Scotland's Suicide Prevention Action Plan

National Suicide Prevention Leadership Group
Every Life Matters Suicide Prevention Action Plan
Academic Advisory Group

An investigation into existing literature exploring unique risk factors for suicidal thoughts, self-harm and suicide in young adults

(Action 7)

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1. Introduction

Anyone can experience suicidal thoughts or behaviour at any point in their lives. However, research has found that some demographic groups are at greater risk of having such experiences. For example, between 2008-2019 self-harm and suicide attempt in Scotland increased for both men and women. However, the prevalence was consistently higher in women (Scottish Health Survey, 2019).

Young adults are also at greater risk of self-harm than older adults (Wenzel et al., 2011). In a nationally representative study of 18–34-year-olds in Scotland, O'Connor et al. (2018) found that 11.3% of participants had a lifetime history of suicide attempt and 16.2% reported a history of non-suicidal self-harm. One of the most powerful predictors of suicide attempt is a history of similar behaviour (Hawton and van Heeringen, 2009), with means of suicide becoming more lethal over time. Therefore, it is important to identify risk factors which are associated with suicidal ideation and behaviour, particularly in high risk populations such as young adults, so that targeted interventions can be developed.

Action 7 of Scotland's ten-action Suicide Prevention Action Plan (SPAP) is to facilitate suicide prevention strategies for at-risk groups. In July 2021, leaders of Action 7 of the SPAP submitted a request to the Academic Advisory Group (AAG) to identify risk factors associated with self-injurious thoughts and/ or behaviours unique to young adults. In doing so, it is intended that evidence-based, targeted approaches can be developed to support young adults who are at increased risk of self-injurious thoughts and behaviours, and thereby potentially reduce the risk of suicide in later life.

2. Method

Five databases were searched for this meta-review (Medline, CINHAL, PsychInfo, PsychArticles and Web of Knowledge). Where possible, subject heading search terms (e.g., MeSH) were applied to identify more relevant outputs during the initial search phase. Outputs included in this meta-review were limited to i) systematic reviews and meta-analyses, ii) written in English, iii) published at any time and, iv) participants with a mean age between 16-24 years old or an absolute upper age limit of 30 years old. Outputs were included if they explored outwith this age range, provided data relating to these age limits could be extracted. Studies were excluded if i) they did not explore risk factors for suicidal ideation or behaviour or, ii) the relevant data could not be accessed (e.g., the output was unavailable, or target demographic population data could not be extracted). 'Young adults 'were defined as those aged 16-24 years, in line with other existing published Scottish government reports on young adults (e.g., Housing and Social Justice Directorate, 2017).

3. Results

11 outputs met the eligibility criteria of this review. Risk factors identified in these outputs were grouped into nine major headings: mental health, substance use, socio-demographic factors, geography, sleep, emotional states, interpersonal factors, education and other. Some of these groups also contained sub-groups to explore risk factors in more detail. Where available, all meta-analytic data are reported. In some cases, odds ratios (ORs) were reported without 95% confidence intervals (95% CI).

3.1. *Mental health*

Mental health includes trauma, early life adverse experiences, and clinical diagnoses and symptoms of depression and anxiety.

3.1.1. Adverse Childhood Experiences (ACEs) and Trauma

ACEs are significantly traumatic events (e.g., experiencing or witnessing violence, growing up in a family with health difficulties or substance abuse) which occur during childhood. In a meta-analysis by Witt et al. (2019), a significant association was identified between reports of childhood sexual abuse and increased repeated self-harm in young adults (14-19 years old; OR: 1.52, 95% CI: 1.02, 2.28, n= 5 studies). Furthermore, a systematic review by Foster (2011) found that trauma in adulthood (e.g., domestic abuse, accommodation problems, financial difficulties) often occurred 12 to 26 weeks prior to suicide death in individuals aged 15 to 30 years old.

3.1.2 Diagnosis of Mental Health

Three reviews explored clinical diagnoses of mental ill-health in relation to suicide death and increased risk of non-fatal self-injury. Safer (1997) found that suicide following psychiatric hospitalisation was six times the rate of the general population for young adults, and this prevalence increased with age. Young adults with a diagnosis of mental ill health were significantly more likely to die by suicide when compared to non-clinical participants aged between 12 and 35 years old (Marttunen and Pelkonen, 2000). In young people and adults aged 14-19 years old, Witt et al. (2019) found no statistically significant association between increased risk of self-harm, on the one hand, and any adjustment disorder (n= 3 studies), eating disorder (n=2 studies), diagnosis of psychosis (n= 5 studies), anxiety disorder (n= 5 studies) or bipolar disorder (n= 5 studies), on the other. Increased self-harm was significantly associated with diagnosis of any mood disorder (OR: 2.16, 95% CI: 1.09, 4.29, n= 2 studies), diagnosis of personality disorder (OR: 2.54, 95% CI: 1.71, 3.78, n= 3 studies) and borderline personality disorder (OR: 3.47, 95% CI: 1.84, 6.53, n= 2 studies)

