This group consisted of people who all had long-term substance use throughout the course of their life (Figure 7). Half had a diagnosis of psychoactive substance use disorder often with depression and or personality disorders. The remaining cases all had a diagnosis of depression and suspected psychoactive substance use disorder. This group was distinct from the previous group as no cases had a diagnosed schizotypal, schizophrenia and delusional disorder. The other defining feature of this life trajectory was that all individuals experienced forensic and/or legal stressors post diagnosis of mental illness. This ranged from people with extensive criminal histories and periods of incarceration to violence against police officers or family members in the context of an actual or threatened suicide attempt. Upcoming legal proceedings were mentioned in 50% of cases. Alcohol (n=7), cannabis (n=4) and methamphetamines (n=3) were the most commonly recorded substances used by individuals with this life trajectory.

Figure 1 Typical life chart of Group 1

Figure 2 Typical life chart of Group 2

Figure 3 Typical life chart of Group 3

Figure 4 Typical life chart of Group 4

Figure 5 Typical life chart of Group 5

Figure 6 Typical life chart of Group 6

Figure 7 Typical life chart of Group 7

Discussion

This study examined the pathways to suicide in a sample of Victorians who had a diagnosed mental illness prior to their suicide. Analysis of life charts revealed two distinct pathways with regards to the chronology of factors and stressors reported for the deceased - one was characterised by life trajectories where diagnoses of mental illness appeared to follow life events or stressors and the other by trajectories where diagnoses of mental illness appeared to precede exposure to events or stressors.

The presence of experiences of child abuse among people who died by suicide in this study (Group 1) was not unexpected given childhood trauma has been found to be associated with mental illness (Afifi, Boman, Fleisher, & Sareen, 2009; Draper et al., 2008) and with suicide and/or suicide attempts (Afifi et al., 2009; Devries et al., 2011; Ng, Yong, Ho, Lim, & Yeo, 2018). Similarly, exposure to other types of violence, such as intimate partner violence, non-partner physical violence and family violence have been found to be independent risk factors for suicidal thoughts and attempts (Devries et al., 2011; Ellsberg, Jansen, Heise, Watts, & Garcia-Moreno, 2008) and for mental illness (Campbell, 2002; Golding, 1999). Additionally, an association has been found between suicidal behaviours and an experience of bullying (Luukkonen, Rasanen, Hakko, & Riala, 2009; McMahon, Reulbach, Keeley, Perry, & Arensman, 2010) and between an experience of bullying and mental illness (Luukkonen et al., 2009; McMahon et al., 2010). In addition to prevention of childhood abuse, treatment strategies that promote resilience following childhood trauma are clearly essential (Ng et al., 2018). In addition, it is important for health professionals treating clients with diagnosed mental illness to be aware of the potential link between childhood sexual abuse, or exposure to other forms of violence or bullying, and subsequent suicide.

An experience of loss (as was apparent in Group 2), such as the loss of a parental figure or the death of a child or sibling, has been linked with an increase in risk for attempted suicide

and/or suicide (Qin & Mortensen, 2003; Rostila, Saarela, & Kawachi, 2013) and for mental illness (Kreicbergs, Valdimarsdóttir, Onelöv, Henter, & Steineck, 2004). In addition to early losses being present in this group, the factors most proximal to suicide were all related to another loss such as relationship separation or a death of a loved one. This finding could point to a link between repeated loss experiences over the course of a person's life and potential for suicide – at least in this population of people with diagnosed mental illness.

