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A systematic review examining risk factors for self-harm and suicide in LGBTQ+ young people

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3 **1 A systematic review examining risk factors for self-harm and suicide in LGBTQ+ young people**
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27 ABSTRACT

28 Introduction: Young people who identify as LGBTQ+ are at increased risk for self-harm, suicide
29 ideation and behaviours. However, there has yet to be a comprehensive understanding of what risk
30 factors influence these behaviours within LGBTQ+ young people as a whole. The purpose of this
31 systematic review is to examine risk factors associated with self-harm, suicidal ideation and
32 behaviour in LGBTQ+ young people.

33 Methods and analysis: A systematic review and meta-analysis will be conducted, conforming to the
34 reporting guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses
35 (PRISMA) statement recommendations. Electronic databases (MEDLINE, Scopus, EMBASE , PsycINFO,
36 and Web of Science) will be systematically searched for cross-sectional, prospective, longitudinal,
37 cohort, and case-control designs which examine risk factors for self-harm and/or suicidal ideation
38 and behaviour in LGBTQ+ young people. Only studies published in English will be included. No date
39 restrictions will be applied. Study quality assessment will be conducted using a modified Newcastle-
40 Ottawa Scale. A meta-analysis will be performed if appropriate; alternatively findings will be drawn
41 together in a narrative synthesis.

42 Ethics and dissemination: This is a systematic review of published literature and thereby ethical
43 approval was not sought. The review will be submitted to a peer-reviewed journal, be publicly
44 disseminated at conferences focusing on mental health, self-harm and suicide prevention. The
45 findings will also be shared through public engagement and involvement, particularly those related
46 to young LGBTQ+ individuals.

47 PROSPERO registration number: CRD42019130037

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49 STRENGTHS AND LIMITATIONS OF THIS STUDY

- 50 • This is the first systematic review of risk factors for self-harm, suicidal ideation and
51 behaviour among LGBTQ+ young people.
- 52 • The protocol has been written following the PRISMA-P guidelines (2015).
- 53 • A limitation of this systematic review is the exclusion of studies which are not published in
54 English; this may bias findings against non-English speaking countries.

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56 INTRODUCTION

57 Suicide, intentionally ending one's own life[1], is one of the leading causes of death within young
58 people[2-3]. Globally, suicide accounts for around 131,441 deaths between the ages of 15-24[2].
59 Rates of self-harm, the self-injury or poisoning of one's self irrespective of suicidal intent[4], are on
60 the rise among young people. Data from the 2014 Adult Morbidity Survey states that 25.7% of
61 women and 9.7% of men were likely to have self-harmed between the ages of 16-24 years[5].
62 Approximately 50% of those who die by suicide have previously self-harmed, making self-harm one
63 of the strongest predictors of suicide[6-8].

64 Among people who identify under the umbrella term LGBTQ+ (Lesbian, Gay, Bisexual, Transgender,
65 Queer or Questioning), this being how one self-identifies as their sex, sexuality, gender identity and
66 gender expression[9], there are elevated rates of suicidal ideation (thoughts of self-harm, the
67 consideration or planning of suicide[1]) and suicidal behaviour[10-12]. King et al's 2008 systematic
68 review found that lesbian, gay and bisexual (LGB) individuals were found to be at higher risk for both
69 suicidal behaviour and ideation compared to heterosexuals[10]. Internationally, this has been
70 estimated to be between four to eight times higher in LGB and transgender (T) young people when
71 compared to the heterosexual and cisgender peers[13]. While as a broad group, sexual and gender
72 minorities have high levels of suicidal ideation and behaviour, among T people (individuals who do
73 not present or identify with their sex assigned at birth[14]) these rates are even greater. Indeed,
74 lifetime risk for suicide attempt is estimated to be between 22-43%, with 9-10% having made an
75 attempt in the past 12 months[15-19].

76 Previous research has examined potential risk factors for self-harm and suicide in young people in
77 general populations. These risk factors range from demographic characteristics such as being female,
78 being younger or having fewer qualifications[20], to childhood abuse and neglect[21-22]. Additional
79 risks such as bullying and academic pressure have been linked to suicidal behaviour in young
80 people[23]. Other factors which relate to the risk of self-harm repetition include troubled
81 relationships with family members, social isolation, poor academic performance, alcohol and drug
82 misuse, and depression[24].

83 Given the heightened risk of suicide attempt within LGBTQ+[10-12, 25], it would be pertinent to
84 explore which factors specifically pose as a risk to this population. Although some of these risk
85 factors may overlap with those from non-LGBTQ+ populations (e.g. depression, substance or alcohol
86 misuse)[10, 26], there are also unique risk factors to sexual and gender minorities. For example,
87 Clements-Nolle et al[26] stated that experiences of abuse, discrimination or harassment due to an
88 individual's gender identity or presentation were also linked to high levels of attempted suicide.
89 Meyer[27-28] suggested that additional risk within homosexual communities may be related to the
90 high levels of stigma, prejudice and discrimination which thereby impacts individual's mental
91 wellbeing. Victimisation or discrimination due to sexual orientation and gender identity is
92 particularly common within LGBTQ+ populations[29-32]. In addition, among LGBTQ+ young people
93 these experiences were found to be significantly associated with suicidal ideation[33-34]. It is
94 suggested that young people may internalise these experiences of public stigma in relation to being
95 LGBTQ+, which can lead to adverse impacts on their self-perception and beliefs, which could then
96 enhance suicidal ideation, behaviour or self-harm[35].

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98 Why this review is important

99 The goal of this systematic review is to comprehensively examine risk factors for self-harm and
100 suicide ideation and behaviour within LGBTQ+ young people. Identifying and understanding how
101 these factors relate to self-harm and suicide could allow future research to address specific risks and
102 streamline potential studies to target the mental health needs of this population. Previous reviews
103 regarding various dimensions of self-harm[21-22, 36-38] have focused on a specific subgroup, such
104 as the prevalence within transgender population[39]. Whereas, few have considered both self-harm
105 and suicide in relation to LGBTQ+ populations as a broad group[10, 40-41]. Thus, this review not only
106 takes a dimensional approach to include self-harmful thoughts and behaviour with and without
107 intent of suicide, thereby covering a wide spectrum of suicide and self-harm, but also includes all
108 sexual and gender minorities.

109 Objective: To examine risk factors associated with self-harm and suicide ideation and behaviour in
110 LGBTQ+ young people.

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112 METHODS

113 A systematic review of empirical quantitative studies which examine risk factors for self-harm and
114 suicidal ideation and behaviour in LGBTQ+ young people will be conducted. The search will consider
115 all studies up to the 1st of April 2019. This protocol follows the Preferred Reporting Items for
116 Systematic Reviews and Meta-Analyses Protocol (PRISMA-P) guidelines[42], presented in the
117 supplementary file 1. Study quality will be assessed by the Newcastle-Ottawa Scale (NOS)[43] and
118 the adapted version for cross-sectional studies[44]. The protocol for this article has been registered
119 with PROSPERO: CRD42019130037.

120 Eligibility criteria: see table 1 for summary:

121 *Types of studies:* This will include empirical quantitative peer reviewed studies following cross-
122 sectional, prospective, longitudinal, cohort, and case-control designs which examine risk factors for
123 self-harm and/or suicidal ideation and behaviour in LGBTQ+ young people. These papers may
124 specifically focus on one subgroup of the LGBTQ+ umbrella (e.g. transgender) or look across groups
125 (e.g. LGB). Mixed-method papers which have applicable extractable information will also be
126 included. Grey literature such as theses, dissertations or conference proceedings will not be
127 included. Commentary, reviews, editorial or opinion pieces will also be excluded. All included studies
128 must be available as full-text and peer-reviewed in the English language.

129 *Types of participants:* Participants between the ages of 12-25 years old, who identify as LGBTQ+
130 (Lesbian, Gay, Bisexual, Transgender, Queer or Questioning) referring to how one self-identifies as
131 their sex, sexuality, gender identity and gender expression[9]. Participants will also have had
132 experiences of self-harm (self-injury or poisoning irrespective of suicidal intention[4], suicide
133 ideation (thoughts of self-harm, the consideration or planning of a suicidal attempt e.g. method[1]or
134 suicidal behaviour (intentionally trying to end one's own life[1]. Alternatively, if participants met the
135 above inclusion criteria as a subgroup, this data will be extracted.

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3 136 *Types of outcome measures:* Studies will be included if they used a measure for self-harm, suicidal
4 137 ideation or suicidal behaviour. Consideration of the number of events (self-harm and suicidal
5 138 attempts, suicidal ideation will be taken as present or not present) as described by study authors,
6 139 and any standardised rating scale for assessing the presence of self-harm and suicidal ideation and
7 140 behaviour. This can be specific tools for considering suicide e.g. Beck Scale for Suicide Ideation
8 141 (SSI)[45]; Motto's Risk Estimator for Suicide[46]; Positive and Negative Suicide Ideation (PANSI)[47];
9 142 Columbia-Suicide Severity Rating Scale[48]; or self-harm e.g. Self-Harm Inventory (SHI)[49];
10 143 Inventory of Statements about Self-injury (ISAS)[36]; Self-Injurious Thoughts and Behaviour
11 144 Interview (SITBI) Short Form[50]. Also included will be self-harm or suicide items from general scales
12 145 such as items 102-105 from the Mental Health History Form[51] or individual questions regarding
13 146 self-harm or suicide had ever been considered or acted upon[52] and clinician reports.

