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Assessing the availability and efficacy of LGBTQI-specific suicide prevention programs

An Evidence Check rapid review brokered by the Sax Institute
for the NSW Ministry of Health—June 2020

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This report was prepared by a team from School of Psychology at Deakin University, Australia, supported by a colleague from Latrobe University.

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Assessing the availability and efficacy of LGBTQI-specific suicide prevention programs

An Evidence Check rapid review brokered by the Sax Institute for the NSW Ministry of Health. June 2020

This report was prepared by Melvin GA, Tatnell R, Clancy E, Bush R, Zanetti N et al.

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Glossary of terms and acronyms

Note: The acronyms used in this review will reflect those used by the authors of the reviewed papers. As such, variations of the acronyms used to describe people of diverse genders and sexualities will appear in this review. These are defined below.

GSA	Gay-Strait Alliances (usually in schools, increasing connection between students)
LGBTQI	Refers to members of the lesbian, gay, bisexual, trans, queer and intersex community (people who are sexually or gender diverse)
LGB	Lesbian, gay and bisexual
LGB?	Lesbian, gay, bisexual or questioning
Modifiable risk factors	Factors associated with an increased likelihood of mental illness or distress, and which can be addressed through individual, group or community actions (as opposed to genetic or pre-determined risk factors such as age or gender). For child and adolescent mental health and wellbeing, modifiable risk factors can include family conflict, academic failure, antisocial behaviours and low community attachment.
Prevention	Refers to strategies or programs that seek to avert or delay the onset or severity of mental health problems
Protective factors	Factors associated with a decreased likelihood of mental illness or distress, and which can be promoted at individual, group and community levels. In child and adolescent mental health and wellbeing, protective factors include individual and environmental factors such as bonding and positive parenting, resilience, positive peer group norms and school engagement
Suicidal ideation	Any thoughts about ending one's own life. May be active, with a clear plan for suicide, or passive, with thoughts about wishing to die
Suicide attempt	Behaviours that may result in ending one's life, whether fatal or not.
Suicide	Intentionally ending one's own life
Non-suicidal self-injury	Self-injurious behaviours without any intent to die
Self-harm	Self-injurious behaviours with or without intent to die. Does not distinguish between suicide attempt and non-suicidal self-injury
SSM	Same-sex marriage
OSM	Opposite-sex marriage

Executive summary

Background

It is estimated that 11% of the Australian population identify as Gay, Lesbian, Bisexual, Transgender, Queer, Intersex or questioning as well as other sexual and gender minorities (LGBTQI; Australian Human Rights Commission [AHRC] 2014). Of considerable concern is that LGBTQI communities are at heightened risk of stigmatisation, discrimination, socio-economic disparity, anxiety, depression, suicide, and suicidal ideation and behaviour. The increased risk of suicide is related to risk factors shown to be present among people who identify as LGBTQI. These risk factors include increased risk of homelessness, unemployment and social isolation, which is thought to be driven by experiences of discrimination and rejection. Furthermore, there is clear evidence that 'coming out' and/or identity-related stress is linked to heightened levels of anxiety, depression, alcohol and drug misuse, and suicidal ideation. This situation requires urgent attention with a greater emphasis on prevention to reduce and eliminate the health and mortality disparities within this community.

Suicide prevention is a broad range of strategies and approaches across multiple tiers. Public health or universal approaches demonstrated to be effective include restriction of access to lethal means and school-based awareness programs. At the individual level, for those with identified risk, use of effective pharmacological and psychosocial interventions reduces risk.

Suicide prevention approaches can be designed or tailored to specific populations that have been identified as being vulnerable to suicide, for example, young people (Robinson et al. 2013), and indigenous people (Clifford et al. 2013), however, it has been recognised that further investigation is required into the evidence base for specific targeted populations (Zalsman et al. 2016).

Review questions

This review aimed to address the following questions:

Question 1: What suicide prevention programs are targeted to support people who identify as LGBTQI?

Question 2: Of the suicide prevention programs described in question 1, which have been found to be effective in reducing the risk of suicide?

Question 3: What barriers to the implementation and/or effectiveness of the suicide prevention programs described in question 1 have been reported by study authors?

Methods

Peer-reviewed literature published between 2010 and January 2020 was identified searching five databases using a combination of appropriate keywords. Grey literature was searched in February 2020 using a combination of databases (e.g. Google Scholar) and requests for unpublished studies were made to established LGBTQI health organisations. After eligibility checks were completed by two members of the team, 11 papers met search criteria and were included in the review. Studies were either comparative studies without concurrent controls (NHRMC Level III-3) or case series (NHMRC Level IV) and quality assessments were conducted independently by two of the team members.

Key findings

Question 1. What suicide prevention programs are targeted to support people who identify as LGBTQI?

A range of suicide prevention approaches have been investigated to address the elevated rates of suicide risk in individuals who identify as LGBTQI, however, there are few and disparate studies within each approach. The programs identified in this review included three legislative initiatives, one community program, four school-based programs, and three therapeutic interventions.

Of the legislative initiatives, two studies—one in the United States (Raifman et al. 2017) and one spanning Sweden and Denmark (Erlangsen et al. 2020)—examined the effects of same-sex marriage on suicidal outcomes. A secondary analysis was undertaken to examine the effect of an anti-bullying law in 22 US states that included sexual orientation as a protected class (Seelman and Walker 2018).

Schools were the most popular context for delivery of youth interventions. Hatzenbuehler and Keyes (2013) investigated the effect of school-based anti-bullying policies and school climate in Oregon, US (Hatzenbuehler, Birkett, Van Wagenen and Meyer 2014). School-based anti-bullying policies, inclusive of sexual orientation, are designed to support safety and provide protection to sexually diverse youth by providing consequences to those who victimise or harass students based on their gender identity/sexuality. A further study conducted in British Columbia, Canada, investigated the effect of school-based Gay-Straight Alliances, which are school-endorsed clubs with LGBTQI and heterosexual and cisgender members. Clubs provide a safe space for LGBTQI students and their allies, host social events, and promote awareness in the wider school community. A media-based project showed films about LGBTQI issues to students to raise awareness about reducing

discrimination and stimulate facilitated discussion about bullying and safe environments (Burk, Park and Saewyc 2018).

Of the three therapeutic interventions examined, only one US-based program—attachment-based family therapy (ABFT; Diamond et al. 2012)—was tailored specifically to meet the needs of LGBTQI people. Building on the theoretical foundation of attachment theory, this intervention aims to resolve family conflict and improve the parent-child relationship through facilitating adolescent autonomy and competence.

In addition, two hospital-based suicide prevention programs (not tailored to LGBTQI communities) were evaluated to assess the effect on patients identifying as sexual minorities compared with heterosexual patients (Beard et al. 2017, Plöderl et al. 2017). Beard et al. (2017) compared the effectiveness of cognitive behavioural therapy (CBT) and dialectical behavioural therapy (DBT) skills-based hospital treatments in the US for LGBQ+ and heterosexual patients. Similarly, Plöderl et al. (2017) assessed a crisis intervention program at a public psychiatric hospital in the city of Salzburg, Austria. The intervention involved high-frequency meetings, suicide-risk assessment, rapport building, safety planning and follow-ups.

Question 2. Of the suicide prevention programs described in question 1, which have been found to be effective in reducing the risk of suicide?

The effect of suicide prevention programs on those who identify as LGBTQI varied considerably, with conclusions tempered by study limitations.

Population-wide policy changes had mixed effects on suicidal outcomes. Same-sex marriage legislation was associated with positive effects ranging from a 14% reduction in past-year suicide attempts in sexual minority youth in the US (Raifman, Moscoe, Austin and McConnell 2017) to a 46% reduction in suicide rates among those entering a same-sex marriage in Scandinavian countries (Erlangsen, Drefahl, Hass, Bjorkenstam, Nordentoft and Andersson 2020). Anti-bullying laws had little effect on suicidal ideation or attempts in gay, lesbian and bisexual youth in the US (Seelman and Walker 2018). Reductions in suicidal ideation among gay men were reported after a public awareness campaign, *"Blues-out",* aimed to increase awareness of depression among gay and lesbian people in Switzerland, however, methodological limitations indicate caution when interpreting these findings (Wang, Häusermann, Berrut and Weiss 2013). The *"Blues-out"* campaign was designed to raise awareness of depression among lesbian and gay people through various forms of advertising, hotline services and the distribution of resources. It included a brochure and website offering information on depression; a symptoms checklist; and a list of consulting institutions and organisations providing the intervention.

The school is a popular site for the delivery of suicide prevention programs, with whole school approaches having evidence of efficacy in reducing suicidal ideation and behaviour. The review identified four studies that evaluated specific programs targeting suicide risk in sub-groups of LGBTQI students. These programs focus on reducing risk factors that underlie suicide, including bullying and discrimination. These approaches had mixed results.

Gay-Straight Alliances as a standalone intervention had a limited effect. GSAs in secondary schools across British Columbia, Canada, were associated with a reduction in suicidal ideation for heterosexual girls but not lesbian or bisexual females or any male students, nor was there any effect

on suicide attempt rates (Saewyc, Konishi, Rose and Homma 2014). However, longer duration of GSA implementation was associated with half the odds of suicidal ideation and attempt compared with schools without GSAs. Districts with more comprehensive, multi-faceted approaches to enhancing protective school climate specifically aimed at LGBTQI youth were associated with less suicidal ideation than districts without such programs. This finding is tempered by suicide outcome data being collected prior to school climate data.

Lesbian and bisexual girls who attended schools participating in a media-based awareness raising project reported decreased odds of suicide ideation compared with those at schools who did not participate, but no effect was evident for boys (Burk, Park and Saewyc 2018). The program presents screenings of a series of LGBTQ short films and facilitates group discussion at secondary schools throughout British Columbia. Events are facilitated by up to three trained adults who identify as LGBTQ+ and run for 1–2 hours. The goal of these presentations is to open a dialogue among students and teachers regarding issues of homophobia, biphobia, transphobia and bullying, and ultimately to promote a safer more inclusive learning environment. School anti-bullying policies that specifically included sexual orientation were associated with a substantial reduction in suicide attempts in lesbian and gay youth. Specifically, lesbian and gay youth living in areas with fewer such policies were more than twice as likely to attempt suicide compared with areas where more schools had policies (Hatzenbuehler and Keyes 2013).

Of the clinical interventions, Diamond and colleagues investigated an adapted version of Attachment-Based Family Therapy for LGB youth and reported a significant decrease in suicidal ideation in a small sample of 10 (Diamond et al. 2012). Finally, two studies (Plöderl et al. 2017, Beard et al. 2017) reported on the effect of generic (i.e. not tailored to the needs of LGBTQI people) hospital-based suicide prevention treatment approaches. Both studies found comparable reductions in suicidal outcomes for sexual minority as for heterosexual patients. Indeed, Plöderl et al. (2017) found that suicidal ideation reduced by 7.76% in heterosexual patients and 7.88% in sexual minority patients following treatment. Beard et al. (2017) found similarly little difference in the rate of hospitalisation following treatment, with 10% of LGBQ+ patients requiring hospitalisation compared to 6% for heterosexual patients.

Question 3. What barriers to the implementation and/or effectiveness of the suicide prevention programs described in question 1 have been reported by study authors?

Very limited information was available on the barriers to implementation and/or effectiveness of the suicide prevention programs. This is consistent with the field being in its infancy resulting in limited studies being available. Most of the papers focused on the primary task of describing the intervention and establishing effectiveness. Furthermore, most studies used existing data which typically limits examination of barriers to implementation. Of those that did report on barriers, a lack of trained program facilitators and program resources was identified. Recruiting parents for family-based intervention was also recognised as a barrier.

Evidence gaps

As indicated, the research literature on the topic of this review is scarce. All approaches that were specifically adapted or focused on the needs of LGBTQI communities were for youth. Only two studies included adults, and both were generic approaches. No studies examined old age or intersection with other populations at risk of suicide. Community and policy studies were more common than the evaluation of clinical interventions and only one study reported on an intervention specifically adapted for LGBTQI people. The long-term effects of suicide prevention programs were not examined. Some studies identified differences between genders and sexualities, suggesting close attention needs to be paid to differences within the sexualities and genders, rather than considering LGBTQI communities as a homogenous group.

Discussion

While the available literature on the prevention of suicide in LGBTQI people is sparse and requires further research, some tentative directions can be suggested from the available evidence. Legislation plays an important role by promoting equality, for example via permitting same-sex marriage and prohibiting homophobic and transphobic discrimination and bullying. Data indicates that introduction of same-sex marriage laws was associated with substantial reductions in suicidal outcomes. This effect may have been achieved by reducing minority stress among same-sex attracted people and promoted opportunities for community support to marrying couples. For example, Erlangson and colleagues speculate that legislation provided increased acceptance and tolerance of sexual minorities, therefore reducing stigmatisation and levels of stress experienced by the LGBTIQ community.

A single study examined the effect of anti-bullying legislation across 22 US states and did not show an effect on suicide outcomes in lesbian, gay, bisexual and questioning (LGB?) youth but did show reductions in victimisation. This suggests that the introduction of the policy had a desirable effect on a key outcome of victimisation but was not sufficient to affect suicidal ideation, or at least not in the short term.

Public awareness campaigns designed to reduce suicide require further investigation before any firm conclusions can be drawn. The aim of such campaigns is to encourage early help-seeking among LGBTQI people at risk of suicide.

Schools are a popular context for suicide prevention, allowing opportunities for early intervention and the development of inclusive attitudes. School-based strategies that promote a positive school climate by creating tolerance offered promising effects in reducing suicide. The ‘dose’ or scope of such interventions is worthy of consideration with GSAs having limited effect, particularly in the short-term, while more comprehensive approaches resulted in more robust effects on suicidal outcomes.