3.1.3 Symptoms of depression (not clinical)

Two meta-analyses explored symptoms of depression in relation to self-harm. Soto-Sanz et al. (2019) found that when using a binary scale, young participants (aged 12-24 years old) who evidenced signs of depression were significantly more likely to engage in self-harm than those who did report symptoms of depression (OR = 6.57, 95% CI 4.72–9.17, number of studies= 8). Conversely, when depression was measured continuously, Soto-Sanz et al. (2019) found no significant association between depression and suicidal behaviour in 12–24-year-olds, and Witt et al., (2019) found no significant association between depression and increased repeated self-harm in 15–29-year-olds.

3.2.4 Symptoms of anxiety (not clinical)

Symptoms of anxiety were included in one systematic review by Soto-Sanz et al. (2019). They found that two-thirds of included studies identified a significant association between anxiety and suicidal behaviour.

3.2 Substance use

Substance use included consumption of either drugs or alcohol in a recreational acute or sustained manner. These are discussed separately below.

3.2.1. Alcohol Use

Alcohol consumption was measured in one systematic review and one meta-analysis. Giner et al. (2007) found that alcohol abuse, alcohol dependence and acute alcohol use were common prior to suicide in those under 20 years old than in older age groups, as well as in male populations than

female. However a meta-analysis by Witt et al. (2019) found no significant association between alcohol use or dependence and increased repeated self-harm in young adults (n= 3 studies).

3.2.2. Drug Use

Drug use was explored in one systematic review and one meta-analysis. Marttunen and Pelkonen (2020) found that drug use was significantly associated with suicide death in 12–25-year-olds. However, Witt et al. (2019) found no statistically significant association between drug use or dependence and increased repeated self-harm.

3.3 Socio-demographic factors

The association between socio-demographic factors (sex, sexuality, and socio-economic status) were investigated in relation to suicidal behaviour or death.

3.3.1. Sex

Safer (1997) found that there was no difference in sex ratio (male to female) of suicide death in adolescents and young adults compared to older adults and Witt et al. (2019) found no significant association between sex and increased repetition of self-harm. However, Canto et al. (2009) found that across the preceding 40 years to their review, male suicide death had increased in 15- to 29-year old's while suicide death had remained stable in female populations of the same age.

3.3.2. Sexuality

Only one review explored sexuality in association to suicide risk. McDaniel (1997) found that suicide death was consistently significantly higher in gay, lesbian and bisexual populations aged 16-to 20-years old compared to general populations. Based on non-representative studies, the risk of suicide death was found to be 2.5 to 7 times higher in individuals who identify as gay and lesbian than straight, while in population representative studies 11% of suicide deaths were by gay men. (There were no population representative studies exploring suicide death by those who identify as lesbian.)

3.3.3. Socio-economic status

Cantor et al. (2000) reported mixed results regarding socio-economic status as a risk factor for suicide in young adults aged 15-29 years. Three studies (based in England and Wales, Sweden and Australia) found those of a low socio-economic status had a higher suicide risk than those of a higher socio-economic status, while the reverse was found in Canada, and in Los Angeles the finding were weak and inconsistent. A meta-systematic review by Beautrais (2000) found that, across three reviews, young people aged 15-24 years who engaged in a suicide attempt were twice as likely to come from a low socio-economic background than a high one. However, Witt et al (2019) found no association between unemployed individuals and increased repetition of self-harm (based on three studies).

3.4 Sleep

Russell (2019) explored sleep disturbance in university students aged 18 to 20 years. Across all 18 studies, insomnia and nightmares was significantly associated with suicidal ideation and behaviour. However, in the few studies which controlled for depression, the association between sleep and suicidal ideation and behaviour was no longer significant.

3.5 Emotional states

Four emotional states (aggression, embarrassment, loneliness and hopelessness) were investigated in relation to suicide death or self-harm either cross-sectionally or longitudinally. Each factor as discussed individually below.

