Original Research Article

Psychosocial Factors Distinguishing Men Who Have Attempted Suicide From Men With Suicidal Ideation and Non-suicidal Men: Findings From a Global Survey

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Abstract

This study addresses our limited understanding of male suicide risk psychology. 2763 men participated in a global survey examining associations between suicidal history and measures of emotions, psychological pain, feelings towards self, and interpersonal connections. Results from multinomial logistic regression analyses indicated that higher levels of loneliness and mental health diagnosis increased the odds of being in the suicidal ideation group compared to controls. A mental health diagnosis and being non-heterosexual increased the odds of being in the suicide attempt group compared to controls. Higher levels of financial strain, mental health diagnosis, being non-heterosexual, having more restrictive attitudes to emotional expression, and lower levels of mattering to others, increased the odds of suicide attempt group membership compared to suicidal ideation.

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Suicide is one of the most critical issues relating to men's health. Data suggest that approximately three-quarters of all suicide deaths worldwide are male (WHO, 2018). In the UK, men under 50 are more likely to kill themselves than die any other way (Mental Health Foundation, 2021). Within suicide research, work to understand suicide risk, specifically in men, has been underfunded and under-researched (Bennett et al., 2023a; Bilsker & White, 2011). As such, there are critical gaps in our understanding of why men are particularly vulnerable to dying by suicide (Richardson et al., 2021).

Various factors have been identified as potentially elevating men's risk. Men are less likely to seek help and more likely to use lethal means - such as firearms - and die on a first attempt (Jordan & McNiel, 2020; O'Donnell & Richardson, 2018). A recent systematic review of quantitative publications on male suicide risk identified 68 potential risk factors, with the strongest evidence pointing towards men who have a diagnosis of depression, are romantically unattached, and/or have substance abuse challenges (Richardson et al., 2021). This study highlights some of the problems facing the field. As the study authors note, many of the identified risk factors have limited utility because they do not help to distinguish between the multitudes of men who experience similar challenges but who are not suicidal. For example, millions of men are diagnosed with depression but do not kill themselves. Similarly, trying to develop prevention and intervention strategies to tackle the 68 identified risk factors creates a complicated context. To move the field forward, increasing our understanding of suicidal ideation and suicide attempts as separate (though interrelated) states of being is crucial (O'Connor & Nock, 2014; Pirkis et al., 2000). Understanding the psychosocial factors that may distinguish men who experience suicidal ideation from men who attempt suicide could support the provision of more targeted interventions to manage these different states and potentially save lives.

Suicidal Ideation Versus Suicide Attempts in Men

There has been limited research into the potentially different social and psychological characteristics of men who think about suicide distinct from men who attempt suicide. Previous non-sex/gender-specific work has suggested people who attempt suicide may experience higher rates of psychopathology and childhood adversity (Fergusson & Lynskey, 1995). Pirkis et al. (2000) found that people with a suicide attempt history are more likely to be unemployed and not married than those who are not suicidal, and unemployment was the only factor differentiating people who have made a suicide attempt from those who have thought about suicide but not acted on their ideation. Further empirical research to specifically explore potential psychosocial distinctions between men who think about suicide and men who attempt suicide is urgently needed.

This work is particularly critical given the reported shorter suicidal process in men. Research suggests the time between a first communication about suicide and death is, on average, 12 months in men compared to 42 months in women (Neeleman et al., 2004), and men are also more likely to die on their first attempt (Jordan & McNiel, 2020).

Understanding male suicide involves exploring both potential biological (sex) and cultural (gender) risk factors. Regarding sex-based risk, research indicates that male suicide risk is influenced by fluctuations in testosterone levels, with both low and high levels implicated (Kõlves et al., 2013). In terms of socio-cultural risk, a recent qualitative meta-synthesis of 78 male suicide studies suggests that in 96% of papers, there was a potential association between cultural norms of masculinity and suicide risk (Bennett et al., 2023a). Norms relating to male emotional suppression, failing to meet societal standards of male success, and the cultural devaluing of men's interpersonal needs appeared to be associated with increased psychological pain and suicide risk in men. To elucidate the potential gendered psychological pathways underpinning male suicide, the authors developed the 3D Model of Masculine Norms and Male Suicide Risk (3D Risk).