A case can be made for adapted treatments for LGBTQI people, given the specific experiences of victimisation and marginalisation in the community. At present only one clinical intervention appears to have been adapted specifically for people who identify as LGB (Diamond et al. 2012). However, two hospital-based programs demonstrated that no differences were evident in suicidal outcomes for LGB patients compared with heterosexual patients. This finding suggests that clinician competence and standard protocols may suffice for some if not many LGBTQI people.

The limited knowledge of barriers to the implementation of suicide prevention programs reflects the infancy of this field and the scope of the studies identified in this review. It is a priority for future research to explain both barriers and facilitators to implementation.

Conclusions

A small number of studies have investigated suicide prevention programs for individuals who identify as LGBTQI. This body of work was generally low in quality and comprised largely of secondary population level data and retrospective analysis apart from one small open clinical trial of an adapted psychosocial intervention. Studies were largely conducted with younger people with no studies examining older adults. School-based interventions that promote inclusive attitudes and destigmatisation show the most promise. Many opportunities exist for the development and evaluation of suicide prevention programs for LGBTQI communities given the identified need, known risk factors and limited research currently available.

Review questions

Question 1:

What suicide prevention programs are targeted to support people who identify as LGBTQI?

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Question 3:

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Background

In Australia, suicide is the leading cause of death for people aged 15–44 (Australian Institute of Health and Welfare [AIHW] 2019). Internationally, research from the US, UK, New Zealand, Canada, Denmark, the Netherlands and Vietnam indicates that people who identify as lesbian, gay, bisexual, trans, queer or intersex (LGBTQI) are between two and seven times more likely to contemplate and attempt suicide (Haas et al. 2010, Salway, Plöderl, Liu and Gustafson 2019). Data from a nationally representative Australian sample of adults has found LGBTQI people (who make up 11% of the population [AHRC 2014]) are between 3 and 19 times more likely to attempt suicide or self-injury than cisgender/heterosexual people (Swannell, Martin and Page 2015).

It is therefore not surprising that individuals who identify as LGBTQI generally report significantly higher rates of suicidal ideation, as well as poorer mental health and greater levels of drug and alcohol abuse (Brown, McNair, Szalacha, Livingston and Hughes 2015, Hughes, Wilsnack and Kristjanson 2015, Reisner, Falb, Wagenen, Grasso and Bradford 2013, Roxburgh, Lea, de Wit and Degenhardt 2016, Skerrett, Kõlves and De Leo 2015) compared with the general population. These figures indicate that this community is at risk for a variety of psychological issues that require urgent attention. However, it must be noted that due to stigma, discrimination, and lack of appropriate assessment of gender identity and sexuality (we highlight the number of different acronyms used in the studies reviewed for example) that the real rates of mental health difficulties and associated suicidal behaviours may be unknown. LGBTQI people are less visible in clinical and research data. This makes understanding suicidality and self-harm, and the effectiveness of interventions aimed at preventing them, more challenging among these populations. The focus of this review is to examine the current literature on potential evidence-based suicide prevention programs for LGBTQI people. An important component will be to examine barriers and facilitators to implementation. To orient the reader, we present first a summary of the current theories and the more significant risk factors related to the heightened suicide risk of individuals who identify as LGBTQI.

Theoretical model

Two theories that assist in helping understand the greater suicide risk for LGBTQI individuals include Klonsky and May's (2015) ideation-to-action three-step framework of suicide, and Meyer's (2003) minority stress theory. Together they help form an integrated framework for understanding the greater risk of suicide in LGBTQI communities. Klonsky and May (2015) have suggested that for individuals to consider suicide, they must first experience a combination of psychological pain and hopelessness. Those who feel a sense of interpersonal connection may not progress beyond considering suicide, however, for those who feel isolated or disconnected from purpose in life, this can progress to strong ideation and desire to die. Finally, when pain and hopelessness become greater than connection, an acquired capability for suicide (for example, through experiencing abuse, engaging in self-harm, or

knowing someone who has suicided) significantly increases likelihood of attempt and death (Klonsky and May 2015).

Minority stress theory (Meyer 2003) proposes that the large health disparities in the sexual and gender minority population are a result of living in a stressful social environment due to experiences of discrimination, victimisation, stigma and prejudice (Chakraborty, McManus, Brugha, Bebbington and King, 2011, Meyer 2003), all of which produce some level of psychological pain. In a survey by the Australian Human Rights Commission (AHRC), 71.8% of respondents reported experiencing violence, harassment or bullying based on their sexual orientation, gender identity or intersex status (AHRC 2015). Furthermore, significantly higher rates of sexual violence have been reported by LGBTQ women in both childhood and adulthood due to homophobic attitudes (Leonard et al. 2012, Rothman, Exner and Baughman 2011, Stoddard, Dibble and Fineman 2009). Therefore, the socially based stress experienced by LGBTQI people increases risks of poorer health outcomes as these stressors are experienced in addition to those experienced by the cisgender/heterosexual community and hence require an extra level of adaptive effort (Meyer 2003).

Discrimination, rejection and victimisation can lead to feelings of psychological pain, hopelessness and disconnection. For LGBTQI people, who are more likely to have experienced abuse or engaged in self-harm (Stoddard et al. 2009, Watson and Tatnell 2019), there may be a greater level of acquired capability for suicide. LGBTQI people face unique stressors (sexuality-based discrimination, victimisation, stigma and prejudice) that arise during different life stages, an increased risk for homelessness, life events such as coming out, and greater levels of drug and alcohol abuse. Some of these more significant stressors are outlined below.

Homelessness

Population statistics pertaining to homelessness are difficult to obtain, but the most recent census suggests that approximately 50 out of every 10,000 Australians experience homelessness at some stage (AIHW 2019b). According to McNair et al. (2017), LGBTQI people are at least twice as likely to experience homelessness compared with cisgender/heterosexual people. It is difficult to get an accurate picture of the disparities in homelessness between LGBTQI people and cisgender/heterosexual people as large population-level surveys on homelessness typically do not include measures for sexuality or non-binary gender identities. However, the Australian 2014 General Social Survey found that 33.7% of respondents who identified as lesbian or gay and 20.8% who identified as bisexual had experienced homelessness compared with 13.4% of heterosexual respondents (Australian Bureau of Statistics 2015). Furthermore, a large Australian study involving 1631 LGBTQ women found that 31.3% of participants had previously been homeless and 2.5% were currently homeless (McNair and Bush 2016). McNair et al. (2017) reported that, particularly among youth, the risk of homelessness increases with lack of acceptance from families, or negative cultural views of sexual and gender diversity. McNair and colleagues found that LGBTQ people were likely to be homeless at younger ages, and that the greater representation of LGBTQ people among the homeless was largely driven by rejection by family and discrimination (e.g. misgendering, harassment and abuse) in shared accommodation, temporary accommodations and in private rental arrangements. McNair and colleagues also found that while sometimes people had experienced negative treatment, for others fear of potential negative treatment was a barrier to seeking help. It has been suggested that LGBTQI-tailored services may increase the likelihood of LGBTQI people

accessing these services as they are more likely to feel comfortable about sharing their sexual and/or gender identity and be less concerned about experiencing or perceiving discriminatory attitudes (Association of American Medical Colleges 2015, McCabe, West, Hughes and Boyd 2013). Despite the findings of the GALFA LGBTQ+ Homelessness Research project (Pennay et al. 2013), which suggested that both specialist and more inclusive mainstream services were required to serve homeless LGBTQI communities, there remain no specific services for LGBTQI people who are homeless, nor are there fields relating to gender and sexual diversity in the national database of homelessness services (Andrews et al. 2019).

Homelessness and suicide share several of the same risk factors, for example low social support, poor mental health and substance use disorders (Tsai and Cao 2019). In addition, and in line with the three-step framework of Klonsky and May (2015), homelessness may compound existing risk factors, such as familial rejection, and increase suicide risk. In a recent, large population-based study in the US (N=33,024), Tsai and Cao (2019) reported that people who had experienced homelessness were four times more likely to have attempted suicide than the general population. These findings are in line with research by Eynan et al. (2002) in Toronto, where 61% of those who had experienced homelessness reported suicidal ideation, and 34% had attempted suicide. By comparison, lifetime prevalence rates in the general population are much lower for both suicidal ideation (5.6%–14.3%) and attempt (1.9%–8.7%; Nock et al. 2008).

Life events

Across their lives, LGBTQI people experience unique life events such as ‘coming out’. Coming out is the process through which an LGBTQI person “*comes to recognise and acknowledge to themselves and/or others, their sexual identity, gender identity or intersex status*” (GLHV@ARCSHS 2016, p. 7171). While the process of coming out typically begins in adolescence, it can happen at all ages and is often a lifelong process (Cox, Dewaele, van Houtte and Vincke 2010, Parks and Hughes 2007). Indeed, coming out does not occur one time as each new personal, social and work situation requires the person to make decisions about whether they want to come out (GLHV@ARCSHS 2016).

Coming out and identity-related stress have been associated with a greater risk for suicidal ideation (McDaniel, Purcell and D'Augelli 2001, Skerrett, Kõlves and De Leo 2017, Wang, Plöderl, Häusermann and Weiss 2015). For example, in a sample of 762 gay men in Geneva, Switzerland, 16.7% reported attempting suicide with difficulties accepting their sexual orientation being cited as one of the top three reasons (Wang et al. 2015). Indeed, research has found the process of coming out to be a significant predictive factor for suicide attempts among younger LGBTQI people (McDaniel et al. 2001). In addition to the stress associated with coming out, reactions from family have also been associated with suicidal ideation and attempts. Research involving youth has found that parental acceptance and support can play a protective role, as it has been associated with lower levels of suicidal thoughts and behaviours (D’amico, Julien, Tremblay and Chartrand 2015, Ryan, Russell, Huebner, Diaz and Sanchez 2010), while youths who perceived negative reactions are more likely to attempt suicide (Ryan, Huebner, Diaz and Sanchez 2009, Skerrett et al. 2017).

Identity-related stress is experienced differently for trans and gender diverse people who experience unique life events such as medical transitioning (i.e. undergoing medical treatments to change the sex characteristics to match the gender identity) and social transitioning (i.e. undergoing cosmetic and

legal changes, and using a different name and pronoun) (Beyond Gender 2016a, 2016b). As such, trans and gender diverse people experience increased levels of stigma, discrimination, gender-related abuse, social stressors, and ostracism from peers (AHRC 2015, Budge et al. 2012, Nuttbrock et al. 2010), as well as higher rates of psychological distress, particularly depression and anxiety, when compared with cisgender people (Connolly, Zervos, Barone, Johnson and Joseph 2016, Reisner et al. 2015). The level of psychological distress experienced depends on the person's transitioning process, social support network, and coping mechanisms (Budge et al. 2012). Stress related with transitioning has also been associated with an increased risk for suicidality (Kuper, Adams and Mustanski 2018, Reisner et al. 2015). For example, in a matched sample of trans and cisgender participants, members of the trans group were almost four times as likely to report suicidal ideation and three times as likely to attempt suicide compared with those in the cisgender group (Reisner et al. 2015).

A second major life event for LGBTQI people is forming a romantic relationship. Before Australia legalised same-sex marriage in 2017, sexually and/or gender diverse relationships were not granted the same legal, financial or health rights as heterosexual relationships and hence experienced institutionalised stigma. Marriage equality often attracts increased media attention and visibility of LGBTQI communities (Ramos, Goldberg and Badgett 2009), which in some countries, for example the US, has been associated with increased social support (Chomsky and Barclay 2010, Lewis 2011), and reduced rates of suicide attempts (Raifman, Moscoe, Austin and McConnell 2017). But, in other countries, such as Australia, increased media attention and the postal vote meant members of LGBTQI communities (as well as their family and friends) experienced verbal and physical assaults, which increased almost two-fold during this period (The Australia Institute 2017). Moreover, the knowledge that family members, friends and/or colleagues were voting 'No' caused psychological trauma for many people in the community, and research found that depression, anxiety and stress increased by more than one-third during this period (The Australia Institute 2017), and placed this vulnerable community at greater risk for suicide (Drummond street services 2017). Therefore, although marriage equality is an important legislative change, in Australia, increased attention brought significantly more violence, harassment, discrimination and prejudice, the effects of which are likely to be long-lasting.

A related significant life event is relationship breakdown. While this is not specific to the LGBTQI population, the experience can be very different to a cisgender/heterosexual person who is experiencing the end of a relationship. In some cases, family, friends and/or society do not acknowledge the legitimacy of LGBTQI romantic relationships (Fingerhut and Maisel 2010, Skerrett et al. 2017), whereas in other cases, the person has not come out and so their relationship is kept a secret (Jaspal 2015). Therefore, experiences of relationship grief and loss are sometimes invisible and/or not acknowledged (Fingerhut and Maisel 2010, Jaspal 2015, Skerrett et al. 2017). Indeed, a decreased sense of validity or legitimacy about their relationship may increase the person's vulnerability during times of relationship discord and decrease their capacity or willingness to seek support from others, further isolating them during an already distressing time (Skerrett et al. 2017).

Among trans and gender diverse people, the experience of relationship breakdown can be very isolating and stigmatising. For example, before same-sex marriage was legalised in Australia, trans people were forced to divorce their spouse in order to change their gender on their birth certificate (Riggs, von Doussa and Power 2015). The relational impact of transitioning can affect romantic relationships as partners are required to consider renegotiating their sexual identity. There is some evidence that suggests that while some partners have managed to do this well (Davidmann 2014), others have struggled with this change (Brown 2010). The ease with which partners change their

sexuality has been found to depend on their ongoing romantic feelings for their trans and gender diverse partner (Davidmann 2014). Stigma has also been found to affect the quality of relationships post-transition with increases in depressive symptomology and reduced relationship quality (Gamarel, Reisner, Laurenceau, Nemoto and Operario 2014). Indeed, the felt stigma and perceptions/internalisation of stigma can also influence the relationship (Riggs et al. 2015). Therefore, romantic partners are confronted with an unexpected change that has an effect on their relationship, their sexual identity, and their mental health which can lead to relationship breakdown.