147 *Table 1: Inclusion and exclusion criteria for papers*

Inclusion Criteria	Exclusion criteria
<ul style="list-style-type: none"> - Peer reviewed studies. - Any geographical location. - English language. - Empirical quantitative studies, following cross-sectional, prospective, longitudinal, cohort and case-control designs. - Studies must consider factors associated with or predictive of self-harm, suicidal ideation or suicidal behaviour. - Participants must be young people (12-25 years). - Participants that are identified or self-identified as any sexual or gender minority or member of LGBTQ+. - Participants that have had an experience of self-harm, suicidal ideation or behaviour. 	<ul style="list-style-type: none"> - Non-peer reviewed literature. - Not English language. - Grey literature such as theses, dissertation or conference proceedings. - Articles such as commentaries, reviews, editorial or opinion pieces. - Empirical qualitative studies. - Studies not considering risk factors. - Sample not aged between 12 and 25 years, e.g. adults 26 years and above or children 12 years and under. - Participants who are identified as heterosexual or not part of sexual or gender minority. - Participants who have no experience of self-harm, suicidal ideation or suicidal behaviour.

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149 Search strategy:

150 The search will be limited to English language and run up to 31st March 2019. No date restrictions
151 will be applied. The following electronic bibliographic databases were searched: MEDLINE, Scopus,
152 EMBASE, PsycINFO, and Web of Science for peer-reviewed publications which examine risk factors
153 for self-harm or suicide within LGBTQ+ young people. The search strategy can be found in the
154 supplementary file 2. This was developed in collaboration with an academic skill specialist from the
155 University of Birmingham library to ensure the robustness of the search. Reference lists of eligible
156 papers and conduct citation searches of key papers will be explored to identify additional reports.
157 Before the final draft of the systematic review is completed, a second search will be conducted to
158 allow for any additional studies to be identified.

159 Study records:

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3 160 *Selection process:* The search strategy will retrieve titles and/or abstracts which will be screened by
4 161 two independent researchers to identify studies which potentially meet the inclusion criteria
5 162 outlined above. The full-texts of the studies will be retrieved and independently assessed for
6 163 eligibility. Any disagreement or uncertainty over the eligibility of particular studies will be resolved
7 164 through discussion.

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10 165 *Data management and collection:* Rayyan QCRI (<https://rayyan.qcri.org/welcome>), the online
11 166 systematic review tool, will be used to manage and screen all retrieved papers. AJW will be the solo
12 167 team member responsible for adding or amending paper records in Rayyan, as well as identifying
13 168 and removing duplicates. A second independent reviewer will be given access to all titles and
14 169 abstracts, within Rayyan. They will be able to make their own decision as to whether to include or
15 170 exclude a paper, blind to AJW's decisions. AJW will also be blind to the decisions of the second
16 171 reviewer until all titles and abstracts are reviewed. Rayyan will provide information on the original
17 172 number of titles screened, duplications, those excluded at this stage, and those included titles at this
18 173 stage.

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23 174 Those papers which reach full-text screening will be managed within Zotero
24 175 (<https://www.zotero.org/>), the bibliographic software. These will be sectioned by those included at
25 176 full-text screening, and final inclusion. Reason for exclusion will be reported for each paper. AJW will
26 177 be responsible for liaising with inter-library loans and obtaining the full-text papers. Full-text
27 178 screening will again be conducted by two researchers, blind to each other's decisions, who will
28 179 resolve disagreements through discussion. If an agreement cannot be reached regarding a paper,
29 180 this will be rated by a third researcher.

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33 181 A pre-piloted standardised data extraction tool will be adapted and used on included studies[53].
34 182 Extracted information will include: 1) author and publication date; 2) study design and setting; 3)
35 183 characteristics of participants (age, gender identity), and the studies' inclusion and exclusion criteria;
36 184 4) method of harm (self-harm, suicidal behaviour or ideation); 5) factors associated with or
37 185 predictive of self-harm or suicidal ideation and behaviour (including clinician diagnosis, subscales or
38 186 validated scales used to assess these items); 6) information relating to risk of bias for the individual
39 187 study.

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42 188 *Risk of bias (quality assessment):* The overall quality of each study will be evaluated by two
43 189 independent researchers using the Newcastle-Ottawa Scale (NOS)[43] and the Newcastle-Ottawa
44 190 Scale adapted for cross-sectional studies[44].

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47 191 *Data synthesis and assessment of heterogeneity:* Descriptive results of each included study will be
48 192 presented in a table format, such as details regarding study design, participants, self-harm or suicidal
49 193 ideation and behaviour methods and measures, identified factors and tools used to assess these.

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52 194 A meta-analysis of risk factors for self-harm and suicidal ideation and behaviour using RevMan 5
53 195 (<https://community.cochrane.org/help/tools-and-software/revman-5/revman-5-download>) will be
54 196 conducted by pooling data on risk factors using a random-effects model with the assumption that
55 197 populations have various effect sizes and weights studies from in- and between-study variance. This
56 198 will consider the extent or heterogeneity, which will be determined using the I^2 statistic. From this, a
57 199 summary effect will be presented, associated 95% CI and p values. Publication bias will be assessed
58 200 using funnel plots and Harbord-Egger test[54].

201 Additionally, consideration will be given to subgroup analysis if data allows, exploring heterogeneity
202 by sexual and gender minorities; such that these studies are split by LGBTQ and transgender; as even
203 within this population it is recognised that the transgender population have high levels of suicide risk
204 and self-harm[39, 55]. This will allow us to determine which risk factors are similar within sexual and
205 gender minorities, and those that unique to the transgender population. Further examination of risk
206 factors will be conducted by age difference, split by 12-18years and 19-25years.

207 The quality of the included studies will be considered when synthesising and analysing the findings in
208 terms of the strength of evidence which they provide. A sensitivity analysis will be run to assess the
209 robustness of the studies[56]. If statistical pooling is not possible, findings will follow a narrative
210 synthesis as suggested by ERSC guidelines[57]. The analysis will take place over four steps; 1)
211 developing a theory of which factors influence LGBTQ+ young people, 2) synthesising the findings, 3)
212 exploring whether there are relationships within the data and what these might be, 4) assessing the
213 robustness of the synthesis.

214 *Patient and Public Involvement:* No patients involved.

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216 **ETHICS AND DISSEMINATION**

217 This is a systematic review of published literature and thereby ethical approval was not sought. It
218 will be submitted to a peer-reviewed journal, be publicly disseminated at conferences focusing on
219 mental health, self-harm and suicide prevention. Findings will also be shared through public
220 engagement and involvement, particularly considering young LGBTQ+ individuals.

221

222 **DISCUSSION**

223 This systematic review will be the first to provide a rich, holistic account of the existing evidence of
224 risk factors for self-harm and suicidality within a broad sample of LGBTQ+ young people. The
225 synthesis of these findings will assess the prevalence of particular factors which impact this
226 population, which may not be relevant to non-sexual or gender minority young people.
227 Acknowledging the similarities and differences of risk factors between sexual orientation and gender
228 identity groups could be used as a valuable stepping stone when considering LGBTQ+ research and
229 promoting more applicable research aims.

230 The quality and strength of the evidence will be rigorously assessed, which could be used to inform
231 future research targeting these particular risks. This could ultimately help to inform self-harm and
232 suicidality prevention within LGBTQ+ young people. It is anticipated that the findings of this review
233 will be of interest to the wider academic and clinical community, policymakers, young people who
234 identify as a sexual or gender minority, those with experience of self-harm or suicide.