3.6.1. Aggression

Young adults with aggressive traits were significantly more likely to die by suicide than those who

evidenced no such traits (Marttunen and Pelkonen, 2000). However, Witt et al. (2019) found that problems at school were not associated with increased repetition of self-harm (based on a meta-analysis of two studies).

3.6.2 Embarrassment

Foster (2011) included one study which explored embarrassment. After adjusting for gender and geographic location, this study reported that 43% of relatives of individuals aged 15- 24 years who died by suicide suggested that a contributing factor was "loss of face or social embarrassment" within one year of death.

3.6.3 Loneliness

McClelland et al. (2020) found that loneliness was a predictor of later suicidal ideation and behaviour in 16- to 20-year-olds. However, the review did not include suicide death as an outcome measure.

3.6.4 Hopelessness

Witt et al. (2019) found a significant association between hopelessness and repeated self-harm (OR: 2.95, 95% CI: 1.74, 5.01, n= 4 studies).

3.7 Interpersonal factors

Based on second-hand accounts, Foster (2011) found almost a third (32.5%) of suicide deaths followed conflict with a parent. Furthermore, the same review found that ~~of~~ suicide deaths were significantly more likely to occur within two days of an interpersonal conflict when compared to controls who died of accidental injury (OR: 11.4). Witt et al (2019) concluded that social isolation or living with family were not significantly associated with increased repetition of self-harm in young based on a meta-analysis of three studies.

3.8 Education

Silverman (1993) found that suicide death was 50% lower among on-campus White students aged 20-24 years old than sex-matched off-campus counterparts. Furthermore, Witt et al. (2019) found no significant association between student status and increased repetition of self-harm (n= 2 studies). Beautrais (2000) found that students who dropped out of college were more likely to engage in a suicide attempt than students who remained in college (OR = 7.8, 95% CI: NA).

3.9 Other

Witt et al. (2019) identified significant associations between self-injury history (history of repeated self-harm: OR: 2.22, 95% CI: 1.06, 4.67, n= 2 studies; history of self-harm at any time: OR: 1.59, 95% CI: 1.17, 2.15, n= 3 studies) and current repeated self-harm. Based on data captured between 1964 and 1993, a systematic review by Cantor et al. (2000) found evidence to suggest that male suicide in 15–24-year-olds is more common in rural areas.

4. Discussion

This meta-review aimed to identify risk factors associated with suicidal ideation and/or behaviour unique to young adults ages 16-24 years old. From the 11 systematic reviews and meta-analyses which met the eligibility criteria for inclusion in the review, nine overarching risk factors were identified, and findings were reported in relation to each.

In terms of demographics, one review failed to find a significant difference in the sex ratio (male to female) of suicide among young adults compared to older adults. However, male suicide death was

commonly associated with living in rural settings and alcohol misuse/alcoholism. Young adults of a minority sexual orientation were found to be more likely to die by suicide than heterosexual young adults. Findings relating to socio-economic status were mixed: there was no statistically significant association between employment status and suicide death; however, those of a low socio-economic status were more likely to die, or attempt to die, by suicide. Regarding affective states, systematic reviews found aggression and embarrassment were commonly significantly associated with suicide death, while loneliness was significantly associated with suicidal ideation and behaviour. One meta-analysis found a statistically significant association between hopelessness and repeated self-harm. Furthermore, second-hand accounts suggest that interpersonal conflict, especially with parents, within the two days prior to death occurred among about a third of suicide deaths in young adults.

As for psychiatric diagnoses, a diagnosis of personality disorder or any mood disorder was significantly associated with later suicide death. However, when compared to older adults, suicide death during psychiatric hospitalisation was found to be lower in young adults. There were mixed results for the association between depression and suicidal behaviour, with outcomes varying depending on whether this was measured on a continuous or binary scale. Furthermore, depression was found to moderate the association between sleep disturbance and suicidal ideation and behaviour in one systematic review.

Although this meta-review highlights a number of risk factors associated with suicidal ideation, behaviour and death in young adults, there is considerable research evidence that these factors are not unique to young adults. For example, alcoholism, both long-term and acute, is commonly associated with suicide death throughout the adult age. Only three reviews compared risk factors across different age groups. Alcoholism and loneliness were found to be particular risk factors in younger adults, while psychiatric hospitalisation was found to be a particular protective factor in this age group.

Only two meta-analyses met the inclusion criteria for this meta-review. Their findings were often inconsistent with the conclusions of comparative systematic reviews. However, it is important to note that the studies included in these meta-analyses were not identical to the studies included in the systematic review (though there was some overlap), which may explain the disagreement between the findings.