Relationship discord and breakdown have been identified as important risk factors for suicidal ideation and attempts, and are often triggers for suicide attempts (Kazan, Calear and Batterham 2016, Skerrett et al. 2017, Wang et al. 2015). Among LGBTQI people, romantic relationships (and platonic relationships) often play a protective role as they buffer rejecting reactions and challenge the perception that an LGBTQI identity is wrong (Baams, Bos and Jonas 2014, Carastathis, Cohen, Kaczmarek and Chang 2016). Therefore, without the protection and support of a relationship, LGBTQI people are more vulnerable to poorer health outcomes (Rothman, Sullivan, Keyes and Boehmer 2012). In fact, compared with cisgender/heterosexual people, LGBT people have been found to be almost four times more likely to attempt suicide following relationship conflict and breakdown (Skerrett, Kõlves and De Leo 2014).

Drug and alcohol abuse

Substance use has consistently been associated with a greater risk for suicidal ideation and attempt among LGBTQI people (e.g. Kennedy et al. 2015, Mereish, O'Cleirigh and Bradford 2014, Skerrett et al. 2017, Smith, Armelie, Boarts, Brazil and Delahanty 2016). Furthermore, it has been found to mediate the relationship between sexual and gender minority-specific stress and an increased risk for suicidality (Mereish et al. 2014). Smith et al. (2016) hypothesised that substance use may exacerbate negative emotions and thoughts associated with trauma and LGBTQI-specific stress, and lower inhibitions while also increasing aggression. Together, these actions increase a person's risk for suicidal ideation and attempts. Therefore, while substance use and trauma/stress may individually predict suicidality, the interactive effect of these risk factors supports more accurate prediction and assessment of suicide risk (Smith et al. 2016).

As discussed above, experiences of minority stress (i.e. discrimination, prejudice and stigma) have been associated with increased risk for suicide, mental health issues and substance abuse (Chakraborty et al. 2011, Meyer 2003). Due to low satisfaction with care, experiences of heterosexism, and stigmatising and discriminatory attitudes from healthcare practitioners, many LGBTQI people do not access support services (Koh, Kang and Usherwood 2014, Pennay et al. 2013). Consequently, drugs and alcohol are often used as a coping mechanism to help reduce negative affect with up to four times as many LGBTQI Australians using drugs and/or alcohol than their cisgender/heterosexual counterparts, and reporting an earlier age of initiation (Roxburgh et al. 2016). International research has also found substance abuse to be significantly greater among LGBTQI people than heterosexual people (see reviews Haas et al. 2010, King et al. 2008). For example, research has found that the use of alcohol as a coping mechanism mediates the relationship between psychological distress and perceived discrimination (Ngamake, Walch and Raveepatarakul 2016). However, although drugs and alcohol may help reduce the distress experienced as a result of discrimination in the short-term, drug and alcohol use can cause the person to disengage and

ultimately prevents them from dealing with adversity, which can lead to more severe long-term issues with their health (Ngamake et al. 2016).

Life stage

Linking each of these stressors is life stage. Each life stage is associated with its own unique risk factors for suicide, though Nock and colleagues' in-depth (2008) review suggested that the rates of death by suicide, while different for males and females, remains fairly consistent across age groups (with the exception of men over 65, for whom rates were much higher). Erikson (1950) proposed eight developmental stages from early childhood to late adulthood, each with its own associated challenges. While some people know they are 'different' as children, others may not realise until adolescence, adulthood or even older adulthood. In addition, many LGBTQI people live as heterosexual/cisgender long after coming to understand their identity, for fear of rejection by family and friends, loss of a treasured partner, or loss of employment or home (Subhrajit 2014). The age or stage at which one adopts or comes into their LGBTQI identity may influence how this new identity affects the individual's life, and this too must be considered in terms of chronology and the prevailing attitudes of the time. For example, a young teen identifying as homosexual in 2020 will likely have a very different experience than a young teen in the 1950s or even early 2000s. In Australia, for example, homosexuality was still a criminal offence until 1984 when South Australia was the first state to change this law, and until 1997 in Tasmania, the last to change (ABC 2015).

Children and adolescents who identify as or who are perceived as LGBTQI have traditionally experienced rejection and bullying for being different (Henrickson 2007, Ybarra, Mitchell, Kosciw and Korchmaros 2015) and while this may be changing, this is still likely to happen today. According to Erikson's theory, the major developmental challenge in adolescence is to align with an identity. For people who identify as LGBTQI in adolescence this means that, depending on their socio-emotional context, identity formation may be characterised by rejection from peers and family, cultural or religious challenges, and difficulty with self-acceptance (although this arguably may co-occur at any stage of life). Each of these forms of rejection may increase the risk of homelessness, drug and alcohol abuse, and risk-taking behaviour. People who come to a non-heterosexual or gender diverse identity in adulthood experience a unique set of challenges, which may include loss of long-term relationships and alienation from family (including children), and grief for the loss of a 'normal' life (Johnston and Jenkins 2004). Conversely, adults who have long identified as LGBTQI have until recently been unable to marry, which for many engendered a feeling of being 'second-class citizens.' LGBTQI people who lived through the Australian marriage equality debate reported considerable increases in psychological distress and abuse (Ecker and Bennett 2017, Ecker, Riggle, Rostosky and Byrnes 2018). While the benefits of the change in law are clear, the effects of the process undertaken were clearly negative, and for some, are ongoing (Tatnell, Zanetti and Watson, under review; The Australia Institute 2017).

Finally, older adult members of LGBTQI communities also experience idiosyncratic difficulties in a developmental stage where rates of suicide are comparatively high for men in particular (Nock et al. 2008). There exists a pervasive and incorrect assumption among elderly care providers that older adults are heterosexual, cisgender, and disinterested in sex (Chaya and Bernert 2014). This is particularly challenging for older LGBTQI people, who may have been closeted for their entire lives, or who experienced their sexuality as a criminal offence, associated with stigma and negative

stereotypes (De Vries 2006). These same older adults may prefer not to disclose their sexuality for fear of potential negative consequences, effectively returning to 'the closet' (Chaya and Bernert 2014). Considering the array of different risk factors touched upon here, it may be that risk varies across different life changes for LGBTQI people, however, this area is under-researched.

Suicide prevention

The path that leads an individual from the LGBTQI community to consider suicide may be comprised of any of these stressors and many more. Preventing the move from consideration to action has become an area of increased interest in both research and policy in the broader community. Sadly, considerably less focus has been on ensuring that vulnerable communities are uniquely responded to. In general, suicide prevention strategies are broad ranging, and include societal level changes (e.g. gun control laws and pharmacological restrictions on harmful medications), public health campaigns and school-based education programs focusing, for example, on recognising risk, reducing bullying and increasing connection, and finally, prevention strategies at the individual level, which may include pharmacological and psychosocial strategies. An early review by Mann et al. (2005) indicated that the most effective prevention measures included educating primary care providers, means restriction and gatekeeper education, whereas findings were mixed regarding public health approaches. Zalsman et al. (2016) reviewed literature published after the 2005 review, finding that means restriction and school-based education were both effective in reducing suicidal ideation and attempt, that fluoxetine and lithium were both useful in reducing suicide, and ketamine showed promise as did CBT- and DBT-based therapies. Zalsman et al. (2016) also indicated that, while under-assessed, social media and mobile technologies showed promise in future prevention efforts. Importantly, suicide prevention approaches may best be tailored to specific populations most vulnerable to suicide. Of relevance to this review is the importance of assessing the existence and evidence-base for strategies specifically aimed at suicide risk reduction in LGBTQI people.

The aim of this review

Across every stage of life, LGBTQI people experience challenges and stressors in addition to those experienced by cisgender/heterosexual people, and the effects of these can be long lasting and increase their vulnerability to poorer wellbeing. This highlights the critical importance of LGBTQI-tailored suicide prevention programs and strategies to support and aid this group of people. While some tailored programs have been developed, there has been no synthesis of the evidence regarding their availability and their effectiveness.

This evidence check was commissioned by the NSW Ministry of Health to evaluate the current evidence base regarding the effectiveness of LGBTQI-tailored suicide prevention programs by addressing three questions:

1. What suicide prevention programs are targeted to support people who identify as LGBTQI?
2. Of the suicide prevention programs described in question 1, which have been found to be effective in reducing the risk of suicide?

3. What barriers to the implementation and/or effectiveness of the suicide prevention programs described in question 1 have been reported by study authors?

Methods

Peer-reviewed literature

To identify peer-reviewed papers addressing the research questions, a literature search was conducted in January 2020 to examine suicide prevention programs designed to target LGBTQI individuals. EBSCOhost was used to search PsycINFO, ERIC and Medline databases. Additional systematic searches of peer-reviewed literature were conducted using EMBASE and Cochrane Library. The following key words were used to identify relevant papers:

> Suicide: suicid* OR deliberate self-harm OR deliberate self harm OR self-destruc* OR self-immol*
>
> AND
>
> Sexuality/Gender/Intersex: LGB* OR GLB*, gay OR lesbian* OR bisexual* OR queer OR trans* OR intersex* OR sexual minority OR homosexual* OR sexual orientation OR same sex attract* OR same-sex attract* OR gender diverse OR “men who have sex with men” OR “women who have sex with women” OR pansex* OR gender fluid* OR nonbinary OR non-binary* OR transsexual* OR gender nonconforming OR gender non-conforming OR gender dysphoria OR gender identity disorder OR gender minority OR polysexual OR sistergirl OR brotherboy OR two-spirit* OR MSM OR WSW OR asexual*
>
> AND
>
> Prevention Program: program* OR intervention OR prevent* OR protect* OR initiative OR gatekeeper OR therap* OR follow-up OR after-care OR safety plan OR safety-plan OR primary care OR inpatient OR outpatient

Searches were limited to full-text papers written in English and published between 2010 and 2020. A total of 3719 peer-reviewed papers were identified at this stage and imported into Endnote X9 for screening.

Grey literature

Further information was gathered through a grey literature search in February 2020. An additional 385 papers were identified in Google Scholar, InformIT, PsycEXTRA, Opengrey and LGBT Life using the same key terms listed above. Other search methods included:

1. a thorough search of Google results using the following search terms: suicide, prevention, program, intervention, LGBT. Through this search, we were able to identify several organisations

providing reports on suicide prevention programs (see Appendix). However, none of these reports included data on the treatment outcomes

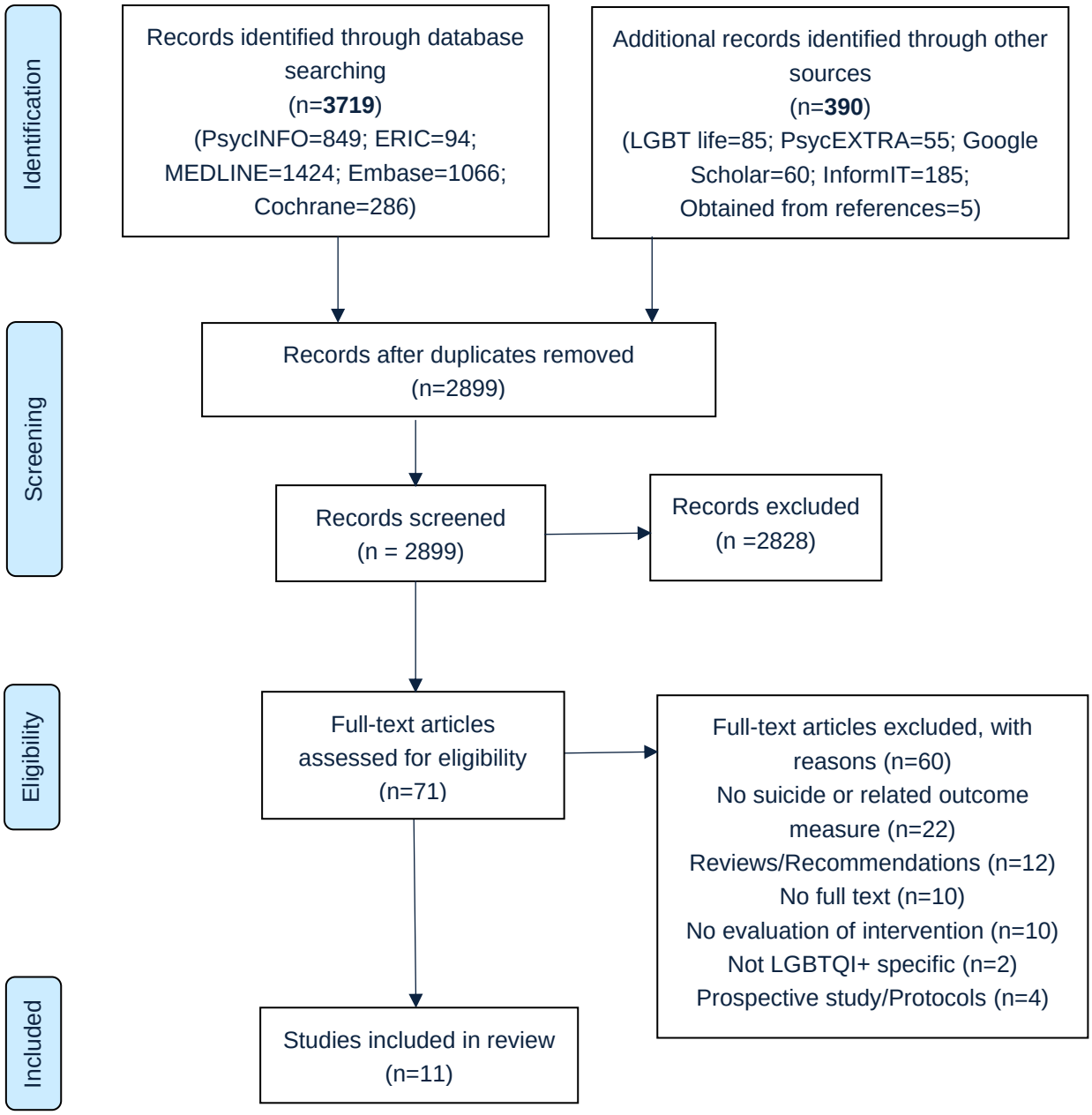
2. three organisations were contacted to enquire whether they had any unpublished findings on treatment outcomes/effectiveness of their suicide prevention programs. Emails and phone calls were made to organisers and researchers at the National LGBTI Health Alliance, ACON and Thorne Harbour Health and Drummond street services/Queerspace, however no additional information was obtained.
3. five relevant conference abstracts were identified in the previous database search. Emails were sent to the authors of these abstracts requesting further information, however, no responses were received.