3D Risk Model

The 3D Risk model explores socio-cultural aspects of male suicide risk. The 3 "Ds" represent 1. denial, 2. disconnection, and 3. dysregulation. The model suggests that cultural norms of masculinity may be associated with men experiencing denial, disconnection, and dysregulation in three psychological domains, being (1) emotions, (2) relationship with self, and (3) connections with others. Denial, disconnection, and dysregulation in these domains seemed to increase men's psychological pain and suicide risk. The model additionally suggests that potential distal and proximal risk factors may be related to the same psychological domains, i.e., proximal factors seemed to represent heightened dysregulation within men's relationship with emotions, self, and/or connections with others, as observed as distal risk factors. For example, a proximal risk factor in relation to emotions was "death as the release from unbearable psychological pain", which appeared to represent a heightened manifestation of distal risk factors relating to emotions such as "emotional suppression", and "help-seeking rejected as weak".

In terms of emotions, cultural norms of male emotional suppression, masculine strength, independence, and coping alone, seem to mean some men denied their emotional reality, became disconnected from it, restricted emotional expression, and/or rejected seeking help. These behaviors seem to be associated with men's emotions becoming dysregulated. In terms of proximal risk, the 3D model suggests suicide can be driven, in part, by overwhelming feelings of psychological pain, defeat, and entrapment. These findings are supported by other quantitative suicide work. A systematic review identified emotional dysregulation as associated with suicidal behaviors (Colmenero-Navarrete et al., 2022). Psychological pain is fundamental to most theories

of suicide (Baumeister, 1990; Joiner, 2005; Shneidman, 1993). Defeat and entrapment, specific types of psychological pain, are also critical components of O'Connor's (2011, 2018) "Integrated Motivational-Volitional Model of Suicidal Behavior".

In relation to feelings towards self, the 3D Risk model suggests not living up to societal expectations of masculine success are associated with distal male suicide risk factors of low self-esteem and feeling like a failure. In terms of proximal risk, the model suggests that some male suicides can be driven by an intensification of those feelings, with suicide associated with the killing of a failed, hated, or devalued self. The re- lationship between low self-esteem and suicide risk has also been previously reported (Chatard et al., 2009; Kõlves et al., 2013), as have feelings of failure - specifically in relation to male suicide (Coleman et al., 2011; Möller-Leimkühler, 2003). Additionally, aversive self-awareness is critical to Baumeister's (1990) "Escape from Self" theory of suicide.

Regarding connections with others, the 3D Risk model suggests cultural norms that devalue men's interpersonal needs may be associated with men experiencing distal suicide risk factors of isolation, loneliness, interpersonal disconnection, and rela- tionship challenges. Proximal risk was again an intensification of these factors. An aspect of male suicidal behavior appeared to be driven by overwhelming isolation, loneliness, and painful relationship challenges and breakdowns. A recent literature review highlights the role of social isolation in suicidal behaviors, particularly for men (Motillon-Toudic et al., 2022), and there is a body of evidence identifying relationship breakdowns as a contributing factor to male suicide (Samaritans, 2012; Scourfield & Evans, 2015). Feelings of burdensomeness and a lack of belonging are central components of Joiner's (2005) interpersonal theory of suicidal behavior.

In summary, the 3D Risk model suggests that cultural norms of masculinity may mean some men who are suicidal experience dysregulation in the domains of emotions, self, and connections with others. Additionally, the model suggests that dysregulation in these domains may intensify between men who have thoughts of suicide and men who attempt suicide. These ideas, inductively informed through qualitative work, now need to be investigated through quantitative research designs.