4.1 Limitations

Almost half (n=5) of the systematic reviews included in this meta-review were over ten years old, and the outputs included within the reviews were even older. The findings of these reviews may therefore not be applicable to young adults today. Additionally, no systematic reviews included the Scottish population. Of the reviews included, very few made comparisons between young adults and other age groups. Many excluded outputs drew comparisons between age groups using a cut-off of approximately 35-49 years olds to distinguish young and older age bands. An important additional limitation is the lack of evidence about causal processes in the reviews, which were based on studies exploring levels of association rather than cause and effect.

4.2 Conclusions

In conclusion, no factors unique to young adults were identified in this meta-review. However, there is evidence to suggest young adults who engage in alcoholism or experience loneliness may be particularly vulnerable to suicidal ideation, behaviour, or death. Associations between several other risk factors for suicidality were identified; however, whether they are elevated or unique to young adults remains unknown. Based on these findings, it would be beneficial for future systematic reviews and meta-analyses to include age comparisons of younger adults when exploring potential

risk factors of suicidality. The findings from such studies would support the development of suicide prevention strategies targeted at, and tailored for, specific age groups.

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Appendix 1. Search strategy

Search method	Search terms	Results
S1	(MM "Suicide") OR (MM "Self-Injurious Behavior") OR (MH "Suicide, Completed") OR (MH "Suicide, Attempted") OR (MH "Suicidal Ideation") OR (MH "Self Mutilation")	114,988
S2	risk factors or contributing factors or predisposing factors or predictor or cause	4, 382, 971
S3	Adult	8, 614, 064
S4	S1 AND S2 AND S3	21,173
L1	Academic journals and journals	21,173
L2	English	19,864
L3	Age: • adult: 19-44 years • all adult: 19+ years • all adult • young adult: 19-24 years • adulthood (18 yrs & older) • Adolescent	18, 268
L4	Methodology: • Literature review • Meta-analysis	61
Total after duplicates removed		59
Included in title screening		59
Included in abstract screening		33
Included in full text screening		29

Included in review	12

S= search term; L= Limiter. Databases were searched on the 25th of August, 2021. Included databases were CINHAL, Medline, PsychInfo, PsychArticles.

Appendix 2. Systematic review summaries

Author	Year	Type of review	Number of studies	Age comparison	Study designs included	Geographic area	Age group included in current review (years)	Outcome	Investigated factors
Beautrais	2000	Systematic	Not stated	No	Mixed: Cross-sectional and prospective	Not stated	15-24	Suicide attempt	• Family factors • Social factors
Cantor	2000	Systematic	Not stated	Yes	Cross-sectional	Worldwide	15-29	Suicide death, suicide attempt	• Age, • Gender, • Geography • Socioeconomics
Foster	2011	Systematic	Not stated	No	Retrospective	Worldwide	15-30	Suicide death	• Illness • Unemployment • Other legal trouble • Rejection • Separation
Giner et al.	2007	Systematic	40	Yes	Retrospective	Worldwide	<20	Suicide death	• Alcohol
Marttunen and Pelkonen	2020	Systematic	NA	No	Longitudinal: Retrospective and prospective	NA	12-35	Suicide death	• Psychiatric diagnosis • Aggression • Substance use

McClelland et al.	2020	Systematic	24	Yes	Prospective	USA, Europe, Australia	16-20	Suicidal ideation and behaviour	• Loneliness
McDaniel et al.	2011	Systematic	Not stated	No	Longitudinal: Retrospective and prospective	Global	16- 20	Suicide death	• Sexuality
Russell et al.	2019	Systematic	18	No	Mixed: Cross-sectional and longitudinal	Not stated	18-20	Ideation, behaviour, suicide death and attempted suicide	• Sleep disturbance
Safer	1997	Systematic	18	Yes	Longitudinal: Retrospective and prospective	USA	14-25	Suicide death and attempted suicide	• Psychiatric hospital • Means of suicide
Silverman	1993	Systematic	31	No	Cross-sectional	Canada, England, Japan, USA	20-24	Suicide death	• Living arrangement
Soto-Sanz et al.	2019	Meta-analysis	24	No	Mixed: Case-control, cross-sectional, prospective	Worldwide	12-24	Suicide death and behaviour	• Depression • Anxiety • Legal difficulties
Witt et al.	2019	Meta-analysis	17	No	Mixed: Cross-sectional and prospective	USA, Europe, Australia	14-19	Self-harm	• Psychiatric diagnoses • Hopelessness • Sexual abuse

- Gender
- Social factors
- Demographic factors
- Suicide history

M= mean average

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