An additional five papers were obtained from references in other papers. In total, 390 resources were identified in the grey literature search.

Inclusion and exclusion criteria

In total, 4,109 records were identified from both peer-reviewed and grey literature sources. After the removal of duplicates (n=1,210), the remaining 2,899 papers were screened in a three-step process. Papers were screened on title (n=2,526), abstract (n=302) and full-text (n=60).

The final number of papers included in this review was 11. Of these, two were of moderate quality and nine were of low quality. A summary of studies included in this review is attached as Appendix A.


Identification
Records identified through database searching (n=3719) (PsycINFO=849; ERIC=94; MEDLINE=1424; Embase=1066; Cochrane=286)
Additional records identified through other sources (n=390) (LGBT life=85; PsycEXTRA=55; Google Scholar=60; InformIT=185; Obtained from references=5)
Screening
Records after duplicates removed (n=2899)
Records screened (n = 2899)
Records excluded (n =2828)
Eligibility
Full-text articles assessed for eligibility (n=71)
Full-text articles excluded, with reasons (n=60)
No suicide or related outcome measure (n=22)
Reviews/Recommendations (n=12)
No full text (n=10)
No evaluation of intervention (n=10)
Not LGBTQI+ specific (n=2)
Prospective study/Protocols (n=4)
Included
Studies included in review (n=11)

Findings

Summary of interventions and findings

The current review identified 11 individual papers evaluating the effectiveness of explicit suicide prevention programs or policies for LGBTQI people. Of these, seven programs focused on outcomes for adolescents, while four focused on adult populations. All included studies were international, with no Australian literature available. Six studies were conducted in the US, two in Canada and three in Europe.

Settings and program targets varied. At the broadest level, three studies addressed the effect of legislative changes, specifically same-sex marriage legislation and anti-bullying legalisation. One study evaluated a community public health campaign, four involved evaluations of school-based initiatives and three papers evaluated clinical programs. In addition to these 11 papers, two review papers were identified that also provided some context around prevention activities.

Table 1 summarises the eligible papers, with greater detail provided in Appendices A and B regarding program populations or settings, the number of participants, outcomes and key barriers. The following section discusses these programs in more detail, in response to the specific evidence questions.

Table 1—Summary of included studies.

Program / intervention description	Source (Author, year)	Country	Key components
Legislative change			
Same-sex marriage legislation	Raifman, Moscoe, Austin and McConnell (2017)	US	Secondary data analysis: suicide attempts among public high school students prior to and after implementation of same-sex marriage legislation
	Erlangsen, Drefahl, Haas, Bjorkenstam, Nordentoft and Andersson (2020)	Denmark and Sweden	Secondary data analysis: suicide rates among adults entering same-sex and opposite-sex marriage in Europe
Anti-bullying legislation	Seelman and Walker (2018)	US	Secondary data analysis: suicide ideation or attempts among LGBQ

Program / intervention description	Source (Author, year)	Country	Key components
			high school students (mean age=16 years) following enactment of general and LGBTQI-specific anti- bullying legislation
Community programs			
Depression awareness	Wang, Häusermann, Berrut and Weiss (2013)	Switzerland	Retrospective evaluation of public health campaign focused on depression awareness in LGBTQI community, promoting help-seeking and service engagement
School-based programs			
Protective school climate	Hatzenbuehler, Birkett, Van Wagenen and Meyer (2014)	US	Secondary data analysis: impact of protective school climate policies
Anti-bullying policies	Hatzenbuehler and Keyes (2013)	US	Secondary data analysis: impact of school-based anti-bullying policies
Gay-Straight Alliances	Saewyc, Konishi, Rose and Homma (2014)	Canada	Secondary data analysis: impact of GSAs and anti-bullying policies in schools
School-based programs	Burk, Park and Saewyc (2018)	Canada	Retrospective evaluation of school-based media-based initiative, Out in Schools
Therapeutic interventions			
Attachment-based family therapy for youth	Diamond et al. (2012)	US	Open trial of pilot program implementing LGBTQI-specific adaptation of Attachment-based family therapy model
Crisis Intervention and Suicide Prevention	Plöderl et al. (2017)	Austria	Evaluation of differential outcomes arising from general program for LGB vs heterosexual patients

Program / intervention description	Source (Author, year)	Country	Key components
Cognitive behavioural therapy (CBT) and dialectical behavioural therapy (DBT)	Beard et al. (2017)	US	Evaluation of differential outcomes arising from general program for LGB vs heterosexual patients

Question 1: What suicide prevention programs are targeted to support people who identify as LGBTQI?

Systematic reviews

Two review papers identified in this search addressed mental health interventions for sexual and gender minorities (Coulter et al. 2019) and interventions for mental illness among LGBTQI young people, aged 12–25 years (Van Der Pol-Harney and McAloon 2018). Coulter et al. (2019) identified nine papers, of which two examined suicidal ideation (Diamond et al. 2012, Seelman and Walker 2018), and two examined suicide attempts (Raifman et al. 2017, Seelman and Walker 2018), all of which are included in this review. Van Der Pol-Harney and McAloon (2018) identified only one studying specifically examining suicidal ideation (Diamond et al. 2012), which is already included in this review.

More broadly, both reviews highlight the limited available evidence for outcomes including suicidality for sexual and gender diverse groups, and the need for increased attention to develop, evaluate and publish findings from mental health interventions specifically tailored for individuals and groups within LGBTQI communities. This includes the need to identify effective treatment components and individual factors to maximise treatment efficacy and to help address existing health inequities, including the increased risk of suicidality within LGBTQI communities.

Original papers

This review identified 11 original papers detailing specific suicide interventions or strategies that have been targeted to support individuals identifying as LGBTQI, and/or evaluated for their efficacy with individuals identifying as LGBTQI. Of these, most were rated as Level III-3 and two rated as Level IV using the NHMRC hierarchy of evidence (NHMRC 2019). A discussion of the range of suicide prevention programs and their efficacy is provided below, and categorised into four areas of intervention: legislation, community campaigns, school-based initiatives and therapeutic interventions.

Legislative initiatives

Enactment of Same-Sex Marriage laws

People who identify as LGBTQI are likely to experience increased rates of discrimination, victimisation, stigma and prejudice (AHRC 2014, Chakraborty et al. 2011, Meyer 2003). This can include historical experiences of relationship invalidation through heteronormative marriage legislation. Amendments to marriage legislation granting same-sex couples equivalent marriage rights to opposite-sex couples were enacted nationally in Australia in 2017, however, no Australian studies have evaluated the effect of these changes on suicide rates at this point.

Internationally, Raifman, Moscoe, Austin and McConnell (2017) compared changes in suicide attempts among public high-school students before and after implementation of state policies allowing same-sex marriage (SSM) in the US. Data was obtained from the Youth Risk Behavior Surveillance System (YRBSS) between 1999–2015. The authors found a 14% reduction in past-year suicide attempts among sexual minority youth following the introduction of policy granting same-sex couples equivalent marriage rights to opposite-sex couples. Interestingly, the enactment of SSM policy was also associated with a significant reduction in past-year suicide attempts for heterosexual youth.

In a similar European study with adults, Erlangsen, Drefahl, Haas, Bjorkenstam, Nordentoft and Andersson (2020) conducted a cohort study of all individuals entering SSM (n=28,649) or opposite-sex marriages (OSM; n=3,918,617) in Denmark and Sweden between 1989 and 2016 (NB: SSM legislation was enacted in 1989 in Denmark and 1995 in Sweden). Data was obtained from Danish and Swedish population registrars and investigated suicide rates since the enactment of SSM laws in the two countries. Results indicated a 46% decline in suicide rates among individuals entering SSM since the enactment of SSM legislation, although suicide rates for those entering SSMs are still higher than those entering OSM, particularly for females and younger individuals.

Anti-bullying legislation

Homophobic bullying represents another component of the discrimination and victimisation potentially experienced by LGBTQI individuals (AHRC 2014, Chakraborty et al. 2011, Meyer 2003). Legislative instruments to address bullying may explicitly mention gender and/or sexual orientation, as with the Australian *Sex Discrimination Act (1984)*, which was amended in 2013 to make it unlawful to discriminate against a person on the basis of sexual orientation, gender identity and intersex status under federal law. However, there is limited evaluation of the effect of such changes on suicidal ideation or attempts.

In a US study of youth outcomes, Seelman and Walker (2018) found that general anti-bullying laws enacted at state levels did not affect suicidal ideation or attempts among LGBQ youth. Enumerated anti-bullying laws (those that explicitly include LGBQ students) did produce a significant effect on suicidality in one year, but this result was significant only when students who identified as ‘questioning’ were included in the analysis.

This study used the data obtained from the Youth Risk Behavior Survey across 22 US states between 2005 and 2015, and included 286,568 youth (10.5% LGBQ) to determine the effect of anti-bullying laws (both general and enumerated) on lesbian, gay, bisexual and questioning students.

Community programs

Depression Awareness Campaign

Public health campaigns aimed at increasing awareness of affective disorders may improve understanding about risk factors for suicidal behaviour and increase help-seeking behaviour, and indeed increase likelihood of friends and family noting warning signs, however, past research has demonstrated mixed effectiveness of these in reducing suicide in the general population (Mann et al. 2005, Zalsman et al. 2016). There may be some efficacy of these for LGBTQI people, however, in reduction of stigma and minority stress.

A study conducted by Wang, Häusermann, Berrut and Weiss (2013) investigated the effect of the *"Blues-out"* campaign among gay and bisexual men in Geneva, Switzerland. This campaign, launched by Dialogai in 2009, was designed to raise awareness of depression among LGB individuals through various forms of advertising, hotline services and the distribution of resources. It included a brochure and website offering information on depression, a symptoms checklist, and a list of LGB-friendly institutions and providers. A telephone hotline was also included on the program's website.

Pre- and post-campaign measures were obtained using data from the Geneva Gay Men's Health Survey (GGMHS) in 2007 (pre-campaign) and 2011 (post-campaign). The total sample included 762 men (pre-intervention, n=276; post-intervention, n=486). The authors found a significant decrease in lifetime suicide plans, 12-month suicidal ideation, lifetime depression and -week psychological distress. However, only 32.9% of participants reported that they recognised or remembered the campaign when asked in 2011, making it difficult to attribute reductions in suicidality to the campaign itself. Further, it was not possible to match pre- and post-intervention responses. Thus, the authors were unable to measure whether the campaign had actually elicited a reduction in depressive symptomatology (including suicidality) among original pre-intervention participants.

School-based initiatives

Schools offer promising settings for implementation of a range of public health and prevention initiatives targeting mental health, and randomised controlled studies have demonstrated reductions in suicide attempts and ideation following school-based mental health and suicide awareness programmes for whole school populations (Zalsman et al. 2016). However, there is limited data addressing the effect of such programs for sexual and gender minority populations.
This review identified four papers that evaluated the effect of school-based policies and initiatives on suicide among sexual minority youth, including whole school policy-level programs and cohort-specific programs.

Protective School Climate

School climate has been defined as the shared beliefs, values and attitudes that shape interactions between students and adults and set the parameters of acceptable behaviour and norms for the school (Wang and Degol 2015). Hatzenbuehler et al. (2014) analysed whether sexual minority students living in states/cities with protective school climates had reduced risk of suicidal thoughts, plans and attempts.

Supportive school climates were defined as those that:

1) have GSA and safe spaces for LGBTQI youth
2) provide curricula on health matters relevant to LGBTQI youths (e.g. HIV)
3) prohibit harassment based on sexual orientation or gender identity
4) encourage staff to attend trainings on creating supportive environments for LGBTQI youth
5) facilitate access to providers off school property that provide health and other services specifically targeted to LGBTQI youth.

The analysis used pooled data from Youth Risk Behavior Surveillance Surveys (YRBSS) conducted in 2005–2007, analysing data from 55,599 school students across eight jurisdictions including Chicago, Delaware, Maine, Massachusetts, New York City, San Francisco, Vermont and Rhode Island (92.8% heterosexual; 1.3% lesbian or gay; 3.5% bisexual; 2.4% unsure). School climate data was derived from the 2010 School Health Profile (SHP) Survey.

Results indicated that LGBTQI youth living in jurisdictions with more protective school climates were significantly less likely to report suicidal thoughts than LGBTQI adolescents living in jurisdictions with less supportive school climates.

The study noted some limitations, in particular that outcome data was obtained in 2005–2007, while school climate data was obtained in 2010 but was used as a 'proxy' of school climate during 2005–2007. Additionally, the SHP does not include psychometric properties of the LGBTQI school climate items, with school climate measures reliant on reports provided by faculty members.

Anti-bullying policies

At a more local level, Hatzenbuehler and Keyes (2013) evaluated data from the Oregon Healthy Teens survey (OHT, 2006–2008) to determine whether school-based anti-bullying policies that explicitly included sexual orientation were associated with a reduced prevalence of suicide attempts among LGB youth. The sample was 31,852 Year 11 students (1413, or 4.4%, of whom identified as LGB) across 34 counties in Oregon, US.