235

236 **AUTHORS CONTRIBUTIONS**

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3 237 All authors conceptualised the study. AJW developed the search strategy and conducted the
4 238 literature search. AJW and MM wrote the first draft of the manuscript. All authors reviewed, edited,
5 239 and approved the final manuscript.
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17 245 **COMPETING INTERESTS**

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Systematic Review Protocol [Version 6, May 2019]

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PRISMA-P 2015 Checklist

This checklist has been adapted for use with protocol submissions to *Systematic Reviews* from Table 3 in Moher D et al: Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Systematic Reviews* 2015 4:1

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
ADMINISTRATIVE INFORMATION					
Title					
Identification	1a	Identify the report as a protocol of a systematic review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1
Update	1b	If the protocol is for an update of a previous systematic review, identify as such	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Registration	2	If registered, provide the name of the registry (e.g., PROSPERO) and registration number in the Abstract	<input checked="" type="checkbox"/>	<input type="checkbox"/>	47
Authors					
Contact	3a	Provide name, institutional affiliation, and e-mail address of all protocol authors; provide physical mailing address of corresponding author	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3-19
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	237-239
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Support					
Sources	5a	Indicate sources of financial or other support for the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	242-243
Sponsor	5b	Provide name for the review funder and/or sponsor	<input checked="" type="checkbox"/>	<input type="checkbox"/>	242
Role of sponsor/funder	5c	Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol	<input checked="" type="checkbox"/>	<input type="checkbox"/>	242-243
INTRODUCTION					
Rationale	6	Describe the rationale for the review in the context of what is already known	<input checked="" type="checkbox"/>	<input type="checkbox"/>	56-108
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	109-110

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
METHODS					
Eligibility criteria	8	Specify the study characteristics (e.g., PICO, study design, setting, time frame) and report characteristics (e.g., years considered, language, publication status) to be used as criteria for eligibility for the review	√	<input type="checkbox"/>	120-148
Information sources	9	Describe all intended information sources (e.g., electronic databases, contact with study authors, trial registers, or other grey literature sources) with planned dates of coverage	√	<input type="checkbox"/>	151-153; 176-177
Search strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	√	<input type="checkbox"/>	Sup file 2
STUDY RECORDS					
Data management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	√	<input type="checkbox"/>	165-187
Selection process	11b	State the process that will be used for selecting studies (e.g., two independent reviewers) through each phase of the review (i.e., screening, eligibility, and inclusion in meta-analysis)	√	<input type="checkbox"/>	160-164
Data collection process	11c	Describe planned method of extracting data from reports (e.g., piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	√	<input type="checkbox"/>	153-154; 165-187
Data items	12	List and define all variables for which data will be sought (e.g., PICO items, funding sources), any pre-planned data assumptions and simplifications	√	<input type="checkbox"/>	181-187
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	√	<input type="checkbox"/>	136-146
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	√	<input type="checkbox"/>	188-190
DATA					
Synthesis	15a	Describe criteria under which study data will be quantitatively synthesized	√	<input type="checkbox"/>	191-212
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data, and methods of combining data from studies, including any planned exploration of consistency (e.g., I^2 , Kendall's tau)	√	<input type="checkbox"/>	194-200
	15c	Describe any proposed additional analyses (e.g., sensitivity or subgroup analyses, meta-regression)	√	<input type="checkbox"/>	201-206
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	√	<input type="checkbox"/>	209-213
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (e.g., publication bias across studies, selective	√	<input type="checkbox"/>	199-200

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Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
		reporting within studies)			
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (e.g., GRADE)	✓	<input type="checkbox"/>	188-190

For peer review only

SUPPLEMENTARY FILE 2**Search strategy terms:**

(self-harm OR self harm* OR self-injur* OR "self injur*" OR self-cut* OR self-destruct* OR "self destruct*" OR "nonsuicidal self-injur*" OR "non-suicidal self injur*" OR "deliberate self harm" OR "deliberate self-harm" OR DSH OR "self-mutil*" OR overdos* OR self-inflicted injur* OR "self inflicted injur*" OR suicid* OR "parasuicid*" OR para-suicid* OR parasuicid* OR suicidal behav* OR suicide* OR "life-threatening behavio*" OR "suicide ideat*" OR "suicide attempt*" OR "attempted suicide*" OR NSSI)

AND

(moderat* OR mediat* OR "risk facto*" OR mechan* OR predict* OR pathway OR interact* OR "protective facto*" OR facto* OR influence OR correlate* OR precurs* OR "causal facto*")

AND

(transgender* OR transsexual* OR "gender nonconforming" OR "gender identity disorder" OR "gender dysphoria" OR "gender minority" OR lesbian* OR gay* OR bisexual* OR "sexual minority" OR "same-sex" OR homosexual* OR "homosexuality, male" OR "homosexuality, female" OR "gender identity" OR non-heterosexual* OR "non heterosexual*" OR homosexuality OR queer* OR questioning OR "non-binary" OR "non binary" OR "LGBT*" OR "sexual dissident*" OR "sexual and gender minorities" OR "gender variant" OR gender-variant OR genderqueer OR intersex OR "minority groups" OR "TGNC" OR "transgender and gender nonconforming")

AND

(Child* OR adolesc* OR "young people" OR kid* OR pupils OR youth OR juvenile OR "young adult*" OR "young person" OR minor*)

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3 **Example of highly sensitive search strategy used in EMBASE**
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<p><i>Search terms (AND, OR, NOT) and truncation (wildcard characters like *)</i></p>	<ol style="list-style-type: none"> 1. exp automutilation/ 2. exp suicide/ 3. exp suicide attempt/ 4. exp suicidal ideation/ 5. 1 or 2 or 3 or 4 6. exp risk factor/ 7. exp "sexual and gender minority"/ 8. exp homosexuality/ 9. exp bisexuality/ 10. exp transgender/ 11. exp LGBT people/ 12. exp gender identity/ 13. 7 or 8 or 9 or 10 or 11 or 12 14. exp adolescent/ 15. exp child/ 16. young people.mp. 17. exp young adult/ 18. exp juvenile/ 19. 14 or 15 or 16 or 17 or 18 20. 5 and 6 and 13 and 19
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BMJ Open

A systematic review protocol examining risk factors for self-harm and suicide in LGBTQ+ young people

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2019-031541.R1
Article Type:	Protocol
Date Submitted by the Author:	06-Aug-2019
Complete List of Authors:	Williams, A. Jess; University of Birmingham, School of Psychology Arcelus, J; University of Nottingham , School of Medicine Townsend, Ellen; University of Nottingham, School of Psychology Michail, Maria; University of Birmingham, School of Psychology
Primary Subject Heading:	Mental health
Secondary Subject Heading:	Public health, Research methods
Keywords:	Suicide & self-harm < PSYCHIATRY, gender identity, young people, sexual orientation

SCHOLARONE™
Manuscripts

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3 **1 A systematic review protocol examining risk factors for self-harm and suicide in LGBTQ+ young**
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48 23 Word count: 2396 (excluding title page, abstract, references, figures and tables)
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50 24
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52 25 Key words:
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54 26 Self-harm, suicide, sexual orientation, gender identity, young people
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28 ABSTRACT

29 Introduction: Young people who identify as LGBTQ+ are at increased risk for self-harm, suicide
30 ideation and behaviours. However, there has yet to be a comprehensive understanding of what risk
31 factors influence these behaviours within LGBTQ+ young people as a whole. The purpose of this
32 systematic review is to examine risk factors associated with self-harm, suicidal ideation and
33 behaviour in Lesbian, Gay, Bisexual, Transgender, Queer or Questioning (LGBTQ+) young people.

34 Methods and analysis: A systematic review will be conducted, conforming to the reporting
35 guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)
36 statement recommendations. Electronic databases (MEDLINE, Scopus, EMBASE, PsycINFO, and Web
37 of Science) will be systematically searched for cross-sectional, prospective, longitudinal, cohort, and
38 case-control designs which examine risk factors for self-harm and/or suicidal ideation and behaviour
39 in LGBTQ+ young people (aged 12-25 years). Only studies published in English will be included. No
40 date restrictions will be applied. Study quality assessment will be conducted using the original and
41 modified Newcastle-Ottawa Scales. Meta-analysis or narrative synthesis will be utilised, dependent
42 on findings.

43 Ethics and dissemination: This is a systematic review of published literature and thereby ethical
44 approval was not sought. The review will be submitted to a peer-reviewed journal, be publicly
45 disseminated at conferences focusing on mental health, self-harm and suicide prevention. The
46 findings will also be shared through public engagement and involvement, particularly those related
47 to young LGBTQ+ individuals.

48 PROSPERO registration number: CRD42019130037

50 STRENGTHS AND LIMITATIONS OF THIS STUDY

- 51 • This is the first systematic review of risk factors for both self-harm as an individual
52 behaviour, and suicidal ideation and suicidal behaviour among LGBTQ+ young people.
- 53 • The protocol has been written following the PRISMA-P guidelines (2015).
- 54 • The robust search strategy was conducted with input from an academic skills specialist to
55 ensure replication across all databases, and capture a large range of papers.
- 56 • The systematic review will follow the Cochrane Review guidelines.
- 57 • A limitation of this systematic review is the exclusion of studies which are not published in
58 English; this may bias findings against non-English speaking countries.

60 INTRODUCTION

61 Suicide, intentionally ending one's own life[1], is one of the leading causes of death within young
62 people[2-3]. Globally, suicide accounts for around 131,441 deaths between the ages of 15-24[2].
63 Rates of self-harm, the self-injury or poisoning of one's self irrespective of suicidal intent[4], are on
64 the rise among young people [5]. Data from the 2014 UK Adult Morbidity Survey states that 25.7% of
65 women and 9.7% of men were likely to have self-harmed between the ages of 16-24 years[6].
66 Approximately 50% of those who die by suicide have previously self-harmed, making self-harm one
67 of the strongest predictors of suicide[7-9].