The current study builds on these findings to explore the phenomena of the 3D Risk model in a global, cross-sectional sample, aimed at answering the following research questions:

1. Do higher levels of emotional and psychological pain, negative feelings towards self, and interpersonal challenges (as suggested by the 3D Risk model) increase the odds of being in the (a) suicidal ideation group compared to the control group (no suicidal history), (b) suicide attempt group compared to controls, and (c) suicide attempt group compared to the ideation group?
2. What specific socio-demographic factors most increase the odds of being in the (a) suicide attempt group compared to the control group; (b) suicidal ideation group compared to the control group; and (c) suicide attempt compared to the ideation group?

Methods

The data in the present study are from a large global online survey conducted from March to October 2021 on male suicide risk and recovery factors. Ethical approval was granted by the College of Medical, Veterinary and Life Sciences (MVLS) at the University of Glasgow (ID 200200085). All participants were aged 18 and over and gave informed consent to take part on a voluntary basis. Participants received no compensation for taking part.

Sample

Identifying as male and being aged 18 or older were the only inclusion criteria. The survey was open to participants worldwide but was only available in English-language.

Sampling Procedures

The survey was built and hosted on online survey software (JISC) and included questions relevant to male suicide risk and recovery. A pilot study was conducted before the survey launched, and men with lived experience provided the research team with feedback on comprehensibility, accessibility, and sensitivity ($n = 6$). Participant recruitment for the study ran from April to October 2021 and was based on adverts shared with national and local mental health/suicide prevention organizations; depression/male support groups; mental health bloggers; community faith groups; businesses; sports groups; online adverts; Facebook and Reddit groups, and the research team's personal networks. The study advert included a URL to the survey. On the welcome page of the survey, participants were given full information about the study, a consent form, and an opt-in "check box" to confirm their consent to participate. Consenting participants then completed demographic questions before completing the survey questions. Participants could save their responses and finish their entries later should they wish. The survey closed with a debrief message that thanked participants for their time and insights and shared a list of support organizations with relevant contact details. The lead author's email address was made available at the start and end of the survey for any questions or feedback.

Measures

Sociodemographic Characteristics. The following sociodemographic information were gathered from participants: age (continuous variable), gender (Man/Trans Man/Genderqueer/Prefer not to say), ethnicity (Other than White), sexuality (Other than Straight), relationship status (Married/in a relationship; and Single/Divorced/Separated/Other), employment (Unemployed; Other/Student/Stay at home parent/Retired; and Employed full time/Employed part-time), financial status (Doing alright/Just about getting by; Finding it quite difficult/Finding it very difficult; and Living Comfortably),

received a mental health diagnosis (binary coded: yes or no). Data were collected during the COVID-19 pandemic. To measure the impact of the pandemic on respondents' well-being, participants were asked: "How much does Covid-19 affect your life?"; "How much does Covid-19 affect your financial situation?"; and "How much does Covid-19 affect your mental wellbeing?" Participants could reply to each question on a Likert-type scale from zero ("No effect at all") to 10 ("Severely affects my life").

Psychological Measures. The current study explores some of the psychological factors suggested by the 3D Risk model (Bennett et al., 2023a) as relevant to male suicide grouped into three domains: (1) Emotions and psychological pain, (2) Feelings towards self, and (3) Connections with others. A detailed description of each measure is provided in Supplemental Material A, and a full copy of all the item questions can be found in Supplemental Material B.