Hatzenbuehler and Keyes (2013) found that inclusive school-based anti-bullying policies were associated with a reduced risk of suicide attempts among lesbian and gay youth, even after controlling for confounding factors, such as sociodemographic characteristics and exposure to peer victimisation. Furthermore, anti-bullying policies that did not specifically include sexual orientation were not associated with lower suicide attempts among lesbian and gay youth. However, this pattern was not observed for bisexual youths.

Importantly, due to the nature of the study design, school policy data was aggregated at the county level, and it was not possible to determine the extent to which anti-bullying policies were enforced in individual schools.

Gay-Straight Alliances (GSAs)

Saewyc et al. (2014) conducted a population-based evaluation of school-based Gay-Straight Alliances (GSAs) in British Columbia, Canada. GSAs are official student clubs with LGBTQI and heterosexual student membership. The groups also include at least one teacher who ensures that students have an adult with whom they can discuss LGBTQI-specific matters. The purpose of such programs is to provide a safe space for LGBTQI students and allies and to encourage students to work together to make their school more welcoming.

This evaluation relied on data from the 2008 British Columbia Adolescent Health Survey to compare discrimination, suicidal ideation and suicide attempts for students attending schools with well-established GSAs (implemented for more than three years and explicit anti-homophobic bullying policies), compared to GSAs implemented more recently (within the last three years) or schools without GSAs or anti-homophobia policy settings.

Findings indicated that the presence of GSAs in schools reduced suicidal ideation only in female students who identified as 'mostly heterosexual'. However, lesbian and bisexual girls attending schools that implemented a GSA (or similar) in combination with additional anti-bullying policies had lower odds of discrimination, suicidal ideation and attempt. No significant findings for suicide outcome measures were found for male students (n=11,594).

The length of time that the program had been established also contributed to a reduction in all outcome measures. The odds of discrimination, suicidal ideation and suicide attempts were reduced by more than half with longer-established programs (i.e. more than three years since implementation) compared to no GSA. Furthermore, having a recently implemented program (i.e. within the previous 3 years) did not predict lower odds for any outcomes. Longer-term anti-homophobic bullying policies were also associated with lower odds rates of suicidal ideation and suicide attempts for gay and bisexual boys, and lower probability of suicide attempts for lesbian and bisexual girls.

Overall, findings suggest that the presence of both GSAs and explicit anti-homophobic bullying policies were associated with reduced discrimination, suicidal ideation and attempts for LGB and mostly heterosexual boys and girls, and effects were stronger when policies and programs had been in place for three or more years. Importantly, the name commonly used to describe sexual minority support groups, *"Gay-Straight Alliance",* might be problematic as it is not explicitly inclusive of other gender and sexual minorities. As such, some GSAs go by other names (such as Rainbow Clubs, Human Rights Clubs, or Social Justice Clubs) to encourage broader membership.

School-based program initiatives

Burk et al. (2018) conducted a population-based evaluation of the media-based intervention, Out in Schools. Out in Schools is a Canadian program developed by the non-profit organisation Out on Screen in 2004. The program presents screenings of a series of LGBTQI short films and facilitates group discussion at schools throughout British Columbia. Events are facilitated by up to three trained adults who identify as LGBTQI, and run for 1–2 hours, either for small classes (approx. 30 students) or larger auditoriums (up to 250 students). The goal of these presentations is to open a dialogue among students and teachers regarding issues of homophobia, biphobia, transphobia and bullying, and ultimately to promote a safer and more inclusive learning environment.

The evaluation study assessed students' experience with bullying, homophobic discrimination, suicidal ideation and social connectedness at schools that had hosted an Out in Schools screening compared to schools that had not. This used Out in Schools presentation data to identify schools participating in the program, and outcomes drawn from the 2013 British Columbia Adolescent Health Survey and included responses from LGB (n=998) and heterosexual students (n=20,077). Analyses were adjusted for the presence of GSAs and/or anti-homophobia-based policies at school and community levels.

Female students (LGB and heterosexual) had significantly decreased odds of reporting suicidal ideation, bullying or homophobic discrimination in schools that had hosted at least one Out in Schools

presentation, even after controlling for the presence of GSAs. Although gay and bisexual boys reported less verbal harassment, no difference in suicide outcome measures was observed compared with other students, however, this study used a single binary response item assessing suicidal ideation across the previous 12 months. The authors also documented a cumulative effect of multiple Out in Schools presentations between 2009 and 2013, with lesbian, bisexual and heterosexual girls having significantly lower odds of considering suicide with each subsequent visit. However, no significant reductions were observed among boys, regardless of sexual orientation.

The authors did note that they were unable to determine whether students had attended the presentations, but assumed that regardless of attendance, Out in Schools presentations influenced the overall school climate, however, this variable was not measured.

Therapeutic interventions

Therapeutic interventions have shown promise in reducing suicide in the general population, in particular cognitive behavioural therapy and dialectical behavioural therapy have both been shown to improve treatment adherence, and reduce depressive symptoms and suicide at the individual level (Mann et al. 2005). These findings were supported in a second review (Zalsman et al. 2016), which also assessed the efficacy of group-based therapy with mixed results. Further research with larger participant cohorts is required to ascertain whether these therapies are effective in specific groups of vulnerable people.

Only three therapeutic interventions that included LGBTQI people were identified in this review: a community-based treatment for youth and two hospital-based interventions for adults, all of which are discussed below. Only the community-based treatment was specifically tailored to the needs of the LGBTQI community.

Psychosocial treatment: Attachment-Based Family Therapy for youth (Diamond et al. 2012)

Diamond et al. (2012) examined the efficacy of an adaptation of Attachment-Based Family Therapy (ABFT) specifically for LGB youth and their families. This study reports results from a small trial involving 10 self-identified LGB adolescents (ages 14–18 years) with significant levels of suicidal ideation and their parents in Philadelphia. Program modifications for LGB adolescents included increasing one-on-one sessions with parents from 1–3 sessions to 3–5 and devoting substantial time to promoting adolescence access to and participation in LGB affirmative services and resources. Changes were also made to program themes, including emphasising discussions of ‘Acceptance’, and increasing awareness of invalidating and harmful comments or behaviours, both in terms of the parent and the child. Assessments were completed at baseline, 6 and 12 weeks (post-treatment). The number of sessions completed ranged from 8–16 (average 12 sessions).

Results indicated a significant decrease in suicidal ideation and depressive symptoms over the course of treatment. All adolescents who completed ABFT-LGB had reliable (reliable change index scores) and clinically significant (clinical change index scores) reductions in suicidal ideation. The feasibility and acceptability of the intervention was also considered to be high, as eight of the participants (80%) completed an average of 12 sessions, indicating good retention.

Challenges inherent in implementation revolved around parental participation. As the authors suggested, substantial one-on-one time with parents was required to address unique factors related

to sexual minority (approximately five individual sessions). Furthermore, all parents who participated in the pilot were deemed by the treating therapists to be 'moderately rejecting' of their teen's sexual orientation compared with other parents the therapists had treated (Diamond et al. 2012). Parent rejection may manifest as disappointment, anger, or unaccepting, invalidating or critical attitudes relating to teens' sexual orientation. The authors suggested that additional modifications may be required for parents who hold more severe and rigid beliefs regarding their child's sexual orientation. It is also noted that access to training in this approach is limited.

Hospital-based interventions

Two papers in this review identified programs that are not adapted or specifically tailored for LGBTQI individuals but have been evaluated in regard to their relative effectiveness for these populations.

Crisis Intervention and Suicide Prevention for adults (CI-SP)

Plöderl et al. (2017) reported results of a comparative analysis regarding the effectiveness of treatment at the Department of Crisis Intervention and Suicide Prevention (CI-SP) at *the "Christian Doppler Clinic"* in Salzburg, Austria. The study aimed to evaluate treatment outcomes for sexual-minority patients (gay, lesbian, bisexual, or otherwise non-heterosexual, LGB+) compared with heterosexual patients. Individuals admitted to CI-SP due to high suicide risk or recent suicide attempt between February 2010 and February 2014 who completed both intake and discharge assessments were included in the analysis. The final sample included 633 individuals, 21% of whom had at least one indicator of sexual minority status. Most patients had a comorbid psychiatric disorder, such as depression, adjustment disorders, substance abuse or Cluster B Axis II personality disorders. Assessments were completed at intake and two days prior to discharge.

Treatment at CI-SP involved frequent meetings between the patient and their treating psychologist/psychiatrist. The purpose of sessions was to establish rapport, assess suicide risk, analyse problems, regulate emotion, explore alternatives and develop safety plans. All participants received the same intervention; no modification was made for sexual minority patients. Most inpatients were also prescribed psychotropic medications, including antidepressants, antipsychotics, mood-stabilisers and benzodiazepines, which were monitored by a psychiatrist. The length of stay ranged between 3422 days, with slightly longer average stays for LGB+ patients (M=30.01 days, SD=34.00) compared with heterosexual patients (M=24.08, SD=24.61).

On admission, CI-SP patients completed an initial narrative-style interview to establish a therapeutic alliance with the treating clinician. A structured assessment was then conducted to obtain information relevant to treatment, such as psychiatric diagnoses or symptoms, suicidality, aggression and self-injurious behaviours. The multi-disciplinary team met daily to evaluate patients and make modifications to individual treatment plans.

LGB+ and heterosexual patients in this study were comparable in improvements. However, when controlling for other factors, such as demographic characteristics, psychiatric diagnosis and length of treatment, LGB+ patients reported greater declines in suicidal ideation than heterosexual patients.

While staff were not required to receive any formal training for LGB+ specific competencies, one member of the therapeutic team was openly gay, which the authors suggest may have assisted in increasing awareness of LGB+ issues and subsequently improved care for LGB+ patients. It was

noted that demographic questions regarding gender identity were constrained to dichotomous responses (i.e. male and female), hence failing to allow for other gender identities.

CBT and DBT skills-based partial hospital program

Beard and colleagues (2017) compared LGBQ+ and heterosexual individuals on treatment outcomes following a partial psychiatric hospitalisation program. The program entailed both group and individual sessions focused on cognitive behavioural therapy (CBT) and dialectical behavioural therapy (DBT) skills. The primary goal was to assist individuals in the acquisition of coping skills to improve mood and daily functioning. Sessions focused on behavioural activation, identifying and challenging negative thoughts, interpersonal effectiveness, and exposure therapy.

Participants were 441 (19% LGBQ+) adult patients admitted to the partial hospital program in 2016, who were admitted for a variety of psychiatric disorders, including mood, anxiety, personality and psychotic disorders. CBT-DBT treatment was delivered by licensed psychologists, social workers, mental health counsellors, nurses and supervised psychology trainees. Treatment involved up to five weekly 50-minute group sessions. Patients also attended up to three 30-minute weekly individual sessions to reinforce skills learned in group therapy. The average duration of treatment (admission to discharge) was 11.7 days.

Sexual orientation was not found to be a predictor of treatment response, whereby heterosexual and LGBQ+ patients did not differ on treatment outcome. However, bisexual individuals did not appear to respond as well to treatment, reporting higher levels of self-injurious behaviours and suicidal thoughts at discharge than all other patients. Bisexual patients also had a lower perception of care than all other patients.

Importantly, none of the group sessions addressed LGBQ+ specific concerns. Given the poorer outcomes experienced by bisexual patients, modifications to the content of sessions may be required to account for the unique challenges associated with bisexuality.

Question 1: What suicide prevention programs are targeted to support people who identify as LGBTQI?

Based on the above results, a small number of suicide prevention initiatives and programs have been identified that are targeted to support people who identify as LGBTQI. These include:

- legislative changes, such as same-sex marriage legislation and anti-discrimination legislation that specifically addresses harassment and discrimination based on sexual orientation and/or gender identity
- public health campaigns that provide population-level information to raise awareness of depression among LGBTQI individuals and promote access to supports and help-seeking
- school-based programs that enable a positive school climate and safety for LGBTQI students, provide safe spaces both physically and socially, and promote inclusion and awareness
- therapeutic programs, including an evidence-based clinical intervention that has been specifically adapted for LGBTQI individuals to address unique and additional stressors related to minority stress and/or are provided by staff who are trained and skilled in culturally competent service provision for LGBTQI populations.

Question 2: Of the suicide prevention programs described in question 1, which have been found to be effective in reducing the risk of suicide?

All the above programs have demonstrated some level of effectiveness in preventing suicide for LGBTQI individuals. However, all studies were assessed as having low levels of evidence/quality and the levels of effects were typically small. As such, this review finds that the evidence for efficacy of the given interventions is limited and requires further work before any firm conclusions can be reached.

Nonetheless, there is evidence, particularly in school-based initiatives, suggesting that a combination of approaches, such as school policies, GSAs and whole-school interventions, that integrate prevention and intervention science to address multiple drivers and barriers across the various levels of the socio-ecological model (Bronfenbrenner 2004) would appear to be supportive of greater efficacy in suicide prevention.

Question 3: What barriers to the implementation and/or effectiveness of the suicide prevention programs described in question 1 have been reported by study authors?

There was minimal information available from this review that focused on barriers to implementation and/or effectiveness of suicide prevention programs for LGBTQI individuals. This is unsurprising given the small number of available studies and relatively low quality of evidence. Identified barriers included:

- lack of program resources
- lack of trained program facilitators
- difficulties with the recruitment of parents for family-based interventions.

For any programs or initiatives adopted from other countries, relevant resources would need to be contextualised to the Australian community and settings.

Typical of other program areas, great training, systemic collaboration with schools and supportive state/federal policy are critical to the success of suicide prevention programs within LGBTQI communities.