Physical illness or injury was a significant stressor in two groups (Groups 3 and 4) and people in these groups tended to be older than those in all other groups. The link between physical illness, mental illness and suicide is not new. A review by Whitlock (1986) demonstrated that more than one-third of people who die by suicide had a medical illness at the time of their death and more recent research has found physical illness was mentioned as the main reason for suicide in almost 20% of cases (Fegg, Kraus, Graw, & Bausewein, 2016). Certain conditions have been shown to increase the risk of suicidal behaviour including HIV/AIDS (Harris & Barraclough, 1997), some cancers (Bjorkenstam, Edberg, Ayoubi, & Rosen, 2005), multiple sclerosis (Harris & Barraclough, 1997), and Huntington's disease (Schoenfeld et al., 1984). In addition, depression and anxiety disorders have also been found to be independently related to a wide range of chronic medical conditions (Scott et al., 2007). Findings from the current study show that in addition to there being cases of suicide where physical illness or injury appears to be a proximal risk factor for suicide in people already experiencing mental illness, physical issues also act as the precipitating factor that precedes mental illness diagnosis and subsequent suicide in others. All individuals with these life trajectories had depression which is consistent with prospective cohort and retrospective case-control studies that indicate affective disorder is a powerful independent risk factor for suicide in older people (Conwell, Duberstein, & Caine, 2002). Older people who die by suicide often have contact with general practitioners proximal to their death (Van Orden & Conwell, 2011)

but the focus of visits in the year prior to death is often physical issues which can lead to mental distress, and potentially suicidal ideation, being left unaddressed (Waern, Beskow, Runeson, & Skoog, 1999). The current study indicates that it may be beneficial for suicidal ideation to be enquired about and addressed in this population, particularly in individuals with long standing mental health issues even if any mental illness has appeared to be stable.

Situational and contextual stressors were a significant feature of many of the life trajectories but were particularly prominent in Group 5. People in this group typically had long-standing mental illness and fairly stable mental health until some kind of significant issue (which was not related to physical health) precipitated the exacerbation of their mental illness and related symptoms. Work-related (including unemployment and stress at work) and relationship separation stressors were common events proximal to suicide. Unemployment has been linked to suicide (Yoshimasu, Kiyohara, & Miyashita, 2008), as have adverse conditions in the workplace (Baumert et al., 2014) and relationship separation has been shown to contribute to higher rates of suicide, particularly in males (Ide et al., 2010; Stack & Scourfield, 2015). Good employment programs that preferentially employ people with mental illness and flexible employment arrangements that cater for the episodic nature of mental illness might be examples of approaches that could prove beneficial for this population. Other approaches could include increased access to counselling and/or mediation (for relationship or work-related issues) at times of increased stress in an attempt to mitigate any potential related negative consequences.

Previous research has suggested that the period of greatest risk for suicide in schizophrenia is early in the course of the disorder (McGirr & Turecki, 2011). However, many in the Group 6—which was characterised by long-term schizotypal, schizophrenia and delusional disorders—had diagnoses that were originally made twenty or more years prior to suicide and in only one case was the diagnosis made within five years of death. Non-

concordance with treatment is a known suicide risk factor in people who have schizotypal, schizophrenia and delusional disorders (Hawton, Sutton, Haw, Sinclair, & Deeks, 2005) and was evident in the majority of life trajectories in this group, as were previous suicide attempts. Efforts to prevent suicide in this population should focus upon those with long-term illness (as well as newly diagnosed), particularly those experiencing a change in medication or ceasing medication altogether, and those experiencing an escalation in symptoms.

Group 7 was the youngest group and life trajectories were characterised by substance use (commonly in the context of a diagnosis of psychoactive substance use disorder) and forensic/legal issues. Extensive research has demonstrated the association between substance use and suicide/suicidal behaviour (Foster, 2011; Moscicki, 1995; Mościcki, 1997) and substance use and mental disorders (Jane-Llopis & Matytsina, 2006). Consistent with previous research, the life charts of this group also demonstrate episodes of violence (Botsis, Soldatos, Liossi, Kokkevi, & Stefanis, 1994), contact with police (Linsley, Johnson, & Martin, 2007) and legal issues (Stack & Wasserman, 2007) are often proximal events to suicide. The significance of police and legal events in this study suggests there is an obvious need for suicide awareness within the justice system. Support needs to be made available to people not only once they leave prison/jail but also in the lead up to court appearances, as these seem to be times of risk for suicide, at least in this population with a history of mental illness.