While the potential impact of masculine norms is integral to the 3D Risk model, we opted not to use an explicit measure of masculinity following Thompson and Bennett's (2015) review of masculine ideology psychometrics. They argue that given the changing cultural milieu, a new generation of masculinity measures is required to capture contemporary masculine norm construction effectively. For example, they question the appropriateness of assessing male attitudes towards dominance, homophobia, and avoidance of femininity. They argue that societal shifts towards reduced adherence to heteronormative social norms and growing awareness of sexist gender dynamics, means traditional masculinity measures may not adequately capture current masculine norms. Findings from the male suicide qualitative meta-synthesis also supported this position. There was very little evidence of a drive for dominance or feminine/homosexual avoidance as critical to male suicide risk, though the authors note these factors may still be relevant (Bennett et al., 2023a). Consequently, the measures in this study instead focused on the psychological domains that the 3D Risk model identified as being negatively impacted by cultural norms of masculinity, i.e., male emotional suppression, negative feelings towards self, and interpersonal isolation and dysregulation.

Additionally, we note that the 3D Risk model is based on qualitative evidence that cannot translate directly onto quantitative measures. While accepting a degree of imprecision inherent to this process, the author team sought to map model domains onto viable measures as coherently as possible. As such, the following psychological measures were included to measure the following dimensions of the 3D Risk model.

Domain 1: Emotions and Psychological Pain Measures. This domain broadly examines aspects of denial, disconnection, and dysregulation in men's emotions via measures of men's (a) current emotional state, (b) attitudes towards emotional expression and help-seeking; and (c) current levels of psychological pain.

    a. Men's current emotional state was measured using:

i. Depression PHQ (Kroenke et al., 2001) a 9-item measure of depression in the last 2   weeks, though we only used 8 of the 9 items removing question 9, "Have you had thoughts that you would be better off dead or of hurting yourself in some way?" - because of potential crossover with our outcome measure of suicide ideation or attempt. The measure has four response options ("Not at all" to "Nearly every day"). Good internal consistency and construct validity have previously been reported (Kroenke et al., 2001) and in this study, the scale displayed high internal reliability (Cronbach's a = 0.90).

ii. Entrapment Scale (De Beurs et al., 2020), a 4-item measure of entrapment (e.g., "I feel trapped inside myself"), with five response options ("Not at all like me" to "Extremely like me"). This measure has good internal consistency and construct validity and displays good psychometric properties (De Beurs et al., 2020). In this study, the scale displayed high internal reliability (Cronbach's a = 0.87).

iii. Defeat Scale (Griffiths et al., 2015); a 4-item measure of defeat (e.g., "I feel defeated by life"), with five response options ("Not at all like me" to "Extremely like me"). This measure has good internal consistency and construct validity and displays good psychometric properties (Griffiths et al., 2015). In this study, the scale displayed high internal reliability (Cronbach's a = 0.92).

b. Men's attitudes to emotional expression and help-seeking were measured via:

i. Attitudes towards Emotional Expression scale (Joseph et al., 1994), a 20-item measure of emotional expression (e.g., "I think getting emotional is a sign of weakness") with five response options ("Strongly Disagree" to "Strongly Agree"). This measure has good internal consistency and construct validity and displays good psychometric properties (Joseph et al., 1994).). In this study, the scale displayed high internal reliability (Cronbach's a = 0.92).

ii. "Self-Reliance" and "Emotional Control" sub-scales from the Conformity to Masculine Norms (Mahalik et al., 2003); 6-items in total (e.g., "I tend to share my feelings"/"It bothers me when I have to ask for help") with six response options ("Strongly Disagree" to "Strongly Agree"). This measure has good internal consistency and construct validity and displays good psychometric properties (Mahalik et al., 2003). In this study, the scale displayed high internal reliability (Cronbach's a = 0.81).

d. Men's current levels of psychological pain were measured using:

i. Flooding & Freezing sub-scales from the Mental Pain Scale (Orbach et al., 2003). We used 7 items to measure flooding and freezing (e.g., "I am flooded by many feelings") with 5 response points ("Does not describe me at all" to "Describes me very well"). This measure has good internal consistency and construct validity and displays good psychometric properties (Orbach et al.,

2003). In this study, the scale displayed high internal reliability (Cronbach's a = 0.86).