Consistent with theory and available evidence, a whole of community approach is essential.

Gap analysis

This review highlighted several gaps in the literature that require further investigation. Most importantly, the overall evidence base for suicide prevention for LGBTQI individuals is limited, with only 11 studies identified in this review.

Of these, there was a notable lack of literature investigating suicide prevention in older members of LGBTQI+ communities. Most of the interventions (n=7) identified were designed to target LGBT youth, with an emphasis on programs and initiatives operating in schools (n=5). Only two intervention studies were aimed at individuals over 18 years of age, both targeted at adults who had been admitted to psychiatric hospitals (Beard et al. 2017, Plöderl et al. 2017). There were similarly no

intersectional studies designed to target LGBTQI indigenous populations, those with disabilities or other areas of intersectionality, which are likely to increase risks for this already vulnerable population.

In addition, very few papers explored the effectiveness of therapeutic interventions. Most interventions involved the enactment of legislation or policy (n=6). Four studies explored the effect of positive school climate through support groups (i.e. GSAs) and inclusive anti-bullying policies, and two papers explored the effect of legalisation of same-sex marriage on suicide rates. Only three papers investigated specific therapeutic interventions for suicide prevention (Diamond et al. 2012, Beard et al. 2017, Plöderl et al. 2011). The literature search identified several therapeutic interventions that elicited a reduction in depressive symptomology. Although it is possible that information regarding the effect on suicidality may be gleaned from suicide items included in the depression measures, such results were not reported explicitly.

It is also important to note that only four interventions specified that delivery personnel were trained in LGBTQI-specific competencies. Furthermore, of all prevention programs (excluding enacted laws and policy), only four were designed specifically for LGBTQI people, (Blues-out, Out in Schools, GSAs, ABFT-LGB), including only one therapeutic intervention (Diamond et al. 2012). Other interventions provided unmodified treatment to LGBTQI people and heterosexual people alike and found similar treatment outcomes regardless of sexuality (i.e. CI-SP, CBT-DBT). Additionally, only two interventions explicitly stated that input from LGBTQI-identifying people was used in program development and/or delivery (Plöderl et al. 2017, Burk et al. 2018).

No studies assessed the effectiveness of prevention programs at follow-up. As most studies used existing secondary data, often provided anonymously, participants could not be located for further assessments. As such, program effectiveness was implied through trends in suicidality over time rather than measurement of individuals' improvement. It should also be noted, that although acknowledging limitations of study designs, one study's authors described factors that may hinder implementation (Diamond et al. 2012).

There were also several limitations regarding the methodology and design of the included papers. As mentioned above, all but one study (Diamond et al. 2012) used existing data to conduct secondary analyses. This placed restrictions on the ability to explore confounding factors or obtain additional participant information, such as gender identity. For example, only four papers were inclusive of gender minorities, with four papers explicitly excluding gender minorities or transgender individuals from their analysis, as this information had not been provided in the original data. Furthermore, due to the nature of secondary analyses, most papers were cross-sectional, inhibiting the ability to determine whether reductions in suicidality could be attributed to the intervention itself.

Groups to watch

While the available literature regarding specific interventions is limited, this review also identified areas of promising work, which may soon deliver relevant findings. These are detailed below, and we recommend the review of publications or results from these initiatives as they are made available.

National LGBTI Mental Health and Suicide Prevention Strategy

The National LGBTI Health Alliance has developed a strategic plan for action to prevent mental ill-health and suicide among LGBTI Australians. The strategy is targeted towards national, state and local government, Primary Health Networks, policy makers and researchers, mental health and suicide prevention organisations, mental health practitioners, LGBTI community organisations, and LGBTI people and communities. The goal is to provide recommendations and services to those currently at risk of suicide and to address structural factors that exacerbate suicidality among LGBTQI populations.

Information on the plan can be found here: https://lgbtihealth.org.au/wp-content/uploads/2016/12/LGBTI_Report_MentalHealthandSuicidePrevention_Final_Low-Res-WEB.pdf

North Western Melbourne Primary Health Network (NWMPHN)

NWMPHN is working in partnership with LGBTQI communities to develop a National Suicide Prevention Trial aimed at reducing suicide rates for local LGBTQI people. NWMPHN has collaborated with their LGBTQI Suicide Prevention Taskforce to design a model specifically for LGBTQI communities. Adapted from the Lifespan model, the framework prioritises 11 focused interventions across five key areas (individual, community, service system, LGBTQI community and society). NWMPHN has recently commissioned an evaluation of the trial.

For more information, refer to: https://nwmphn.org.au/wp-content/uploads/2019/11/NWMPHN-SP-LGBTQI-Update-NOV-2019-FINAL.pdf

Emerging programs

Three conference papers were identified in this review. While suicidality results are not available, and authors did not respond to requests for further information, these programs may present areas of promising practice.

Family Acceptance Project

A conference abstract presented at the 66th Annual Meeting of the American Academy of Child & Adolescent Psychiatry in 2018 discussed the Family Acceptance Project (Ryan 2019). This is an evidence-based family support model, designed to help racially, ethnically and religiously diverse families accept and support their LGBTQI children. Available results do not specifically address suicidality, but further results may be published in the future.

Group CBT Resilience Skills training for LGBTQI Youth

Another conference abstract presented at the 66th Annual Meeting of the American Academy of Child & Adolescent Psychiatry in 2018 discussed the development of a manualised CBT-based resilience class designed to teach emotion regulation and coping to depressed LGBTQI youth aged 12–17 years (N. Ramos, Miranda and Ollen 2019). Data from three pilot groups was being collected at the time of presentation and was scheduled for completion in March 2019. Preliminary data indicated that there were significant reductions in depression and anxiety symptomology post-intervention.

Project RESPEQT

A conference abstract presented in a special issue of the *Journal of Adolescent Health*, Project RESPEQT is a cross-sectional study examining community resources and wellbeing among LGBTQI adolescents. Data was collected from 2,454 LGBTQI students in grade 9 and grade 11 across 81 communities in Minnesota. Results indicated that the odds of experiencing suicidal ideation were significantly lower for adolescents (boys and girls) living in communities with some organisational resources than those living in communities without such resources. However, no full text was available.

Discussion

In a broad review of suicide prevention strategies, Zalsman et al. (2016) identified a range of suicide prevention strategies operating across a range of settings and contexts. While some are universal, such as means restrictions, others can be tailored for specific population cohorts, including LGBTQI communities. Relevant findings from this review are discussed below.

Legislation

Legislation has long loomed large in the lives of LGBTQI individuals (Knauer 2012), with regulation and structures affecting workplaces, relationships and social experiences. Legislation that attempts to promote equality through changes to marriage legislation, and to mitigate harassment through explicitly banning homophobic and transphobic bullying and discrimination, appears to have had a significant positive effect on suicide-related outcomes, drawing on international studies in both Europe and the US conducted over extended time periods. It has been suggested that this is likely to both relate to, and increase visibility of, more accepting and positive attitudes towards LGBTQI individuals and groups, which can decrease long-term experiences of minority stress and provide opportunities for statements of support from peers and the public.

Australian marriage legislation was amended in December 2017 to recognise same-sex marriage. The period preceding the postal survey was challenging for many members of LGBTQI communities, with a negative effect on mental health related to increased exposure to negative media messages about same-sex marriage for LGB people (Verrelli, White, Harvey and Pulciani 2019). Members of LGBTQI communities reported experiencing increased verbal and physical assault, online abuse, discrimination from businesses and community-led negative media, such as letterbox drops and posters in streets, all of which contributed to poor mental health and increases in suicidal ideation (Tatnell et al. under review). Protective factors included personal social support and public support, particularly for those experiencing their own networks as less supportive (Verrelli et al. 2019). Effects on suicidality have not yet been examined, as the legislative changes are still relatively recent.

Specific anti-bullying legislation that references gender and/or sexual identity was found to have a limited positive effect on suicidality for LGBTQI individuals.

Australian legislation, including the *Human Rights and Equal Opportunity Commission (HREOC) Act 1986* and the *Sex Discrimination Act 1984*, already explicitly mentions both gender and sexual identity as protected attributes. Beyond increased promotion and enforcement of these legislative instruments, there is limited additional effects anticipated from legislative change.

Community programs

The evidence for community-based public health campaigns and their effect on suicide-related outcomes was limited in this study, with only one study identified, itself of low quality. In more general population groups, public awareness campaigns have been associated with some increased help-seeking behaviours (Zalsman et al. 2016), but additional research using higher-quality studies to evaluate suicide outcomes is needed to evaluate outcomes to develop any certainty.

School-based programs

Findings from the school-based programs suggest that a whole-school approach to supporting LGBTQI students is critical to prevention of suicidal ideation and attempts. Consistent with the Australian Student Wellbeing Framework (Education Services Australia 2020), such approaches need to operate at a range of levels, as indicated in **Error! Reference source not found.** below. This i ncludes leadership and culture, provision of support and involvement of student voice, inclusion practices, and partnerships with other relevant groups.

Figure 1—Australian Student Wellbeing Framework (from Education Services Australia, Australian Student Wellbeing Framework).

International research appears to indicate protective effects of jurisdiction-level legislation and school-level policies specifically addressing homophobic bullying. In addition, school-based instrumental supports such as the provision of safe spaces and guidance, as in GSAs and program-level initiatives, can contribute to significant protective effects against suicidal ideation and attempts for LGBTQI

students during adolescence, with some indication of protective effects also being observed for heterosexual students.

In their general review, Zalsman et al. (2016) highlight the broader effectiveness of school-based programs that focus on mental health literacy, suicide risk awareness and skills training in reducing both suicidal ideation and attempts. This may offer a potential argument for further investment in this area, possibly through programs such as Mental Health First Aid (MHFA; Kitchener, Jorm and Kelly 2017), for which there are now published guidelines providing relevant considerations for working with LGBTQI individuals (Bond et al. 2017).

Therapeutic interventions

This review identified very little evidence of LGBTQI specific suicide prevention therapeutic interventions. Only one paper (Diamond et al. 2012) had an LGB-specific treatment model, and results to date are limited to a very small sample size from a pilot study. One non-tailored intervention was evaluated comparing heterosexual vs LGB populations (Plöderl et al. 2017) and found no difference in suicidal ideation reduction following treatment (7.8% in heterosexual patients compared to 7.9% in sexual minority patients). Beard et al. (2017) found similar rates of re-hospitalisation for LGBQ+ patients (10%) and heterosexual patients (6%) following intensive hospital-based crisis interventions (Plöderl et al. 2017, Wang et al. 2015). However, of note, bisexual individuals reported fewer positive outcomes for CBT- and DBT-based interventions (Beard et al. 2017). Despite the limited studies, these findings do suggest that standard protocols have benefit for at least some LGBTQI people, however, understanding why bisexual individuals benefit less is important to investigate. Moreover, there is insufficient evidence available to determine suitable models for LGBTQI clinical practice, and further investment in research with an emphasis on making findings available is critical to help address this gap.

As noted by Zalsman et al. (2016), there is support for the provision of effective pharmacological and psychological treatments for depression in prevention initiatives, but again, the lack of published findings is a barrier to determining suitable models. Other areas highlighted by Zalsman et al. (2016) that require further exploration and consideration of tailoring or adapting approaches for LGBTQI groups include gatekeeper training, education of primary care practitioners with a focus on depression recognition and support, and internet and helpline supports.

Summary of findings

Overall, this review identified a small number of studies that specifically investigated programs or initiatives targeting suicide prevention for LGBTQI individuals. Of these, most were of a low quality, with most evaluations using secondary population-level data and retrospective analysis, and clinical trials involving very small samples with no control groups. The lack of high-quality research is a significant barrier to addressing the review questions identified for this study.

In addition, the focus of studies was limited, with few adult studies available, and no research addressing suicidality in older age groups. Of the available studies, none were conducted in Australia, that is, all were conducted in either North America or Europe, and hence generalisability may be limited, particularly for more isolated regional or rural areas.

In addition, there is no systematic research that specifically evaluates programs within a contextual framework that considers experiences of discrimination, and no research has considered issues of intersectionality for individuals of colour, those from refugee or migrant backgrounds, or those living with disability and/or socio-economic disadvantage. This is relevant as all these experiences might be considered likely to worsen experiences of harassment and contribute to increased risks of suicidality.

Overall, one key finding of this review is that while suicidality in LGBTQI communities is a key issue, the lack of research to evaluate what works is a barrier to investment in effective interventions. Future work could effectively leverage the current knowledge in suicide prevention more broadly, drawing on systematic reviews such as that by Zalsman et al. (2016).

We propose that all funded projects in this area are required to publish findings in open access formats. This is essential if we are to build a knowledge base within the Australian context.

Recommendations

People who identify as LGBTQI are at increased risk of suicidal ideation and behaviour, and suicide. The literature on suicide prevention in LGBTQI people is in its infancy. Thus, further research into the effectiveness of existing suicide prevention programs for LGBTQI people and the development of LGBTQI specific programs is warranted.

Prioritising of future research and evaluation into LGBTQI suicide prevention is highlighted by the National Lesbian, Gay, Bisexual, Transgender and Intersex Mental Health and Suicide Prevention Strategy (2016). The strategy emphasises the need for additional research that may be facilitated by funding bodies calling for research in this field, such as Suicide Prevention Australia, Beyond Blue, National Medical & Health Research Council, Australian Research Council and Medical Research Future Fund.