68 Among people who identify under the umbrella term LGBTQ+ (Lesbian, Gay, Bisexual, Transgender,
69 Queer or Questioning), this being how one self-identifies as their sex, sexuality, gender identity and
70 gender expression[10], there are elevated rates of suicidal ideation (thoughts of self-harm, the
71 consideration or planning of suicide[1]) and suicidal behaviour[11-13]. King et al's 2008 systematic
72 review found that lesbian, gay and bisexual (LGB) individuals were found to be at higher risk for both
73 suicidal behaviour and ideation compared to heterosexuals[11]. Internationally, this has been
74 estimated to be between four to eight times higher in LGB and transgender (T) young people when
75 compared to the heterosexual and cisgender peers[14]. While as a broad group, sexual and gender
76 minorities have high levels of suicidal ideation and behaviour, among transgender people
77 (individuals who do not present or identify with their sex assigned at birth[15]) these rates are even
78 greater. Indeed, lifetime risk for suicide attempt is estimated to be between 22-43%, with 9-10%
79 having made an attempt in the past 12 months[16-20].

80 Previous research has examined potential risk factors for self-harm and suicide in young people in
81 general populations. These risk factors range from demographic characteristics such as being female,
82 being a younger adult or adolescent, having fewer qualifications[21], to childhood abuse and
83 neglect[22-23]. Additional risks such as bullying and academic pressure have been linked to suicidal
84 behaviour in young people[24], as well as any mental health disorder[25]. Other factors which relate
85 to the risk of self-harm repetition include troubled relationships with family members, social
86 isolation, poor academic performance, alcohol and drug misuse, and depression[26].

87 Given the heightened risk of suicide attempt within LGBTQ+[11-13, 27], it would be pertinent to
88 explore which factors specifically pose as a risk to this population. Although some of these risk
89 factors may overlap with those from non-LGBTQ+ populations (e.g. depression, substance or alcohol
90 misuse)[11, 28], there are also unique risk factors to sexual and gender minorities. For example,
91 Clements-Nolle et al[28] stated that experiences of abuse, discrimination or harassment due to an
92 individual's gender identity or presentation were also linked to high levels of attempted suicide.
93 Meyer[29-30] suggested that additional risk within homosexual communities may be related to the
94 high levels of stigma, prejudice and discrimination which thereby impacts individual's mental
95 wellbeing. Victimisation or discrimination due to sexual orientation and gender identity is
96 particularly common within LGBTQ+ populations[31-34]. In addition, among LGBTQ+ young people
97 these experiences were found to be significantly associated with suicidal ideation[35-36]. It is
98 suggested that young people may internalise these experiences of public stigma in relation to being
99 LGBTQ+, known as internalised homophobia [37], which can lead to adverse impacts on their self-
100 perception and beliefs, which could then enhance suicidal ideation, behaviour or self-harm[38].

101

102 Why this review is important

103 The goal of this systematic review is to comprehensively examine risk factors for self-harm and
104 suicide ideation and behaviour within LGBTQ+ young people. Identifying and understanding how
105 these factors relate to self-harm and suicide could allow future research to address specific risks and
106 streamline potential studies to target the mental health needs of this population. Previous reviews
107 regarding various dimensions of self-harm[22-23, 39-41] have focused on a specific subgroup, such
108 as the prevalence within transgender population[42] or sexual orientation[43]. Whereas, few have
109 considered both self-harm and suicide in relation to LGBTQ+ populations as a broad group[11, 43-
110 45]. Thus, this review not only takes a dimensional approach to include self-harmful thoughts and
111 behaviour with and without intent of suicide, thereby covering a wide spectrum of suicide and self-
112 harm, but also includes all sexual and gender minorities.

113 Objectives:

- 114 1) To examine risk factors associated with self-harm and suicide ideation and behaviour in
115 LGBTQ+ young people.
- 116 2) To examine whether there is a difference between sexual orientation minority young people
117 and gender identity minority young people in the type of risk factors for self-harm, suicidal
118 ideation and behaviour.

120 METHODS

121 A systematic review of empirical quantitative studies which examine risk factors for self-harm and
122 suicidal ideation and behaviour in LGBTQ+ young people will be conducted. The search considered
123 all studies up to the 1st of April 2019, a summary of eligibility criteria is shown in table 1. This
124 protocol follows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Protocol
125 (PRISMA-P) guidelines[46], presented in the supplementary file 1. Study quality will be assessed by
126 the Newcastle-Ottawa Scale (NOS)[47] and the adapted version for cross-sectional studies[48]. The
127 protocol for this article has been registered with PROSPERO: CRD42019130037.

128 Eligibility criteria: see table 1 for summary:

129 *Types of studies:* These include empirical quantitative peer reviewed studies following cross-
130 sectional, prospective, longitudinal, cohort, and case-control designs which examine risk factors for
131 self-harm and/or suicidal ideation and behaviour in LGBTQ+ young people. Risk factors being
132 identified as significant predictors, mediators or moderators which influence a self-harm or suicidal
133 outcome. These papers may specifically focus on one subgroup of the LGBTQ+ umbrella (e.g.
134 transgender) or look across groups (e.g. LGB). Mixed-method papers which have applicable
135 extractable information will also be included. Grey literature such as theses, dissertations or
136 conference proceedings will not be included. Commentary, reviews, editorial or opinion pieces will
137 also be excluded. All included studies must be available as full-text and peer-reviewed in the English
138 language.

139 *Types of participants:* Participants between the ages of 12-25 years old, who identify as LGBTQ+
140 (Lesbian, Gay, Bisexual, Transgender, Queer or Questioning) referring to how one self-identifies as
141 their sex, sexuality, gender identity and gender expression[10]. Participants will also have had

142 experiences of self-harm (self-injury or poisoning irrespective of suicidal intention[4]), suicide
 143 ideation (this can include thoughts of self-harm, the consideration or planning of a suicidal attempt
 144 e.g. method[1]) or suicidal behaviour (intentionally trying to end one's own life[1]). Alternatively, if
 145 participants met the above inclusion criteria as a subgroup, this data will be extracted.

146 *Types of outcome measures:* Studies will be included if they used a measure for self-harm, suicidal
 147 ideation or suicidal behaviour. A binary variable of self-harm, suicidal ideation and suicidal attempt
 148 will be taken as described by study authors, and any standardised rating scale for assessing the
 149 presence of self-harm and suicidal ideation and behaviour. This can be specific tools for considering
 150 suicide e.g. Beck Scale for Suicide Ideation (SSI)[49]; Motto's Risk Estimator for Suicide[50]; Positive
 151 and Negative Suicide Ideation (PANSI)[51]; Columbia-Suicide Severity Rating Scale[52]; or self-harm
 152 e.g. Self-Harm Inventory (SHI)[53]; Inventory of Statements about Self-injury (ISAS)[38]; Self-
 153 Injurious Thoughts and Behaviour Interview (SITBI) Short Form[54]. Also included will be self-harm
 154 or suicide items from general scales such as items 102-105 from the Mental Health History Form[55]
 155 or individual questions regarding self-harm or suicide had ever been considered or acted upon[56]
 156 and clinician reports.

157 *Table 1: Inclusion and exclusion criteria for papers*

Inclusion Criteria	Exclusion criteria
- Peer reviewed studies.	- Non-peer reviewed literature.
- Any geographical location.	- Not English language.
- English language.	- Grey literature such as theses, dissertation or conference proceedings.
- Empirical quantitative studies, following cross-sectional, prospective, longitudinal, cohort and case-control designs.	- Articles such as commentaries, reviews, editorial or opinion pieces.
- Studies must consider factors associated with or predictive of self-harm, suicidal ideation or suicidal behaviour.	- Empirical qualitative studies.
- Participants must be young people (12-25 years).	- Studies not considering risk factors.
- Participants that are identified or self-identified as any sexual or gender minority or member of LGBTQ+.	- Sample not aged between 12 and 25 years, e.g. adults 26 years and above or children 12 years and under.
- Participants that have had an experience of self-harm, suicidal ideation or behaviour.	- Participants who are identified as heterosexual or not part of sexual or gender minority.
	- Participants who have no experience of self-harm, suicidal ideation or suicidal behaviour.

158

159 Search strategy:

160 The search was limited to English language and was ran up to the 1st April 2019. No date restrictions
 161 were applied. The following electronic bibliographic databases were searched: MEDLINE, Scopus,
 162 EMBASE, PsycINFO, and Web of Science for peer-reviewed publications which examine risk factors
 163 for self-harm or suicide within LGBTQ+ young people. The search strategy can be found in the
 164 supplementary file 2. This was developed in collaboration with an academic skill specialist from the
 165 University of Birmingham library to ensure the robustness of the search. Reference lists of eligible

Systematic Review Protocol [Version 7, August 2019]

166 papers and conduct citation searches of key papers were explored to identify additional reports.
167 Before the final draft of the systematic review is completed, a second search will be conducted to
168 allow for any additional studies to be identified.

169 Study records:

170 *Selection process:* The search strategy will retrieve titles and/or abstracts which will be screened by
171 two independent researchers to identify studies which potentially meet the inclusion criteria
172 outlined above. The full-texts of the studies will be retrieved and independently assessed for
173 eligibility. Any disagreement or uncertainty over the eligibility of particular studies will be resolved
174 through discussion by two independent researchers.