Domain 2: Feelings and Thoughts About Self. This domain broadly explores denial, disconnection, and dysregulation in men's relationship with self, assessed via measures of (a) self-esteem, self-liking, and self-competency and (b) feelings of being a failure.

- a. Men's self-esteem, self-liking, and self-competency were measured via:
    - i.   Self-Esteem Scale (Rosenberg, 1965) a 10-item measure of self-esteem (e.g., "I certainly feel useless at times") with four response options ("Strongly Agree" to "Strongly Disagree"). This measure has good internal consistency and construct validity and displays good psychometric properties (Donnellan et al., 2011). In this study, the scale displayed high internal reliability (Cronbach's a = 0.91).
    - ii. Self-Liking/Self Competence Scale (Tafarodi & Swann, 2001) a 16-item measure of self-liking and self-competence (e.g., "I never doubt my personal worth") with four response options ("Strongly Agree" to "Strongly Disagree"). This measure has good internal consistency and construct validity and displays good psychometric properties (Donnellan, Trzesniewski & Robins, 2015). In this study, the scale displayed high internal reliability (Cronbach's a = 0.92).
- b. Men's feelings of being a failure were measured via:
    - i.   Failure (1 measure from BDI-II) with three response options ("I have failed more than I should have" to "I feel I am a total failure as a person"). This measure has good internal consistency and construct validity and displays good psychometric properties (Wang & Gorenstein, 2013).

Domain 3: Connections with Others. In this domain, denial, disconnection, and dysregulation in men's interpersonal connections were broadly assessed via (a) connections with a significant other, friends and/or family, (b) social and emotional isolation, and (c) men's sense of mattering to others.

- a. Men's connections with a significant other, friends and/or family were measured via:
    - i.   Multidimensional Scale of Perceived Social Support (Zimet et al., 1988); a 12-item measure of support from family, friends, and significant others (e.g., "I can count on my friends when things go wrong"), with seven response options ("Very Strongly Disagree" to "Very Strongly Agree"). This measure has good internal consistency and construct validity and displays good psychometric properties (Zimet et al., 1988). In this study, the scale displayed high internal reliability (Cronbach's a = 0.92).
- b. Men's emotional and social loneliness was measured via:

    i.   The De Jong Gierveld Loneliness Scale (Gierveld & Van Tilburg, 2006); a 6-item measure of social and emotional loneliness (e.g., "I miss having people around me"), with five response options ("Yes!" to "No!"). This measure has good internal consistency and construct validity and displays good psychometric properties (Gierveld & Van Tilburg, 2006). In this study, the scale displayed high internal reliability (Cronbach's a = 0.80).

  c. Men's sense of mattering to others was measured via:

    i.   General Mattering Scale (Marcus, 1991) a 5-item measure of mattering to others (e.g., "How important are you to others?"), with four response options ("Not at all" to "Very much"). This measure has good internal consistency and construct validity and displays good psychometric properties (Sarı & Karaman, 2018). In this study, the scale displayed high internal reliability (Cronbach's a = 0.86).

Primary Outcome: Suicide-related Measures. To measure participants' history of suicidal behaviors, two items were used from the Adult Psychiatric Morbidity Survey (McManus et al., 2007). To measure participants' past thoughts of suicide, respondents were asked, "*Have you ever thought of taking your life, but not actually attempted to do so?*" Participants who answered "Yes" were grouped together (Suicidal ideation group) to indicate their status as men who had past thoughts of suicide. To measure past suicide attempts, participants were asked: *"Have you ever made an attempt to take your life?"* Participants who answered "Yes", were grouped together (Suicide attempt group) to indicate their status as men who had made a previous suicide attempt. Men who responded "No" to both questions were grouped together (Not suicidal or control group) to indicate they had never been suicidal.

Missing Data

Missing data was relatively low, with "Age" missing at 4.73%, "Mental Health Diagnosis" at 4.02% but all other scales missing at under 1%. The missing completely at random test (Little, 1988) was used to establish patterns in the missing data. The test was non-significant, suggesting that data were missing completely at random. The expectation maximization technique was used to address missing data (Rubin, 1987). The imputation procedures were only applied to continuous variables (i.e., categorical data were not included).