There is an obvious interplay between life events and/or stressors and mental illness in the different trajectories to suicide identified among this sample. In addition, there were interesting findings with regards to distal and proximal factors present in the life trajectories of these individuals. Some factors seemed to act as distal factors (e.g. sexual abuse), and in some instances these events happened almost 40 years prior to suicide. Other factors were more common as proximal factors (e.g. relationship separation), with some of these events occurring in the days leading up to, or even on the day of, suicide. Yet others acted as both distal and

proximal factors (e.g. mental illness, physical illness, injury, substance use, death of a family member).

Limitations

The intention of this study was not to establish casual relationships between mental illness and suicide as that is not possible in a retrospective study such as this. Rather, the intention was to examine the probable chronology of factors in a sample of suicides occurring among persons with mental illness. However, due to the lack of a control group who did not die, this study cannot determine whether these trajectories or chronologies are significantly more common in those who die by suicide than in those who do not. In addition, a review of coronial information might be biased due to the potential for incomplete information (Sutherland et al., 2018), or alternatively the importance of some factors in a person's life may have been overstated by virtue of that information having being supplied after the suicide by someone other than the person themselves. The paper concentrated on the chronology of various stressors and events leading up to the death because this was most relevant to the research question. While including information regarding other factors such as communication of suicidal intent and suicide method might have given a fuller picture of the death it was not considered of immediate relevance to the question at hand.

Conclusion

This study revealed two distinct pathways to suicide in this sample of Victorians who had diagnosed mental illness. One pathway was characterised by life trajectories where diagnoses of mental illness appeared to follow life events or stressors such as abuse, violence, interpersonal loss and physical illness. The other trajectory identified was where diagnoses of mental illness appeared to precede exposure to events or stressors. Importantly exposure to some events seemed to act as distal factors related to suicide, other events were more common

as proximal factors and yet others appeared to act as both distal and proximal factors. Consequently, strategies to reduce suicide clearly need to be different depending on whether distal or proximal factors are the target of the intervention and need to consider the chronology of stressors that occur in people's lives.

References

- Afifi, T. O., Boman, J., Fleisher, W., & Sareen, J. (2009). The relationship between child abuse, parental divorce, and lifetime mental disorders and suicidality in a nationally representative adult sample. *Child Abuse and Neglect*, 33(3), 139-147. doi: 10.1016/j.chiabu.2008.12.009
- Agerbo, E., Nordentoft, M., & Mortensen, P. B. (2002). Familial, psychiatric, and socioeconomic risk factors for suicide in young people: nested case-control study. *BMJ (Clinical research ed.)*, 325(74), 1-5. doi: 10.1136/bmj.325.7355.74
- Arsenault-Lapierre, G., Kim, C., & Turecki, G. (2004). Psychiatric diagnoses in 3275 suicides: a meta-analysis. *BMC Psychiatry*, 4(37), 1-11. doi: 10.1186/1471-244x-4-37
- Baumert, J., Schneider, B., Lukaschek, K., Emeny, R. T., Meisinger, C., Erazo, N., . . . Ladwig, K. H. (2014). Adverse conditions at the workplace are associated with increased suicide risk. *Journal of Psychiatric Research*, 57, 90-95. doi: 10.1016/j.jpsychires.2014.06.007
- Beautrais, A. L. (2002). A case control study of suicide and attempted suicide in older adults. *Suicide and Life-Threatening Behavior*, 32(1), 1-9. doi: 10.1521/suli.32.1.1.22184
- Bertolote, J. M., & Fleischmann, A. (2002). Suicide and psychiatric diagnosis: a worldwide perspective. *World Psychiatry*, 1(3), 181-185.
- Bjorkenstam, C., Edberg, A., Ayoubi, S., & Rosen, M. (2005). Are cancer patients at higher suicide risk than the general population? *Scandinavian Journal of Public Health*, 33(3), 208-214. doi: 10.1080/14034940410019226
- Botsis, A. J., Soldatos, C. R., Liossi, A., Kokkevi, A., & Stefanis, C. N. (1994). Suicide and violence risk: relationship to coping styles. *Acta Psychiatrica Scandinavica*, 89, 92-96.
- Campbell, J. C. (2002). Health consequences of intimate partner violence. *The Lancet*, 359(9314), 1331-1336. doi: 10.1016/s0140-6736(02)08336-8