175 *Data management and collection:* Rayyan QCRI (<https://rayyan.qcri.org/welcome>), the online
176 systematic review tool, will be used to manage and screen all retrieved papers. AJW will be the solo
177 team member responsible for adding or amending paper records in Rayyan, as well as identifying
178 and removing duplicates. A second independent reviewer will be given access to all titles and
179 abstracts, within Rayyan. They will be able to make their own decision as to whether to include or
180 exclude a paper, blind to AJW's decisions. AJW will also be blind to the decisions of the second
181 reviewer until all titles and abstracts are reviewed. Rayyan will provide information on the original
182 number of titles screened, duplications, those excluded at this stage, and those included titles at this
183 stage.

184 Those papers which reach full-text screening will be managed within Zotero
185 (<https://www.zotero.org/>), the bibliographic software. These will be sectioned by those included at
186 full-text screening, and final inclusion. Reason for exclusion will be reported for each paper. AJW will
187 be responsible for liaising with inter-library loans and obtaining the full-text papers. Full-text
188 screening will again be conducted by two researchers, blind to each other's decisions, who will
189 resolve disagreements through discussion. If an agreement cannot be reached regarding a paper,
190 this will be rated by a third researcher.

191 A pre-piloted standardised data extraction tool will be adapted and used on included studies[57].
192 Extracted information will include: 1) author and publication date; 2) study design and setting; 3)
193 characteristics of participants (age, gender identity), and the studies' inclusion and exclusion criteria;
194 4) method of harm (self-harm, suicidal behaviour or ideation); 5) factors associated with or
195 predictive of self-harm or suicidal ideation and behaviour (including clinician diagnosis, subscales or
196 validated scales used to assess these items); 6) information relating to risk of bias for the individual
197 study.

198 *Risk of bias (quality assessment):* The overall quality of each study will be evaluated by two
199 independent researchers using the Newcastle-Ottawa Scale (NOS)[47] and the Newcastle-Ottawa
200 Scale adapted for cross-sectional studies[48]. Alternative study designs which are not covered in
201 these versions of NOS, will be assessed using a pre-piloted version developed for a previous
202 systematic review[57]. The level of agreement will be demonstrated by Cohen's Kappa and a
203 Prevalence and Bias-Adjusted Kappa (PABAK) score.

204 *Data synthesis and assessment of heterogeneity:* Descriptive results of each included study will be
205 presented in a table format, such as details regarding study design, participants, self-harm or suicidal
206 ideation and behaviour methods and measures, identified factors and tools used to assess these.

207 A meta-analysis of risk factors for self-harm and suicidal ideation and behaviour using RevMan 5
208 (<https://community.cochrane.org/help/tools-and-software/revman-5/revman-5-download>) may be
209 conducted by pooling data on risk factors using a random-effects model with the assumption that
210 populations have various effect sizes and weights studies from in- and between-study variance. This
211 will consider the extent of heterogeneity, which will be determined using the I^2 statistic. From this, a
212 summary effect will be presented, associated 95% CI and p values. Odds ratio (OR) with 95%
213 confidence intervals will present the overall synthesised measure of effect size. Publication bias will
214 be assessed using funnel plots and Harbord-Egger test[58].

215 Additionally, consideration will be given to subgroup analysis if data allows, exploring heterogeneity
216 by sexual and gender minorities; such that these studies are split by LGBQ and transgender; as even
217 within this population it is recognised that the transgender population have high levels of suicide risk
218 and self-harm[42, 59]. This will allow us to determine which risk factors are similar within sexual and
219 gender minorities, and those that unique to the transgender population. Further examination of risk
220 factors will be conducted by age difference, split by 12-18years and 19-25years.

221 The quality of the included studies will be considered when synthesising and analysing the findings in
222 terms of the strength of evidence which they provide. A sensitivity analysis will be run to assess the
223 robustness of the studies [60]. If statistical pooling is not possible, findings will follow a narrative
224 synthesis as suggested by ERSC guidelines [61]. The analysis will take place over four steps; 1)
225 developing a theory of which factors influence LGBTQ+ young people, 2) synthesising the findings, 3)
226 exploring whether there are relationships within the data and what these might be, 4) assessing the
227 robustness of the synthesis.

228 *Patient and Public Involvement:* No patients involved.

229

230 **ETHICS AND DISSEMINATION**

231 This is a systematic review of published literature and thereby ethical approval was not sought. It
232 will be submitted to a peer-reviewed journal, be publicly disseminated at conferences focusing on
233 mental health, self-harm and suicide prevention. Findings will also be shared through public
234 engagement and involvement, particularly considering young LGBTQ+ individuals.

235

236 **DISCUSSION**

237 This systematic review will be the first to provide a rich, holistic account of the existing evidence of
238 risk factors for self-harm and suicidality within a broad sample of LGBTQ+ young people. The
239 synthesis of these findings will assess the prevalence of particular factors which impact this
240 population, which may not be relevant to non-sexual or gender minority young people.
241 Acknowledging the similarities and differences of risk factors between sexual orientation and gender

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3 242 identity groups could be used as a valuable stepping stone when considering LGBTQ+ research and
4 243 promoting more applicable research aims.

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6 244 The quality and strength of the evidence will be rigorously assessed, which could be used to inform
7 245 future research targeting these particular risks. This could ultimately help to inform self-harm and
8 246 suicidality prevention within LGBTQ+ young people. It is anticipated that the findings of this review
9 247 will be of interest to the wider academic and clinical community, policymakers, young people who
10 248 identify as a sexual or gender minority, those with experience of self-harm or suicide.

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16 250 **AUTHORS CONTRIBUTIONS**

17
18 251 AJW, JA, ET, and MM conceptualised the study. AJW developed the search strategy and conducted
19 252 the literature search. AJW and MM wrote the first draft of the manuscript. AJW, JA, ET, and MM
20 253 authors reviewed, edited, and approved the final manuscript.

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24
25 255 **FUNDING STATEMENT**

26
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28 257 A. Jess Williams. The funding body were not involved in the development of this protocol.

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32 259 **COMPETING INTERESTS**

33
34 260 None declared.
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261 REFERENCES

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PRISMA-P 2015 Checklist

This checklist has been adapted for use with protocol submissions to *Systematic Reviews* from Table 3 in Moher D et al: Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Systematic Reviews* 2015 4:1

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
ADMINISTRATIVE INFORMATION					
Title					
Identification	1a	Identify the report as a protocol of a systematic review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1
Update	1b	If the protocol is for an update of a previous systematic review, identify as such	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Registration	2	If registered, provide the name of the registry (e.g., PROSPERO) and registration number in the Abstract	<input checked="" type="checkbox"/>	<input type="checkbox"/>	48
Authors					
Contact	3a	Provide name, institutional affiliation, and e-mail address of all protocol authors; provide physical mailing address of corresponding author	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4-20
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	250-253
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Support					
Sources	5a	Indicate sources of financial or other support for the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	255-257
Sponsor	5b	Provide name for the review funder and/or sponsor	<input checked="" type="checkbox"/>	<input type="checkbox"/>	256
Role of sponsor/funder	5c	Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol	<input checked="" type="checkbox"/>	<input type="checkbox"/>	257
INTRODUCTION					
Rationale	6	Describe the rationale for the review in the context of what is already known	<input checked="" type="checkbox"/>	<input type="checkbox"/>	60-112
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	113-118

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
METHODS					
Eligibility criteria	8	Specify the study characteristics (e.g., PICO, study design, setting, time frame) and report characteristics (e.g., years considered, language, publication status) to be used as criteria for eligibility for the review	√	<input type="checkbox"/>	128-157
Information sources	9	Describe all intended information sources (e.g., electronic databases, contact with study authors, trial registers, or other grey literature sources) with planned dates of coverage	√	<input type="checkbox"/>	160-168
Search strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	√	<input type="checkbox"/>	Sup file 2
STUDY RECORDS					
Data management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	√	<input type="checkbox"/>	175-197
Selection process	11b	State the process that will be used for selecting studies (e.g., two independent reviewers) through each phase of the review (i.e., screening, eligibility, and inclusion in meta-analysis)	√	<input type="checkbox"/>	170-174
Data collection process	11c	Describe planned method of extracting data from reports (e.g., piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	√	<input type="checkbox"/>	175-197
Data items	12	List and define all variables for which data will be sought (e.g., PICO items, funding sources), any pre-planned data assumptions and simplifications	√	<input type="checkbox"/>	191-197
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	√	<input type="checkbox"/>	146-156
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	√	<input type="checkbox"/>	198-203
DATA					
Synthesis	15a	Describe criteria under which study data will be quantitatively synthesized	√	<input type="checkbox"/>	204-222
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data, and methods of combining data from studies, including any planned exploration of consistency (e.g., I^2 , Kendall's tau)	√	<input type="checkbox"/>	207-214
	15c	Describe any proposed additional analyses (e.g., sensitivity or subgroup analyses, meta-regression)	√	<input type="checkbox"/>	215-220
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	√	<input type="checkbox"/>	223-227
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (e.g., publication bias across studies, selective	√	<input type="checkbox"/>	221-223

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Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
		reporting within studies)			
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (e.g., GRADE)	✓	<input type="checkbox"/>	198-203