Recommendations derived from this review include:

1. In the Australian context, replication of international studies investigating comprehensive school-based approaches that aim to increase positive attitudes towards those who identify as LGBTQI in order to reduce bullying, discrimination, suicidal ideation and associated behaviour. Furthermore, opportunities to translate and adapt successful school-based programs into university and workplace programs may enable awareness raising and suicide prevention programs to be delivered to the adult population.
2. Evaluation of current Australian suicide prevention practises to determine their effectiveness with and acceptability to LGBTQI people (e.g. emergency crisis intervention, mental health care plans, crisis hotlines and aftercare approaches) is required in order to determine the need for adapted interventions specific to LGBTQI communities.
3. While there was only one intervention study specifically adapted to the needs of LGBTQI people, this approach holds promise and requires further research attention. It is important to note that evidence-based treatment approaches to suicide prevention for the broader population do exist. There is, however, a critical need to ensure that these programs are sensitive and appropriate to the needs of individuals who identify as LGBTQI.
4. Examine current levels of health, education and caring professionals' attitudes towards and competence in working with LGBTQI people in order to inform any training needs
5. A lifespan approach to suicide prevention in LGBTQI people that acknowledges the importance of youth-focused programs but does not neglect adulthood and old age.
6. Future research and evaluation should continue to examine differences between gender identities and sexualities included within LGBTQI communities as this is a heterogeneous group and studies found different intervention effects between people of diverse gender and sexual identities. This issue is particularly salient as it is recognised that some LGBTQI groups are at greater risk of suicide than others (e.g. bisexual and gender diverse groups).
7. All research and evaluation ought to be done in collaboration with peak bodies and/or representatives of the LGBTQI community.

Incentivising the reporting on any funded research and evaluation projects to a national clearinghouse or similar organisation would provide a richer published and grey literature.

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Appendix A: Details of included studies (including NHMRC grading): Part A – Original studies

Source (Author, Year)	Study type	Level of evidence (NHMRC grade)	Population/ Setting	N (number of studies, number of participants)	Intervention/ Comparator	Outcomes	Comments/notes
Diamond, Diamond, Levy, Closs, Ladipo & Siqueland 2012	Treatment Development Study and Open Trial	IV	Setting: Clinical Population: Lesbian, gay and bisexual (LGB) youth admitted for suicidal ideation and/or attempts, and their families	N=10, age range 14–18 (M=15.10 SD=1.37); 80% female, 20% male; 20% lesbian, 10% gay, 70% bisexual	Attachment-Based Family Therapy-LGB (ABFT-LGB) No comparison	• Significant decrease in suicidal ideation over the course of treatment, F(2, 18)=18.78, p< .001, d=2.10. • Significant decrease in depressive symptoms over the course of treatment, F(2, 18)=4.59, p=.03, d=.9 • No significant decrease in attachment-related anxiety over the course of treatment, F(2, 12)=2.50, p=ns, d=.68	• Small sample size, limiting the ability to estimate treatment effect sizes • Not known if the original version of ABFT works with LGB adolescents and if adaptation of the treatment manual was actually necessary
Burk, Park & Saewyc (2018)	Population-Based Evaluation	III-3	Setting: High school Population: Teachers and	N=21,075 (998 LGB students and 20,077	School-based intervention (Out in Schools)	• Out in Schools presentations were associated with decreased odds of experiencing suicidal ideation among lesbian and	• Data used for this study was obtained retrospectively. As such, authors were unable to determine whether

Source (Author, Year)	Study type	Level of evidence (NHMRC grade)	Population/ Setting	N (number of studies, number of participants)	Intervention/ Comparator	Outcomes	Comments/notes
			students (including LGB-identifying and heterosexual students)	heterosexual students)	compared to No intervention	bisexual girls OR = 0.84 (0.74, 0.95)* • Heterosexual girls attending schools that had hosted an Out in Schools presentation also had significantly lower odds of suicidal ideation. OR=0.94 (0.89, 0.99)* than schools that had not • Multiple presentations between 2009 and 2013 had an accumulative effect, whereby lesbian and bisexual girls had 16% lower odds and heterosexual girls had 6% lower odds of considering suicide with each additional screening No significant results for suicide outcomes were obtained for boys, regardless of sexual orientation – i.e. gay, bisexual or heterosexual	students had actually attended the presentations and had been directly affected by the program • Instead, authors assumed that 'Out in Schools' events would influence the overall school climate subsequently affecting student responses. • Data was cross-sectional in nature, impeding the ability to infer causality

Source (Author, Year)	Study type	Level of evidence (NHMRC grade)	Population/ Setting	N (number of studies, number of participants)	Intervention/ Comparator	Outcomes	Comments/notes
Saewyc, Konishi, Rose & Homma (2014)	Population-Based Evaluation	III-3	Setting: High school Population: Students (including LGB-identifying and heterosexual) who attend schools with Gay-Straight Alliances (GSAs) in western Canada	N=21,708 students (LGB, n=723; heterosexual, including 'mostly heterosexual' n=20,985)	Gay-Straight Alliances	• As expected, LGB students and those who identified as 'mostly heterosexual' were significantly more likely than their 'heterosexual' peers to report serious suicidal ideation (boys: χ=361.44, p<.001, girls: χ2=541.20, p<.001) or suicide attempts (boys: χ2=385.53, p<.001; girls: χ2=429.63, p<.001) • GSAs linked to reduced odds of suicidal ideation only for 'mostly heterosexual girls' (AOR=0.68, 95% CI, 0.49–0.95, p<.05), • None of the gay, lesbian or bisexual orientation groups had significantly reduced odds of past-year suicide attempts • Explicit anti-homophobic bullying policies associated with lower odds of discrimination for mostly heterosexual girls, suicidal ideation for exclusively	• No details about the GSAs, their purpose, size and visibility in the schools • Students were assessed at only one point in time

Source (Author, Year)	Study type	Level of evidence (NHMRC grade)	Population/ Setting	N (number of studies, number of participants)	Intervention/ Comparator	Outcomes	Comments/notes
						heterosexual girls, and suicide attempts for LGB boys and girls. • Odds of discrimination, suicidal ideation and suicide attempts reduced by more than half with GSAs implemented for more than 3 years compared to no GSA	
Plöderl et al. (2017)	Secondary analysis	III-3	Setting: Clinical Population: LGB youth admitted for suicidal ideation and/or attempts	633 (63% of admitted patients) completed both intake and discharge assessments, comprising the analysed sample At least one indicator of sexual minority status was	Crisis intervention and suicide prevention (CI-SP) department within a public psychiatric hospital Compared treatment outcomes for LGB patients	• At both intake and discharge assessment, only small sexual orientation differences (d<0.27) in suicide ideation, hopelessness and depression • Only suicide ideation achieved statistical significance, indicating that sexual-minority patients had slightly higher levels than heterosexual patients at intake and discharge	Did not use open-ended response options for questions regarding sexual behaviour, which may have been problematic for some people (e.g. those with lacking sexual attraction)

Source (Author, Year)	Study type	Level of evidence (NHMRC grade)	Population/ Setting	N (number of studies, number of participants)	Intervention/ Comparator	Outcomes	Comments/notes
				reported by 21% of patients	and heterosexual patients		
Hatzenbuehler & Keyes (2013)	Secondary analysis	III-3	Setting: School Population: High school students (including LGB-identifying and heterosexual)	N=31,852 11th-grade public school students (1413 lesbian, gay and bisexual individuals; 4.4%) 15% of counties had no schools with inclusive anti-bullying policies; 18% had fewer than half of their school-districts with inclusive policies; and	Schools with inclusive anti-bullying policies compared to those without such policies	• Lesbian and gay youths living in counties with fewer school districts with inclusive anti-bullying policies were 2.25 times (95% confidence interval [CI], 1.13–4.49) more likely to have attempted suicide in the past year compared with those living in counties where more districts had these policies • Inclusive anti-bullying policies were significantly associated with a reduced risk for suicide attempts among lesbian and gay youths, even after controlling for sociodemographic characteristics (sex, race/ethnicity) and exposure to	• Data was obtained from the Oregon Healthy Teens survey, which does not release information on the individual schools. As such, authors were unable to determine whether anti-bullying policies were actually enforced in the schools • Study was cross-sectional

Source (Author, Year)	Study type	Level of evidence (NHMRC grade)	Population/ Setting	N (number of studies, number of participants)	Intervention/ Comparator	Outcomes	Comments/notes
				only 15% had policies implemented into all schools		peer victimisation (odds ratio, .18; 95% CI, .03e.92). • In contrast, anti-bullying policies that did not include sexual orientation were not associated with lower suicide attempts among lesbian and gay youths (odds ratio, .38; 95% CI, .02–.33)	
Hatzenbuehler, Birkett, Van Wagenen & Meyer (2014)	Secondary analysis	III-3	Setting: School Population: High school students (including LGB-identifying, unsure, and heterosexual)	N=55,599 students (92.8% heterosexual; 1.3% lesbian or gay; 3.5% bisexual; 2.4% unsure)	Compared outcomes for LGB students living in states and cities with more protective school climates compared to students living in states/cities	• Lesbian, gay, and bisexual students living in states and cities with more protective school climates reported fewer past-year suicidal thoughts than those living in states and cities with less protective climates (lesbians and gays: odds ratio [OR]=0.68; 95% confidence interval [CI]=0.47, 0.99; bisexuals: OR=0.81; 95% CI=0.66, 0.99).	• Data obtained from Youth Risk Behavior Surveillance Surveys (YRBSs) • The surveys were completed by students attending schools across 8 jurisdictions, including Massachusetts; Chicago, Illinois; Delaware; Maine; Massachusetts; New York City, New York; San Francisco, California;

Source (Author, Year)	Study type	Level of evidence (NHMRC grade)	Population/ Setting	N (number of studies, number of participants)	Intervention/ Comparator	Outcomes	Comments/notes
					with less protective school climates		Vermont; and Rhode Island
Erlangsen, Drefahl, Haas, Bjorkenstam, Nordentoft & Andersson (2020)	Cohort study	III-3	Setting: Community Population: Individuals (same-sex attracted and heterosexual) who were married in Denmark and Sweden between 1989 and 2016	N=28,649 individuals entered same-sex marriage (SSM) and 3,918,617 who entered opposite-sex marriage (OSM)	Legalisation of same-sex marriage	There was a 46% decline in rates of suicide over time among individuals who entered a same-sex marriage	Not stated
Raifman, Moscoe, Austin	Difference-in-	III-3	Setting: School	N=762,678 students (12.7%	Compared changes in suicide	• Implementation of SSM laws was associated with a 7%	Not stated

Source (Author, Year)	Study type	Level of evidence (NHMRC grade)	Population/ Setting	N (number of studies, number of participants)	Intervention/ Comparator	Outcomes	Comments/notes
& McConnell (2017)	differences analysis		Population: High school students (sexual minority students including gay, lesbian, bisexual or not sure; all students)	identified as sexual minorities)	attempts among all public high school students before and after implementation of state policies regarding same-sex marriage (SSM) (1999–2015)	decrease of past-year suicide attempts for all students • There was a 14% reduction in past-year suicide attempts among sexual minority youth following implementation of state policies	
Seelman & Walker (2018)	Secondary analysis	III-3	Setting: High School Population: High school students (including LGBQ-	N=286,568 (10.5% lesbian, gay, bisexual and questioning; LGBQ)	Investigated the effect of anti-bullying laws that include sexual orientation as	• There was a significant difference in rates of suicide attempts for LGBQ youth living in states with enumerated anti-bullying laws compared to states without	Results were only significant when 'questioning' identities were included in the analysis

Source (Author, Year)	Study type	Level of evidence (NHMRC grade)	Population/ Setting	N (number of studies, number of participants)	Intervention/ Comparator	Outcomes	Comments/notes
			identifying and heterosexual)		a protected class	• There were no significant findings regarding the relationship between general anti-bullying laws and suicidality	
Wang, Häusermann, Berrut & Weiss (2013)	Secondary analysis	IV	Setting: Community Population: Gay and bisexual men	N=762 Pre-intervention (2007), N=276 Post-intervention (2011), N=486	Investigated the effectiveness of the Blues-out campaign (2009–2011) Pre- and post-campaign measures were compared	• There was a significant decrease in lifetime suicide plans, 12-month suicidal ideation, lifetime depression and 4-week psychological distress • Small effect ranging from .10–.20	• Community-level assessment with no control • Different participants for pre- and post-assessment • Very little information regarding the campaign itself (including on campaign website)
Beard, Kirakosian, Silverman, Winer,	Comparative analysis	III-3	Setting: Clinical Population: Inpatient	N=441 (19% LGBQ+)	Compared LGBQ+ and heterosexual individuals on	• Sexual orientation did not significantly predict treatment response, whereby heterosexual and LGBQ+	The lack of a control group restricts the conclusions that can be made

Source (Author, Year)	Study type	Level of evidence (NHMRC grade)	Population/ Setting	N (number of studies, number of participants)	Intervention/ Comparator	Outcomes	Comments/notes
Wadsworth & Björgvinsson (2017)			sample attending a partial hospital program (Lesbian, gay, bisexual, queer, or other sexual minorities vs. heterosexual)		treatment outcomes following a partial hospital program utilising CBT and DBT skills-based training	patients did not differ on treatment outcome (β=.410, p=.028) • Bisexual individuals did not appear to respond as well to treatment, reporting higher levels of self-injurious behaviours and suicidal thoughts at discharge than all other patients (β=.386, p=.014) • Bisexual individuals also had lower perception of care than all other patients	regarding the source of improvement

Appendix B: Details of included studies (including NHMRC grading): Systematic reviews

Source (Author, Year)	Study type	Level of evidence (NHMRC grade)	Population/ Setting	N (number of studies, number of participants)	Intervention/ Comparator	Outcomes	Comments/notes
Coulter et al. (2019)	Systematic review of randomised and non-randomised designs with pre-test and post-test data	I	Primary and secondary	Identified a total of 9 interventions. This included 9 for mental health, 2 for substance use and 1 for violence victimisation	Reviewed interventions and their effectiveness in preventing or reducing substance use, mental health problems and violence victimisation among sexual and gender minorities	• Mental health outcomes were examined in all studies: • Depressive symptoms (n=5) • Suicidal ideation (Diamond et al. 2012, Seelman et al. 2018) • Suicide attempts (Seelman et al. 2019, Raifman et al. 2017) • All interventions improved mental health outcomes • Only one study included in the review had strong methodological quality	All studies examining suicidality were included in the current review