- Chesney, E., Goodwin, G. M., & Fazel, S. (2014). Risks of all-cause and suicide mortality in mental disorders: a meta-review. *World Psychiatry*, 13, 153-160. doi: 10.1002/wps.20128.
- Clapperton, A., Newstead, S., Bugeja, & Pirkis, J. (in press). Relative risk of suicide following exposure to recent stressors, Victoria, Australia. *Australian & New Zealand Journal of Public Health*. doi: 10.1111/1753-6405.12886
- Conwell, Y., Duberstein, P. R., & Caine, E. D. (2002). Risk factors for suicide in later life. *Biological Psychiatry*, 52, 193-204. doi: 10.1016/S0006-3223(02)01347-1
- Devries, K., Watts, C., Yoshihama, M., Kiss, L., Schraiber, L. B., Deyessa, N., . . . Team, W. H. O. M.-C. S. (2011). Violence against women is strongly associated with suicide attempts: evidence from the WHO multi-country study on women's health and domestic violence against women. *Social Science and Medicine*, 73(1), 79-86. doi: 10.1016/j.socscimed.2011.05.006
- Draper, B., Pfaff, J. J., Pirkis, J., Snowdon, J., Lautenschlager, N. T., Wilson, I., . . . Early Prevention of Suicide in General Practice Study, G. (2008). Long-term effects of childhood abuse on the quality of life and health of older people: Results from the Depression and Early Prevention of Suicide in General Practice Project. *Journal of the American Geriatrics Society*, 56(2), 262-271. doi: 10.1111/j.1532-5415.2007.01537.x
- Ellsberg, M., Jansen, H. A. F. M., Heise, L., Watts, C. H., & Garcia-Moreno, C. (2008). Intimate partner violence and women's physical and mental health in the WHO multi-country study on women's health and domestic violence: an observational study. *The Lancet*, 371(9619), 1165-1172. doi: 10.1016/s0140-6736(08)60522-x
- Fegg, M., Kraus, S., Graw, M., & Bausewein, C. (2016). Physical compared to mental diseases as reasons for committing suicide: a retrospective study. *BMC Palliative Care*, 15(1), 14. doi: 10.1186/s12904-016-0088-5

- Fortune, S., Stewart, A., Yadav, V., & Hawton, K. (2007). Suicide in adolescents: using life charts to understand the suicidal process. *Journal of Affective Disorders*, 100(1-3), 199-210. doi: 10.1016/j.jad.2006.10.022
- Foster, T. (2011). Adverse life events proximal to adult suicide: a synthesis of findings from psychological autopsy studies. *Archives of Suicide Research*, 15(1), 1-15. doi: 10.1080/13811118.2011.540213
- Golding, J. (1999). Intimate partner violence as a risk factor for mental disorders: a meta-analysis. *Journal of Family Violence*, 14, 99-132. doi: 10.1023/A:1022079418229
- Harris, E. C., & Barraclough, B. (1997). Suicide as an outcome for mental disorders: A meta-analysis. *British Journal of Psychiatry*, 170, 205-228. doi: 10.1192/bjp.170.3.205
- Haw, C., Bergen, H., Casey, D., & Hawton, K. (2007). Repetition of deliberate self-harm: A study of the characteristics and subsequent deaths in patients presenting to a general hospital according to extent of repetition. *Suicide and Life-Threatening Behavior*, 37(4), 379-396. doi: 10.1521/suli.2007.37.4.379
- Hawton, K., Sutton, L., Haw, C., Sinclair, J., & Deeks, J. J. (2005). Schizophrenia and suicide: Systematic review of risk factors. *British Journal of Psychiatry*, 187, 9-20. doi: 10.1192/bjp.187.1.9
- Hjelmeland, H., & Knizek, B. L. (2017). Suicide and mental disorders: A discourse of politics, power, and vested interests. *Death Studies*, 41(8), 481-492. doi: 10.1080/07481187.2017.1332905
- Ide, N., Wyder, M., Kolves, K., & De Leo, D. (2010). Separation as an important risk factor for suicide: A systematic review. *Journal of Family Issues*, 31(12), 1689-1716. doi: 10.1177/0192513x10365317
- Isometsä, E. T. (2001). Psychological autopsy studies - a review. *European Psychiatry*, 16(7), 379-385. doi: 10.1016/S0924-9338(01)00594-6