For peer review only

SUPPLEMENTARY FILE 2**Search strategy terms:**

(self-harm OR self harm* OR self-injur* OR "self injur*" OR self-cut* OR self-destruct* OR "self destruct*" OR "nonsuicidal self-injur*" OR "non-suicidal self injur*" OR "deliberate self harm" OR "deliberate self-harm" OR DSH OR "self-mutil*" OR overdos* OR self-inflicted injur* OR "self inflicted injur*" OR suicid* OR "parasuicid*" OR para-suicid* OR parasuicid* OR suicidal behav* OR suicide* OR "life-threatening behavio*" OR "suicide ideat*" OR "suicide attempt*" OR "attempted suicide*" OR NSSI)

AND

(moderat* OR mediat* OR "risk facto*" OR mechan* OR predict* OR pathway OR interact* OR "protective facto*" OR facto* OR influence OR correlate* OR precurs* OR "causal facto*")

AND

(transgender* OR transsexual* OR "gender nonconforming" OR "gender identity disorder" OR "gender dysphoria" OR "gender minority" OR lesbian* OR gay* OR bisexual* OR "sexual minority" OR "same-sex" OR homosexual* OR "homosexuality, male" OR "homosexuality, female" OR "gender identity" OR non-heterosexual* OR "non heterosexual*" OR homosexuality OR queer* OR questioning OR "non-binary" OR "non binary" OR "LGBT*" OR "sexual dissident*" OR "sexual and gender minorities" OR "gender variant" OR gender-variant OR genderqueer OR intersex OR "minority groups" OR "TGNC" OR "transgender and gender nonconforming")

AND

(Child* OR adolesc* OR "young people" OR kid* OR pupils OR youth OR juvenile OR "young adult*" OR "young person" OR minor*)

BMJ Open

A systematic review protocol examining risk factors for self-harm and suicide in LGBTQ+ young people

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2019-031541.R2
Article Type:	Protocol
Date Submitted by the Author:	16-Sep-2019
Complete List of Authors:	Williams, A. Jess; University of Birmingham, School of Psychology Arcelus, J; University of Nottingham , School of Medicine Townsend, Ellen; University of Nottingham, School of Psychology Michail, Maria; University of Birmingham, School of Psychology
Primary Subject Heading:	Mental health
Secondary Subject Heading:	Public health, Research methods
Keywords:	Suicide & self-harm < PSYCHIATRY, gender identity, young people, sexual orientation, systematic review, protocol

SCHOLARONE™
Manuscripts

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3 **1 A systematic review protocol examining risk factors for self-harm and suicide in LGBTQ+ young**
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9 4 A. Jess Williams*^{1,2} (a.williams.10@pgr.bham.ac.uk), Jon Arcelus³ (jon.arcelus@nottingham.ac.uk),
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48 23 Word count: 2594 (excluding title page, abstract, references, figures and tables)
49
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51 24

52 25 Key words:
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54 26 Self-harm, suicide, sexual orientation, gender identity, young people
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28 ABSTRACT

29 Introduction: Young people who identify as LGBTQ+ are at increased risk for self-harm, suicide
30 ideation and behaviours. However, there has yet to be a comprehensive understanding of what risk
31 factors influence these behaviours within LGBTQ+ young people as a whole. The purpose of this
32 systematic review is to examine risk factors associated with self-harm, suicidal ideation and
33 behaviour in Lesbian, Gay, Bisexual, Transgender, Queer or Questioning (LGBTQ+) young people.

34 Methods and analysis: A systematic review will be conducted, conforming to the reporting
35 guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)
36 statement recommendations. Electronic databases (MEDLINE, Scopus, EMBASE, PsycINFO, and Web
37 of Science) will be systematically searched for cross-sectional, prospective, longitudinal, cohort, and
38 case-control designs which examine risk factors for self-harm and/or suicidal ideation and behaviour
39 in LGBTQ+ young people (aged 12-25 years). Only studies published in English will be included. No
40 date restrictions will be applied. Study quality assessment will be conducted using the original and
41 modified Newcastle-Ottawa Scales. Meta-analysis or narrative synthesis will be utilised, dependent
42 on findings.

43 Ethics and dissemination: This is a systematic review of published literature and thereby ethical
44 approval was not sought. The review will be submitted to a peer-reviewed journal, be publicly
45 disseminated at conferences focusing on mental health, self-harm and suicide prevention. The
46 findings will also be shared through public engagement and involvement, particularly those related
47 to young LGBTQ+ individuals.

48 PROSPERO registration number: CRD42019130037

50 STRENGTHS AND LIMITATIONS OF THIS STUDY

- 51 • This is the first systematic review of risk factors for both self-harm as an individual
52 behaviour, and suicidal ideation and suicidal behaviour among LGBTQ+ young people.
- 53 • The protocol has been written following the PRISMA-P guidelines (2015).
- 54 • The robust search strategy was conducted with input from an academic skills specialist to
55 ensure replication across all databases, and capture a large range of papers.
- 56 • The systematic review will follow the Cochrane Review guidelines.
- 57 • A limitation of this systematic review is the exclusion of studies which are not published in
58 English; this may bias findings against non-English speaking countries.

60 INTRODUCTION

61 Suicide, intentionally ending one's own life[1], is one of the leading causes of death within young
62 people[2-3]. Globally, suicide accounts for around 131,441 deaths between the ages of 15-24[2].
63 Rates of self-harm, the self-injury or poisoning of one's self irrespective of suicidal intent[4], are on
64 the rise among young people[5]. Data from the 2014 UK Adult Morbidity Survey states that 25.7% of
65 women and 9.7% of men were likely to have self-harmed between the ages of 16-24 years[6].
66 Approximately 50% of those who die by suicide have previously self-harmed, making self-harm one
67 of the strongest predictors of suicide[7-9].

68 Among people who identify under the umbrella term LGBTQ+ (Lesbian, Gay, Bisexual, Transgender,
69 Queer or Questioning), this being how one self-identifies as their sex, sexuality, gender identity and
70 gender expression[10], there are elevated rates of suicidal ideation (thoughts of self-harm, the
71 consideration or planning of suicide[1]) and suicidal behaviour[11-13]. King et al's 2008 systematic
72 review found that lesbian, gay and bisexual (LGB) individuals were found to be at higher risk for both
73 suicidal behaviour and ideation compared to heterosexuals[11]. Internationally, this has been
74 estimated to be between four to eight times higher in LGB and transgender (T) young people when
75 compared to the heterosexual and cisgender peers[14]. While as a broad group, sexual and gender
76 minorities have high levels of suicidal ideation and behaviour, among transgender people
77 (individuals who do not present or identify with their sex assigned at birth[15]) these rates are even
78 greater. Indeed, lifetime risk for suicide attempt is estimated to be between 22-43%, with 9-10%
79 having made an attempt in the past 12 months[16-20].

80 Previous research has examined potential risk factors for self-harm and suicide in young people in
81 general populations. These risk factors range from demographic characteristics such as being female,
82 being a younger adult or adolescent, having fewer qualifications[21], to childhood abuse and
83 neglect[22-23]. Additional risks such as bullying and academic pressure have been linked to suicidal
84 behaviour in young people[9], as well as any mental health disorder[24]. Other factors which relate
85 to the risk of self-harm repetition include troubled relationships with family members, social
86 isolation, poor academic performance, alcohol and drug misuse, and depression[25].

87 Given the heightened risk of suicide attempt within LGBTQ+[11-13, 26], it would be pertinent to
88 explore which factors specifically pose as a risk to this population. Although some of these risk
89 factors may overlap with those from non-LGBTQ+ populations (e.g. depression, substance or alcohol
90 misuse)[11, 27], there are also unique risk factors to sexual and gender minorities. For example,
91 Clements-Nolle et al[27] stated that experiences of abuse, discrimination or harassment due to an
92 individual's gender identity or presentation were also linked to high levels of attempted suicide.
93 Meyer[28-29] suggested that additional risk within homosexual communities may be related to the
94 high levels of stigma, prejudice and discrimination which thereby impacts individual's mental
95 wellbeing. Victimisation or discrimination due to sexual orientation and gender identity is
96 particularly common within LGBTQ+ populations[30-33]. In addition, among LGBTQ+ young people
97 these experiences were found to be significantly associated with suicidal ideation[34-35]. It is
98 suggested that young people may internalise these experiences of public stigma in relation to being
99 LGBTQ+, known as internalised homophobia[36], which can lead to adverse impacts on their self-
100 perception and beliefs, which could then enhance suicidal ideation, behaviour or self-harm[37].

101

102 Why this review is important

103 The goal of this systematic review is to comprehensively examine risk factors for self-harm and
104 suicide ideation and behaviour within LGBTQ+ young people. Identifying and understanding how
105 these factors relate to self-harm and suicide could allow future research to address specific risks and
106 streamline potential studies to target the mental health needs of this population. Previous reviews
107 regarding various dimensions of self-harm[22-23, 38-40] have focused on a specific subgroup, such
108 as the prevalence within transgender population[41] or sexual orientation[42]. Whereas, few have
109 considered both self-harm and suicide in relation to LGBTQ+ populations as a broad group[11, 42-
110 44]. Thus, this review not only takes a dimensional approach to include self-harmful thoughts and
111 behaviour with and without intent of suicide, thereby covering a wide spectrum of suicide and self-
112 harm, but also includes all sexual and gender minorities.