Source (Author, Year)	Study type	Level of evidence (NHMRC grade)	Population/ Setting	N (number of studies, number of participants)	Intervention/ Comparator	Outcomes	Comments/notes
Van Der Pol-Harney & McAloon (2018)	Systematic review	I	Primary and secondary	9 studies with a total of 1,149 participants	Reviewed trials that evaluated psychosocial interventions for LGBTQIA youth (12–25 years)	• Effects on mental health varied considerably depending on how they were measured • Mental health was measured in relation to suicidal ideation in 1 study (i.e. Diamond et al. 2012)	Study investigating suicidal ideation was included in the current review

Appendix C: Summary table of interventions

Author (date) – Intervention name and Location	Intervention type	Time period	Target population	Delivery personnel	Length & duration*	Mode of delivery	Cost	Funding	Program content &LGBTI input	Barriers & enablers
Diamond, Diamond, Levy, Closs, Ladipo & Siqueland (2012) – Attachment-based family therapy (ABFT) Philadelphia, US	Attachment-based family therapy (ABFT)	Not specified	LGB suicidal youth	Therapists were two developers of ABFT. Both were PhD-level clinical psychologists with 8–22 years of experience working with urban, suicidal youth, including suicidal LGB youth	Weekly 60-minute sessions for 12–16 weeks	Face-to-face (adolescent-only, parent-only, and family sessions)	Not stated	This pilot program was supported by a grant from the American Foundation for Suicide Prevention	The adapted model (ABFT-LGB) was composed of five tasks delivered in sequence: (1) Relational Reframe Task, designed to focus treatment on strengthening relationships (2) the Adolescent Alliance Task (child only), identifies core family conflicts linked to the adolescent's suicidal ideation and preparation to address these with parents during future conjoint sessions (3) the Parent Alliance Task (parent only),	• Substantial amount of time was required working alone with the parents. The authors suggest that up to 5 sessions were necessary for some parents • Most of the parents who participated were deemed to be only 'moderately rejecting' by the treating therapists. The authors propose that

Author (date) – Intervention name and Location	Intervention type	Time period	Target population	Delivery personnel	Length & duration*	Mode of delivery	Cost	Funding	Program content &LGBTI input	Barriers & enablers
									aims to amplify parental love and empathy, and to teach emotionally focused parenting skills (4) the Reattachment Task, involves family discussion of core relational themes and events using their newly acquired communication, problem solving, and affect regulation skills (5) as attachment relationships strengthened, therapists focused on the Competency Task, which aims to promote adolescent autonomy (e.g. improving school functioning, involvement in	additional modifications might be necessary in order to recruit and treat intransigent parents who hold severe and persistent anger towards their child's sexual orientation

Author (date) – Intervention name and Location	Intervention type	Time period	Target population	Delivery personnel	Length & duration*	Mode of delivery	Cost	Funding	Program content &LGBTI input	Barriers & enablers
									LGB youth groups) while maintaining family connection LGBTI input not stated	
Burk, Park, and Saewyc (2018) Out in Schools British Columbia, Canada	Film-based intervention	2004–Ongoing	High school students (including LGB and hetero-sexual)	Showings are facilitated by 1–3 trained adults who identify as LGBTQ	Events last 1–2 hours and feature a combination of films	Face-to-face (events are booked by schools and can be shown to small groups during class time or for larger audience of students, in auditorium showings for up to 250 students)	Not stated	Research was funded by the Canadian Institutes of Health Research	Out in Schools presents LGBTQ film screenings and facilitates group dialogues at schools. The aim of these sessions is to engage and inform school personnel (students and teachers) on issues of homophobia, biphobia, transphobia and bullying Sessions are conducted by LGBTQ facilitators	N/A

Author (date) – Intervention name and Location	Intervention type	Time period	Target population	Delivery personnel	Length & duration*	Mode of delivery	Cost	Funding	Program content &LGBTI input	Barriers & enablers
Saewyc, Konishi, Rose, and Homma (2014) Sexual minority support programs and anti-homophobia policies in schools such as Gay-Straight Alliances; GSAs) British Columbia, Canada	Support group	Not specified	Sexual minority school students	Teachers at the school who also serve as faculty advisors	Ongoing throughout the school year	Face-to-face	Not stated	Research was supported by grants from the Canadian Institutes of Health Research, Institute of Population and Public Health, and Institute of Gender and Health	• Gay-Straight Alliances (GSAs) are official student clubs with LGBTQ and heterosexual student membership • Students who attend schools with a GSA know that they have at least one or two adults they can talk to about LGBTQ-specific matters • The purpose of GSAs is to provide a safe space in which LGBTQ students and allies can work together on making their schools more welcoming for sexual and gender minority students LGBTQI students are crucial in the development and	The name commonly used to describe sexual minority support groups, "*Gay-Straight Alliance*" might be problematic as it is not explicitly inclusive of other gender and sexual minorities. As such, some GSAs go by other names (such as Rainbow Clubs, Human Rights Clubs, or Social Justice Clubs) to encourage

Author (date) – Intervention name and Location	Intervention type	Time period	Target population	Delivery personnel	Length & duration*	Mode of delivery	Cost	Funding	Program content &LGBTI input	Barriers & enablers
									implementation in school-based GSAs	broader membership
Plöderl et al. (2017) Department of Crisis Intervention and Suicide Prevention (CI-SP), at the "Christian *Doppler Clinic*" Salzburg, Austria	Crisis intervention	February 5 2010, February 26, 2014.	Adult patients (18+ years) who have attempted suicide or experience suicide ideation, despair, or hopelessness	Psycho-therapist or clinical psychologist	Stays ranged from 3–422 days. SM patients (M=30.01, SD=34.00) compared to heterosexual patients (M=24.08, SD=24.61)	Face-to-face (high-frequency meetings between patient and their responsible psychotherapist or clinical psychologist)	Not stated	No funding involved	Crisis intervention included: • An interview at admission by the responsible psychiatrist and psychotherapist/ psychologist to enhance therapeutic alliance • A structured assessment of treatment-relevant information, such as psychiatric diagnosis, physical symptoms, suicide ideation, plans,	One member of the therapeutic team was openly gay, which may have assisted in increasing awareness of SM issues, and subsequently improved care for SM patients

Author (date) – Intervention name and Location	Intervention type	Time period	Target population	Delivery personnel	Length & duration*	Mode of delivery	Cost	Funding	Program content &LGBTI input	Barriers & enablers
									self-control, previous suicide attempts (date, reason, method, medical treatment), non-suicidal self-injury, aggressive behaviour • A realistic short-term goal for crisis intervention is agreed upon (e.g., enhancing sleep, managing depressive symptoms, and reducing suicide ideation) • The multi-professional team meets daily from Monday to Friday to discuss suicide risk, evaluate and modify crisis intervention steps or goals, manage transference and counter-transference	

Author (date) – Intervention name and Location	Intervention type	Time period	Target population	Delivery personnel	Length & duration*	Mode of delivery	Cost	Funding	Program content &LGBTI input	Barriers & enablers
									issues, evaluate and modify the diagnosis, and plan for discharge • No staff had received any formal training in sexual minority-specific competencies, however one member of the therapeutic team identified as LGBTQ	
Hatzenbuehler and Keyes (2013) Anti-Bullying Policies in schools US	Social Policy	Data from 2005–2015	LGB school students	American schools that have adopted inclusive anti-bullying policies	Ongoing	School climate	Not stated	Not stated	Laws and policies implemented to address bullying, discrimination and harassment in schools. ‘Inclusive’ anti-bullying policies explicitly include LGBT individuals in their specifications	Introduced at the state-level and enforced by the individual school

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Protective School Climate US	School initiative	Pooled data from 2005–2007	School students	Teaching faculty and students	Ongoing	School climate	Not stated	Research was supported by grants from the Eunice Kennedy Shriver National Institute of Child Health and Human Development, the National Institute of Drug Abuse, and by the IMPACT LGBT Health and Development Program at Northwestern University	Supportive school climates were defined as those that: (1) have GSA and safe places for LGBTQ youth (2) provide curricula on health matters relevant to LGBTQ youths (e.g. HIV) (3) prohibit harassment based on sexual orientation or gender identity (4) encourage staff to attend trainings on creative supportive environments for LGBTQ youth (5) facilitate access to providers off school property that provide health and other	N/A

Author (date) – Intervention name and Location	Intervention type	Time period	Target population	Delivery personnel	Length & duration*	Mode of delivery	Cost	Funding	Program content &LGBTI input	Barriers & enablers
									services specifically targeted to LGBTQ youth	
Erlangsen, Drefahl, Haas, Bjorkenstam, Nordentoft, and Andersson (2020) Implementation of law allowing same-sex marriage Denmark and Sweden	Enactment of SSM legislation	Danish and Swedish registrar data from 1989–2016	Individuals entering same-sex marriage in Denmark and Sweden	Danish and Swedish governments	Ongoing since 1989 (Denmark) and 1995 (Sweden)	Legislation	Not stated	No funding involved	Legislation granted same-sex couples equivalent marriage rights as 'opposite-sex marriage'	SSM has already been made legal in Australia
Raifman, Moscoe, Austin, and McConnell (2017) US state-level policy granting same-sex	Enactment of SSM policy	Data obtained from the Youth Risk Behavior Surveillance System (YRBSS) from	Sexual minority youth in US states	Policy enforced by state governments	Ongoing since enactment of state policies	Policy	Not stated	Research was funded by training grants from the National Institutes of Health, the Maternal and Child Health Bureau, Health	State-level policy granting same-sex couples equivalent marriage rights to opposite-sex couples	Similar policies have been enacted at a national level by the Australian Government

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couples the right to marry US		1999–2015						Resources and Services Administration and the US Department of Health and Human Services		
Wang, Häusermann, Berrut, and Weiss (2013) Blues-out Geneva, Switzerland	Depression awareness campaign	Two campaigns were launched between 2009 and 2011	Gay and lesbian individuals in Geneva	A national campaign designed and delivered by "*Dialogai*"	2 years	Multiple formats including advertising, hotline services and the distribution of resources	Not stated	Not stated	The campaign launch included: (1) a brochure and website offering information on depression (2) symptoms checklist (3) a list of consulting institutions and organisations providing the key intervention Additional resources including the number for a telephone hotline were included on the website	Difficult to assess whether these differences can actually be attributed to the campaign itself

Author (date) – Intervention name and Location	Intervention type	Time period	Target population	Delivery personnel	Length & duration*	Mode of delivery	Cost	Funding	Program content &LGBTI input	Barriers & enablers
									LGBTI input not stated	
Beard et al. (2017) CBT & DBT skills-based training New England	Clinical intervention	January-November 2016	Individuals admitted to a partial hospital program with a range of psychiatric disorders (i.e. mood, anxiety, personality and psychotic disorders)	CBT-DBT treatment was delivered by licensed psychologists, social workers, bachelor-level mental health counsellors, nurses and supervised psychology trainees	Treatment involved up to five 50-minute group sessions Monday-Friday. Patients also attended up to three 30-minute individual sessions each week to reinforce skills learned in group therapy. The average duration of treatment (admission to discharge)	Face-to-face	Not stated	Not stated	Treatment was comprised of both individual and group therapy that teach skills derived from cognitive behavioural therapy (CBT) and dialectical behavioural therapy (DBT). Sessions focussed on behavioural activation, identifying and challenging negative thoughts, interpersonal effectiveness, and exposure therapy LGBTI input not stated	None of the group sessions addressed LGBTQ+ specific concerns

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					was 11.7 days					

Appendix D: List of websites visited in grey literature research

MindOUT! https://www.mindout.org.uk/ (UK)

LGBT Foundation https://lgbt.foundation/publications (UK)

Stonewall https://www.stonewall.org.uk/lgbt-britain-health (UK)

Gov.UK https://www.gov.uk/government/publications/preventing-suicide-lesbian-gay-and-bisexual-young-people (UK)

NHS https://www.nhs.uk/conditions/stress-anxiety-depression/mental-health-issues-if-you-are-gay-lesbian-or-bisexual/ (UK)

National Suicide Prevention Alliance https://www.nspa.org.uk/home/our-work/ (UK)

The LGBT Health and Inclusion Project http://www.switchboard.org.uk/wp-content/uploads/2013/08/LGBT-Suicidal-Distress-Report.pdf (UK)

American Foundation for Suicide Prevention https://afsp.org/about-suicide/lgbtq-suicide-suicide-risk/ (US)

Suicide Prevention Resource Centre https://www.sprc.org/populations/lgbt (US)

American Medical Association https://www.ama-assn.org/delivering-care/population-care/preventing-suicide-lgbtq-youth (US)

Centre for Suicide Prevention https://www.suicideinfo.ca/resources/ (Canada)

Canadian Mental Health Association https://ontario.cmha.ca/documents/lesbian-gay-bisexual-trans-queer-identified-people-and-mental-health/ (Canada)

Mental Health Commission of Canada https://www.mentalhealthcommission.ca/English/resources (Canada)

International Association for Suicide Prevention (ISAP) https://www.iasp.info/resources/Groups_at_Risk/LGBT/ (Canada)

Together to Live http://www.togethertolive.ca/engaging-lgbtq-youth (Canada)

Mental Health Foundation of New Zealand https://www.mentalhealth.org.nz/home/our-work/category/51/suicide-prevention (NZ)

RainbowYOUTH https://ry.org.nz/what-we-do/info/research (NZ)

Ministry of Youth Development https://www.msd.govt.nz/documents/about-msd-and-our-work/newsroom/lgbti-release-ministry-of-youth-development.pdf (NZ)