Statistical Analysis

Data were cleaned and grouped into two classification models with the reference group for Model 1 set as men who are not suicidal and in Model 2 as men with suicidal ideation. Model 1 explored: (a) men who are not suicidal (reference: not suicidal) versus men with thoughts of suicide (ideation); and (b) men who are not suicidal (reference: not suicidal) versus men who have attempted suicide (attempt). Model

2 compared (c) men with thoughts of suicide (reference: ideation) versus men who have attempted suicide (attempt).

First, we descriptively summarized demographic and psychological data through frequencies, percentages, means, and standard deviations. Separate multinomial univariate logistical regressions were then conducted on each variable in each model with odds ratios (OR) and 95% CIs reported (see Table 3). Variables statistically significant at p-value <.01 across the 2 models were added to a multinomial multivariate logistical regression analysis. Multicollinearity tests were carried out to check the correlation between independent variables in the multivariate model. Collinearity on variables in Model 1 were low, medium, and high, so results for these models need to be interpreted with appropriate caution. Collinearity on variables in Model 2 were all confirmed as low. See Supplemental Material C for collinearity breakdown. For all measures, Cronbach Alpha was 0.80 and above (see Supplemental Material A). Odds ratios (OR) and 95% CIs are reported for this regression in Table 4, along with the model fit statistics. A risk factor was deemed significant if the p-value was <0.01. The p-value was set at <0.01 to account for the multiple comparisons in this study, as well as to increase the robustness of the evidence of the findings reported. See Supplemental Material E for a breakdown of all the variables included in the multivariate analysis and the sociodemographic reference categories. All analyses were conducted using R version 4.2.2; see Supplemental Material D for analysis script (scripts 1–7).

Results

Suicidal History

There were 2763 men in the study sample. Overall, 781 (29%) men reported a lifetime suicide attempt, 1670 (60%) participants reported lifetime suicidal ideation, and 312 (11%) participants reported no suicidal history.

Participant Characteristics

Of the 2763 men in the sample, 1681 were aged 18–30 ($n = 61\%$); 845 were aged 31 to 50 ($n = 31\%$); and 237 were 51 and older ($n = 9\%$) The majority of the sample was white ($n = 81\%$), straight ($n = 77\%$), employed (59%), not in a relationship ($n = 61\%$) and financially "Doing alright/Just about getting by" ($n = 59\%$). The sample included men from 79 countries, with representation across World Bank regions as follows: Europe & Central Asia (50.92%), North America (35.69%), East Asia & Pacific (6.33%), Latin America & Caribbean (3.76%), South Asia (2.14%), Sub-Saharan Africa (0.51%), and Middle East & North Africa (0.51%) (World Bank, 2023). The mean impact of Covid-19 on participants was 5 out of 10 (SD = 2.85); the mean for impact on wellbeing was 5 out of 10 (SD = 3.10); and 3 out of 10 for impact on financial situation (SD = 3.14). Depression symptomatology rates differed across the groups, with mean PHQ-8 scores of 6.18 (SD = 5.13) for the "Not suicidal" group, 12.42 (SD = 6.21) for the "Suicidal

Ideation" group, and 15.41 (SD = 6.1) for the "Suicide attempt" group. Correspondingly, 28%, 71%, and 84% of individuals surpassed the threshold indicating symptoms of clinical depression within each group, respectively, based on the cut-off suggested by Wu et al. (2020). It is important to note that this threshold is an indicator and not a formal diagnosis. See Tables 1 and 2 for a full breakdown of participant demographic and psychosocial characteristics broken down by suicidal history can be found in Tables 1 and 2.