- Jane-Llopis, E., & Matytsina, I. (2006). Mental health and alcohol, drugs and tobacco: a review of the comorbidity between mental disorders and the use of alcohol, tobacco and illicit drugs. *Drug and Alcohol Review*, 25(6), 515-536. doi: 10.1080/09595230600944461
- Judd, F., Jackson, H., Komiti, A., Bell, R., & Fraser, C. (2012). The profile of suicide: changing or changeable? *Social Psychiatry and Psychiatric Epidemiology*, 47(1), 1-9. doi: 10.1007/s00127-010-0306-z
- Kolves, K., Potts, B., & De Leo, D. (2015). Ten years of suicide mortality in Australia: Socio-economic and psychiatric factors in Queensland. *Journal of Forensic and Legal Medicine*, 36, 136-143. doi: 10.1016/j.jflm.2015.09.012
- Kreicbergs, U., Valdimarsdóttir, U., Onelöv, E., Henter, J.-I., & Steineck, G. (2004). Anxiety and depression in parents 4–9 years after the loss of a child owing to a malignancy: a population-based follow-up. *Psychological Medicine*, 34(8), 1431-1441. doi: 10.1017/s0033291704002740
- Kunde, L., Kolves, K., Kelly, B., Reddy, P., & De Leo, D. (2017). Pathways to suicide in australian farmers: A life chart analysis. *International Journal of Environmental Research and Public Health*, 14(4), 352. doi: 10.3390/ijerph14040352
- Linsley, K., Johnson, N., & Martin, J. (2007). Police contact within 3 months of suicide and associated health service contact. *British Journal of Psychiatry*, 190, 170-171. doi: 10.1192/bjp.bp.106.021857
- Luukkonen, A. H., Rasanen, P., Hakko, H., & Riala, K. (2009). STUDY-70 Workgroup. Bullying behavior is related to suicide attempts but not to self-mutilation among psychiatric inpatient adolescents. *Psychopathology*, 42, 131-138. doi: 10.1159/000204764
- Maris, R. (1981). Pathways to suicide: A survey of self-destructive behaviors. Baltimore, MD: Johns Hopkins University Press.