113 Objectives:

- 114 1) To examine risk factors associated with self-harm and suicide ideation and behaviour in
115 LGBTQ+ young people.
- 116 2) To examine whether there is a difference between sexual orientation minority young people
117 and gender identity minority young people in the type of risk factors for self-harm, suicidal
118 ideation and behaviour.

120 METHODS

121 A systematic review of empirical quantitative studies which examine risk factors for self-harm and
122 suicidal ideation and behaviour in LGBTQ+ young people will be conducted. The search considered
123 all studies up to the 1st of April 2019, a summary of eligibility criteria is shown in table 1. This
124 protocol follows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Protocol
125 (PRISMA-P) guidelines[45], presented in the supplementary file 1. Study quality will be assessed by
126 the Newcastle-Ottawa Scale (NOS)[46] and the adapted version for cross-sectional studies[47]. The
127 protocol for this article has been registered with PROSPERO: CRD42019130037.

128 Eligibility criteria: see table 1 for summary:

129 *Types of studies:* These include empirical quantitative peer reviewed studies following cross-
130 sectional, prospective, longitudinal, cohort, and case-control designs which examine risk factors for
131 self-harm and/or suicidal ideation and behaviour in LGBTQ+ young people. Risk factors being
132 identified as significant predictors, mediators or moderators which influence a self-harm or suicidal
133 outcome. These papers may specifically focus on one subgroup of the LGBTQ+ umbrella (e.g.
134 transgender) or look across groups (e.g. LGB). Mixed-method papers which have applicable
135 extractable information will also be included. Grey literature such as theses, dissertations or
136 conference proceedings will not be included. Commentary, reviews, editorial or opinion pieces will
137 also be excluded. All included studies must be available as full-text and peer-reviewed in the English
138 language.

139 *Types of participants:* Participants between the ages of 12-25 years old, who identify as LGBTQ+
140 (Lesbian, Gay, Bisexual, Transgender, Queer or Questioning) referring to how one self-identifies as
141 their sex, sexuality, gender identity and gender expression[10]. This age range was selected to mirror

142 papers within the field that consider young people up to the age of 25 years[9,48], with the lower
 143 limit extended to 12 years to include the adolescent period. Participants will also have had
 144 experiences of self-harm (self-injury or poisoning irrespective of suicidal intention[4]), suicide
 145 ideation (this can include thoughts of self-harm, the consideration or planning of a suicidal attempt
 146 e.g. method[1]) or suicidal behaviour (intentionally trying to end one's own life[1]). Alternatively, if
 147 participants met the above inclusion criteria as a subgroup, this data will be extracted.

148 *Types of outcome measures:* Studies will be included if they used a measure for self-harm, suicidal
 149 ideation or suicidal behaviour. The measurements of self-harm (any, with intent, without intent) and
 150 suicidal behaviour; attempt or death, will be taken as binary variables; present or absence.
 151 Continuous scales for suicidal ideation will be converted to binary variables by considering the
 152 original scale threshold. This will act as a cut-off point, if the population mean for ideation is above
 153 this threshold, ideation will be considered present, whereas below the threshold, ideation will be
 154 considered absent. The psychometric measures of these outcomes will be extracted for descriptive
 155 purposes. This can be specific tools for considering suicide e.g. Beck Scale for Suicide Ideation
 156 (SSI)[49]; Motto's Risk Estimator for Suicide[50]; Positive and Negative Suicide Ideation (PANSI)[51];
 157 Columbia-Suicide Severity Rating Scale[52]; or self-harm e.g. Self-Harm Inventory (SHI)[53];
 158 Inventory of Statements about Self-injury (ISAS)[38]; Self-Injurious Thoughts and Behaviour
 159 Interview (SITBI) Short Form[54]. Also included will be self-harm or suicide items from general scales
 160 such as items 102-105 from the Mental Health History Form[Boudewyn & Liem, 1995; Mental Health
 161 History Form] or individual questions regarding self-harm or suicide had ever been considered or
 162 acted upon[55] and clinician reports.

163 *Table 1: Inclusion and exclusion criteria for papers*

Inclusion Criteria	Exclusion criteria
- Peer reviewed studies.	- Non-peer reviewed literature.
- Any geographical location.	- Not English language.
- English language.	- Grey literature such as theses, dissertation or conference proceedings.
- Empirical quantitative studies, following cross-sectional, prospective, longitudinal, cohort and case-control designs.	- Articles such as commentaries, reviews, editorial or opinion pieces.
- Studies must consider factors associated with or predictive of self-harm, suicidal ideation or suicidal behaviour.	- Empirical qualitative studies.
- Participants must be young people (12-25 years).	- Sample not aged between 12 and 25 years, e.g. adults 26 years and above or children 12 years and under.
- Participants that are identified or self-identified as any sexual or gender minority or member of LGBTQ+.	- Participants who are identified as heterosexual or not part of sexual or gender minority.
- Participants that have had an experience of self-harm, suicidal ideation or behaviour.	- Participants who have no experience of self-harm, suicidal ideation or suicidal behaviour.

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165 Search strategy:

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3 166 The search was limited to English language and was run up to the 1st April 2019. No date restrictions
4 167 were applied. The following electronic bibliographic databases were searched: MEDLINE, Scopus,
5 168 EMBASE, PsycINFO, and Web of Science for peer-reviewed publications which examine risk factors
6 169 for self-harm or suicide within LGBTQ+ young people. The search strategy can be found in the
7 170 supplementary file 2. This was developed in collaboration with an academic skill specialist from the
8 171 University of Birmingham library to ensure the robustness of the search. Reference lists of eligible
9 172 papers and conduct citation searches of key papers were explored to identify additional reports.
10 173 Before the final draft of the systematic review is completed, a second search will be conducted to
11 174 allow for any additional studies to be identified.

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15 175 Study records:

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18 176 *Selection process:* The search strategy will retrieve titles and/or abstracts which will be screened by
19 177 two independent researchers to identify studies which potentially meet the inclusion criteria
20 178 outlined above. The full-texts of the studies will be retrieved and independently assessed for
21 179 eligibility. Any disagreement or uncertainty over the eligibility of particular studies will be resolved
22 180 through discussion by two independent researchers.

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25 181 *Data management and collection:* Rayyan QCRI (<https://rayyan.qcri.org/welcome>), the online
26 182 systematic review tool, will be used to manage and screen all retrieved papers. AJW will be the solo
27 183 team member responsible for adding or amending paper records in Rayyan, as well as identifying
28 184 and removing duplicates. A second independent reviewer will be given access to all titles and
29 185 abstracts, within Rayyan. They will be able to make their own decision as to whether to include or
30 186 exclude a paper, blind to AJW's decisions. AJW will also be blind to the decisions of the second
31 187 reviewer until all titles and abstracts are reviewed. Rayyan will provide information on the original
32 188 number of titles screened, duplications, those excluded at this stage, and those included titles at this
33 189 stage.

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37 190 Those papers which reach full-text screening will be managed within Zotero
38 191 (<https://www.zotero.org/>), the bibliographic software. These will be sectioned by those included at
39 192 full-text screening, and final inclusion. Reason for exclusion will be reported for each paper. AJW will
40 193 be responsible for liaising with inter-library loans and obtaining the full-text papers. Full-text
41 194 screening will again be conducted by two researchers, blind to each other's decisions, who will
42 195 resolve disagreements through discussion. If an agreement cannot be reached regarding a paper,
43 196 this will be rated by a third researcher.

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47 197 A pre-piloted standardised data extraction tool will be adapted and used on included studies[56].
48 198 Extracted information will include: 1) author and publication date; 2) study design and setting; 3)
49 199 characteristics of participants (age, gender identity), and the studies' inclusion and exclusion criteria;
50 200 4) method of harm (self-harm, suicidal behaviour or ideation); 5) factors associated with or
51 201 predictive of self-harm or suicidal ideation and behaviour (including clinician diagnosis, subscales or
52 202 validated scales used to assess these items); 6) information relating to risk of bias for the individual
53 203 study.

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57 204 *Risk of bias (quality assessment):* The overall quality of each study will be evaluated by two
58 205 independent researchers using the Newcastle-Ottawa Scale (NOS)[47] and the Newcastle-Ottawa
59 206 Scale adapted for cross-sectional studies[48]. Alternative study designs which are not covered in

207 these versions of NOS, will be assessed using a pre-piloted version developed for a previous
208 systematic review[57]. The level of agreement will be demonstrated by Cohen's Kappa and a
209 Prevalence and Bias-Adjusted Kappa (PABAK) score.

210 *Data synthesis and assessment of heterogeneity:* Included studies will be presented by grouping risk
211 types together (e.g. demographic, psychosocial, psychiatric or mental health etc.). The descriptive
212 characteristics of each will be presented in tabular format, and the risks and outcomes of which will
213 be discussed using narrative synthesis, following the ESRC guidelines[58]. The analysis will take place
214 over four steps; 1) developing a theory of which factors influence LGBTQ+ young people, 2)
215 synthesising the findings, 3) exploring whether there are relationships within the data and what
216 these might be, 4) assessing the robustness of the synthesis.