Factors Increasing the Odds of Suicidal Ideation Category Membership (Compared to no Suicidal History)

In the univariate multinomial logistic regression (see Table 3 for full breakdown), demographic factors that significantly increased the likelihood of suicidal ideation category membership compared to the control group were: being aged 51+, not straight, not married or in a relationship, unemployed, mental health diagnosis, and any category of financial strain. Explanatory psychological factors included:

Domain 1 - Emotional and Psychological Pain: Higher rates of depressive symptoms, mental pain, entrapment, defeat, emotional control, self-reliance, and more negative attitudes to emotional expression.
Domain 2 - Feelings towards self: Higher rates of failure, and lower levels of self-esteem, self-liking, and self-competence.
Domain 3 - Connections with others: Lower levels of mattering to others and perceived social support, and higher emotional and social loneliness.

In the multivariate multinomial logistic regression model, the factors that significantly increased the odds of ideation group membership versus not suicidal were loneliness [OR (95% CI) = 1.25 (1.13–1.39) $p < .0001$] and having a mental health diagnosis [OR (95% CI) = 1.99 (1.40–2.81) $p < .0001$]. See Figure 1(A) and Table 4.

Factors Increasing the Odds of Suicide Attempt Category Membership (Compared to no Suicidal History)

In the univariate multinomial logistical regression (see Table 3 for full breakdown), the same demographic and psychological factors that significantly increased suicidal ideation group membership compared with controls were also found to be statistically significant here (suicide attempt vs controls), though gender other than "male" was also significant here.

In the multivariate multinomial logistical regression, factors that significantly increased suicide attempt category membership were: sexuality i.e., not being heterosexual [OR (95% CI) = 2.10 (1.35–3.28) $p < .001$]; and having a mental health diagnosis [OR (95% CI) = 5.26 (3.62–7.65) $p < .0001$]. See Figure 1(B) and Table 4.

Table I. Demographic and Clinical Characteristics by Suicidal History.

(N (%) or M (SD))

Psychosocial factor	Total	No Suicidal History	Suicidal Thoughts	Suicide Attempts
	2685 (100%)	280 (10%)	1634 (61%)	771 (29%)
		Sociodemographics		
Age	18–30: 1681 (61%)	18–30: 169 (54%)	18–30: 1033 (62%)	18–30: 479 (61%)
	31–50: 845 (31%)	31–50: 94 (30%)	31–50: 513 (31%)	31–50: 238 (30%)
	51+: 237 (9%)	51+: 49 (16%)	51+: 124 (7%)	51+: 64 (8%)
Gender				
Trans/Gender Queer/ Prefer not to say	96 (3%)	2 (1%)	32 (2%)	62 (8%)
Male (ref)	2667 (97%)	310 (99%)	1638 (98%)	719 (92%)
Sexuality				
Gay/ Bisexual/Not Sure	646 (23%)	33 (11%)	346 (21%)	267 (34%)
Straight (ref)	2117 (77%)	279 (89%)	1324 (79%)	514 (66%)
Relationship status				
Single/ Divorced/ Separated/ Widowed/Other	1697 (61%)	138 (44%)	1043 (62%)	516 (66%)
Married/In a relationship (ref)	1066 (39%)	174 (56%)	627 (38%)	265 (34%)
Ethnicity				
Black/Asian/Arab/ Mixed	527 (19%)	54 (17%)	314 (19%)	159 (20%)
White (ref)	2236 (81%)	258 (83%)	1356 (81%)	622 (80%)
Employment				
Unemployed	472 (17%)	17 (5%)	270 (16%)	185 (24%)
Student/Stay at home parent/Retired	670 (24%)	80 (26%)	412 (25%)	178 (23%)
In employment (ref)	1621 (59%)	215 (69%)	988 (59%)	418 (54%)
Financial				
Doing alright/Just about getting by	1628 (59%)	148 (47%)	1016 (61%)	462 (59%)
Finding it quite difficult/Finding it very difficult	381 (14%)	18 (6%)	190 (11%)	173 (22%)
Living comfortably (ref)	754 (27%)	146 (47%)	464 (28%)	144 (18%)
		Mental health and suicidal behaviours		
Mental health diagnosis				
Yes	1307 (47%)	51(16%)	709 (42%)	547 (70%)
No (ref)	1456 (53%)	262 (84%)	961 (58%)	234 (30%)

Table 2. Psychosocial Factors by Suicidal History.