- McGirr, A., & Turecki, G. (2011). Schizophrenia, other psychotic disorders, and suicidal behaviour. In R. C. O'Connor, S. Platt & J. Gordon (Eds.), *International handbook of suicide prevention : research, policy and practice* (pp. 75-94).
- McMahon, E. M., Reulbach, U., Keeley, H., Perry, I. J., & Arensman, E. (2010). Bullying victimisation, self harm and associated factors in Irish adolescent boys. *Social Science and Medicine*, 71(7), 1300-1307. doi: 10.1016/j.socscimed.2010.06.034
- Moscicki, E. K. (1995). Epidemiology of suicidal behavior. *Suicide and Life-Threatening Behavior*, 25(1), 22-35. doi: 10.1111/j.1943-278X.1995.tb00390.x
- Mościcki, E. K. (1997). Identification of suicide risk factors using epidemiologic studies. *Psychiatric Clinics of North America*, 20(3), 499-517. doi: 10.1016/S0193-953X(05)70327-0
- Ng, Q. X., Yong, B. Z. J., Ho, C. Y. X., Lim, D. Y., & Yeo, W. S. (2018). Early life sexual abuse is associated with increased suicide attempts: An update meta-analysis. *Journal of Psychiatric Research*, 99, 129-141. doi: 10.1016/j.jpsychires.2018.02.001
- Pompili, M. (2018). The increase of suicide rates: the need for a paradigm shift. *The Lancet*, 392(10146), 474-475. doi: 10.1016/s0140-6736(18)31498-3
- Poorolajal, J., Haghtalab, T., Farhadi, M., & Darvishi, N. (2016). Substance use disorder and risk of suicidal ideation, suicide attempt and suicide death: a meta-analysis. *Journal of Public Health (Oxford, England)*, 38(3), e282-e291. doi: 10.1093/pubmed/fdv148
- Qin, P., & Mortensen, P. B. (2003). The impact of parental status on the risk of completed suicide. *Archives of General Psychiatry*, 60(8), 797-802. doi: 10.1001/archpsyc.60.8.797
- Rostila, M., Saarela, J., & Kawachi, I. (2013). Suicide following the death of a sibling: A nationwide follow-up study from Sweden. *BMJ Open*, 3(4), e002618. doi: 10.1136/bmjopen-2013-002618

- Schoenfeld, M., Myers, R. H., Cupples, A., Berkman, B., Sax, D. S., & Clark, E. (1984). Increased rate of suicide among patients with Huntington's disease. *Journal of Neurology, Neurosurgery, and Psychiatry*, 47, 1283-1287. doi: 10.1136/jnnp.47.12.1283
- Scott, K. M., Bruffaerts, R., Tsang, A., Ormel, J., Alonso, J., Angermeyer, M. C., . . . Von Korff, M. (2007). Depression-anxiety relationships with chronic physical conditions: Results from the World Mental Health Surveys. *Journal of Affective Disorders*, 103(1-3), 113-120. doi: 10.1016/j.jad.2007.01.015
- Skerrett, D. M., Kolves, K., & De Leo, D. (2016). Pathways to suicide in lesbian and gay populations in Australia: A life chart analysis. *Archives of Sexual Behavior*, 46(5):1481-1489. doi: 10.1007/s10508-016-0827-y
- Stack, S., & Scourfield, J. (2015). Recency of divorce, depression, and suicide risk. *Journal of Family Issues*, 36(6), 695-715. doi: 10.1177/0192513x13494824
- Stack, S., & Wasserman, I. (2007). Economic strain and suicide risk: A qualitative analysis. *Suicide and Life-Threatening Behavior*, 37(1), 103-112. doi: 10.1521/suli.2007.37.1.103
- Sutherland, G., Milner, A., Dwyer, J., Bugeja, L., Woodward, A., Robinson, J., & Pirkis, J. (2018). Implementation and evaluation of the Victorian Suicide Register. *Australian and New Zealand Journal of Public Health*, 42(3), 296-302. doi: 10.1111/1753-6405.12725
- Van Orden, K., & Conwell, Y. (2011). Suicides in late life. *Current Psychiatry Reports*, 13(3), 234-241. doi: 10.1007/s11920-011-0193-3
- Waern, M., Beskow, J., Runeson, B., & Skoog, I. (1999). Suicidal feelings in the last year of life in elderly people who commit suicide. *The Lancet*, 354(9182), 917-918. doi: 10.1016/s0140-6736(99)93099-4

Whitlock, F. (1986). Suicide and physical illness. In A. Roy (Ed.), *Suicide* (pp. 151–170).

Baltimore: Williams and Wilkins.

Wyder, M., Ward, P., & De Leo, D. (2009). Separation as a suicide risk factor. *Journal of Affective Disorders*, *116*(3), 208-213. doi: 10.1016/j.jad.2008.11.007

Yoshimasu, K., Kiyohara, C., & Miyashita, K. (2008). Suicidal risk factors and completed suicide: meta-analyses based on psychological autopsy studies. *Environmental Health and Preventive Medicine*, *13*(5), 243-256. doi: 10.1007/s12199-008-0037-x