217 If possible, a meta-analysis of risk factors for self-harm and suicidal ideation and behaviour using
218 RevMan 5 ([https://community.cochrane.org/help/tools-and-software/revman-5/revman-5-](https://community.cochrane.org/help/tools-and-software/revman-5/revman-5-download)
219 [download](https://community.cochrane.org/help/tools-and-software/revman-5/revman-5-download)) may be conducted by pooling data on risk factors using a random-effects model with the
220 assumption that populations have various effect sizes and weights studies from in- and between-
221 study variance. These risks will be pooled based on the analysis which has taken place in the original
222 paper, if a risk appears in more than one type of analysis it will be included in both analyses. These
223 will consider the extent of heterogeneity, which will be determined using the I^2 statistic. From this, a
224 summary effect will be presented, associated 95% CI and p values. Odds ratio (OR) with 95%
225 confidence intervals will present the overall synthesised measure of effect size. Publication bias will
226 be assessed using funnel plots and Harbord-Egger test[57].

227 Additionally, consideration will be given to subgroup analysis if data allows, exploring heterogeneity
228 by sexual and gender minorities; such that these studies are split by LGBQ and transgender; as even
229 within this population it is recognised that the transgender population have high levels of suicide risk
230 and self-harm[42, 58]. This will allow us to determine which risk factors are similar within sexual and
231 gender minorities, and those that unique to the transgender population. Further examination of risk
232 factors will be conducted by age difference, split by 12-18years and 19-25years.

233 The quality of the included studies will be considered when synthesising and analysing the findings in
234 terms of the strength of evidence which they provide. A sensitivity analysis will be run to assess the
235 robustness of included studies[59], following the removal of papers which score lower than 70% on
236 quality assessment scales.

237 *Patient and Public Involvement:* No patients involved.

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239 **ETHICS AND DISSEMINATION**

240 This is a systematic review of published literature and thereby ethical approval was not sought. It
241 will be submitted to a peer-reviewed journal, be publicly disseminated at conferences focusing on
242 mental health, self-harm and suicide prevention. Findings will also be shared through public
243 engagement and involvement, particularly considering young LGBTQ+ individuals.

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3 245 **DISCUSSION**
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5 246 This systematic review will be the first to provide a rich, holistic account of the existing evidence of
6 247 risk factors for self-harm and suicidality within a broad sample of LGBTQ+ young people. The
7 248 synthesis of these findings will assess the prevalence of particular factors which impact this
8 249 population, which may not be relevant to non-sexual or gender minority young people. However,
9 250 when pooling studies within a meta-analysis, it is possible that the variation between papers may
10 251 cause a challenge for this synthesis. This may be related to the broad approach in which we're
11 252 approaching the systematic review, nonetheless we feel that this approach offers many values. Such
12 253 as, exploring the similarities and differences of risk factors by subgroup analysis, via sexual
13 254 orientation and gender identity or age, could be used as a valuable stepping stone when considering
14 255 LGBTQ+ research and promoting more applicable research aims.

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19 256 The quality and strength of the evidence will be rigorously assessed, which could be used to inform
20 257 future research targeting these particular risks. This could ultimately help to inform self-harm and
21 258 suicidality prevention within LGBTQ+ young people. It is anticipated that the findings of this review
22 259 will be of interest to the wider academic and clinical community, policymakers, young people who
23 260 identify as a sexual or gender minority, those with experience of self-harm or suicide.
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28 262 **AUTHORS CONTRIBUTIONS**
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30 263 AJW, JA, ET, and MM conceptualised the study. AJW developed the search strategy and conducted
31 264 the literature search. AJW and MM wrote the first draft of the manuscript. AJW, JA, ET, and MM
32 265 authors reviewed, edited, and approved the final manuscript.
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37 267 **FUNDING STATEMENT**
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39 268 This work was supported by the Midlands Graduate School ESRC DTP Joint Studentship awarded to
40 269 A. Jess Williams. The funding body were not involved in the development of this protocol.
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45 271 **COMPETING INTERESTS**
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47 272 None declared.
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PRISMA-P 2015 Checklist

This checklist has been adapted for use with protocol submissions to *Systematic Reviews* from Table 3 in Moher D et al: Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Systematic Reviews* 2015 4:1

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
ADMINISTRATIVE INFORMATION					
Title					
Identification	1a	Identify the report as a protocol of a systematic review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1
Update	1b	If the protocol is for an update of a previous systematic review, identify as such	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Registration	2	If registered, provide the name of the registry (e.g., PROSPERO) and registration number in the Abstract	<input checked="" type="checkbox"/>	<input type="checkbox"/>	48
Authors					
Contact	3a	Provide name, institutional affiliation, and e-mail address of all protocol authors; provide physical mailing address of corresponding author	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4-20
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	262-265
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Support					
Sources	5a	Indicate sources of financial or other support for the review	<input checked="" type="checkbox"/>	<input type="checkbox"/>	267-269
Sponsor	5b	Provide name for the review funder and/or sponsor	<input checked="" type="checkbox"/>	<input type="checkbox"/>	268
Role of sponsor/funder	5c	Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol	<input checked="" type="checkbox"/>	<input type="checkbox"/>	269
INTRODUCTION					
Rationale	6	Describe the rationale for the review in the context of what is already known	<input checked="" type="checkbox"/>	<input type="checkbox"/>	60-112
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	113-118

Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
METHODS					
Eligibility criteria	8	Specify the study characteristics (e.g., PICO, study design, setting, time frame) and report characteristics (e.g., years considered, language, publication status) to be used as criteria for eligibility for the review	√	<input type="checkbox"/>	128-163
Information sources	9	Describe all intended information sources (e.g., electronic databases, contact with study authors, trial registers, or other grey literature sources) with planned dates of coverage	√	<input type="checkbox"/>	165-174
Search strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	√	<input type="checkbox"/>	Sup file 2
STUDY RECORDS					
Data management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	√	<input type="checkbox"/>	181-203
Selection process	11b	State the process that will be used for selecting studies (e.g., two independent reviewers) through each phase of the review (i.e., screening, eligibility, and inclusion in meta-analysis)	√	<input type="checkbox"/>	176-180
Data collection process	11c	Describe planned method of extracting data from reports (e.g., piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	√	<input type="checkbox"/>	181-203
Data items	12	List and define all variables for which data will be sought (e.g., PICO items, funding sources), any pre-planned data assumptions and simplifications	√	<input type="checkbox"/>	197-203
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	√	<input type="checkbox"/>	148-162
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	√	<input type="checkbox"/>	217-226
DATA					
Synthesis	15a	Describe criteria under which study data will be quantitatively synthesized	√	<input type="checkbox"/>	210-216
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data, and methods of combining data from studies, including any planned exploration of consistency (e.g., I^2 , Kendall's tau)	√	<input type="checkbox"/>	217-226
	15c	Describe any proposed additional analyses (e.g., sensitivity or subgroup analyses, meta-regression)	√	<input type="checkbox"/>	227-232
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	√	<input type="checkbox"/>	210-216

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Section/topic	#	Checklist item	Information reported		Line number(s)
			Yes	No	
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (e.g., publication bias across studies, selective reporting within studies)	√	<input type="checkbox"/>	217-226
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (e.g., GRADE)	√	<input type="checkbox"/>	233-236

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SUPPLEMENTARY FILE 2**Search strategy terms:**

(self-harm OR self harm* OR self-injur* OR "self injur*" OR self-cut* OR self-destruct* OR "self destruct*" OR "nonsuicidal self-injur*" OR "non-suicidal self injur*" OR "deliberate self harm" OR "deliberate self-harm" OR DSH OR "self-mutil*" OR overdos* OR self-inflicted injur* OR "self inflicted injur*" OR suicid* OR "parasuicid*" OR para-suicid* OR parasuicid* OR suicidal behav* OR suicide* OR "life-threatening behavio*" OR "suicide ideat*" OR "suicide attempt*" OR "attempted suicide*" OR NSSI)

AND

(moderat* OR mediat* OR "risk facto*" OR mechan* OR predict* OR pathway OR interact* OR "protective facto*" OR facto* OR influence OR correlate* OR precurs* OR "causal facto*")

AND

(transgender* OR transsexual* OR "gender nonconforming" OR "gender identity disorder" OR "gender dysphoria" OR "gender minority" OR lesbian* OR gay* OR bisexual* OR "sexual minority" OR "same-sex" OR homosexual* OR "homosexuality, male" OR "homosexuality, female" OR "gender identity" OR non-heterosexual* OR "non heterosexual*" OR homosexuality OR queer* OR questioning OR "non-binary" OR "non binary" OR "LGBT*" OR "sexual dissident*" OR "sexual and gender minorities" OR "gender variant" OR gender-variant OR genderqueer OR intersex OR "minority groups" OR "TGNC" OR "transgender and gender nonconforming")

AND

(Child* OR adolesc* OR "young people" OR kid* OR pupils OR youth OR juvenile OR "young adult*" OR "young person" OR minor*)