(N (%) or M (SD))				
Psychosocial factor	Total	No Suicidal History	Suicidal Thoughts	Suicide Attempts
Psychological variables				
Emotional and psychological pain:				
Depression *(from PHQ)*	30.38 (21.21)	11.96 (13.95)	29.57 (20.08)	39.49 (20.8)
Conformity to masculine norms *(Emotions and Self Reliance)*	4.18 (1.09)	3.83 (1.04)	4.19 (1.08)	4.29 (1.09)
Attitudes to emotions	62.51 (15.12)	54.17 (14.48)	62.17 (14.6)	66.58 (15.01)
Mental pain *(Flooding and Freezing)*	19.94 (7.54)	12.83 (6.17)	19.81 (7.12)	23.04 (6.92)
Entrapment	12.77 (5.18)	7.52 (3.84)	12.8 (4.92)	14.82 (4.7)
Defeat	11.86 (5.62)	6.45 (3.63)	11.78 (5.39)	14.18 (5.23)
Feelings about self:				
Failure *(from BDI-II)*	2.55 (1.04)	1.65 (0.83)	2.53 (0.99)	2.95 (0.98)
Self-esteem scale	27.09 (6.97)	19.98 (6.15)	27.15 (6.47)	29.81 (6.3)
Self-Liking/Self-competence	46.56 (9.2)	37.43 (8.73)	46.71 (8.44)	49.88 (8.5)
Connections with others:				
Perceived social support	4.22 (2.19)	5.24 (1.87)	4.19 (2.17)	3.86 (2.23)
General mattering scale	12.37 (3.93)	15.12 (3.71)	12.42 (3.72)	11.17 (3.9)
Loneliness scale	4.48 (1.71)	2.76 (2)	4.59 (1.59)	4.94 (1.37)

Factors Increasing the Odds of Suicide Attempt Category Membership (Compared to Suicidal Ideation)

In the univariate multinomial logistical regression (see Table 3 for full breakdown), the demographic factors that significantly increased the likelihood of suicide attempt category membership compared to suicidal ideation membership were: not being a cis male, not being straight, being unemployed, having a mental health diagnosis, and any category of financial strain. Psychological factors that increased the odds of belonging to the suicide attempt group were:

Domain 1 - Emotional and Psychological Pain: Higher rates of depressive symptoms, mental pain, entrapment, defeat, and more negative attitudes to emotional expression.
Domain 2 - Feelings towards self: Higher rates of failure, and lower levels of self-esteem, self-liking, and self-competence.

Table 3. Univariate Multinomial Logistic Regression of Demographic, Mental Health Characteristics and Psychological Associated With Suicidal History Group Membership.

Demographic and Clinical Variables

Model Variables	Suicidal Ideation versus No Suicidal History[a]		Suicide Attempts versus No Suicidal History[a]		Suicidal Thoughts versus Suicide Attempts[b]	
	Unadjusted OR (95% CI)	p value	Unadjusted OR (95% CI)	p value	Unadjusted OR (95% CI)	p value
Age						
Age 51+	0.41 (0.29–0.6)	**0.0001**	0.46 (0.31–0.7)	**0.0001**	1.11 (0.81–1.53)	0.51
Age 31–50	0.89 (0.68–1.17)	0.42	0.89 (0.66–1.2)	0.46	1 (0.83–1.21)	1
Age 18–30 (ref)	—	—	—	—	—	—
Gender						
Trans men	3.07 (0.73–12.99)	0.13	13.55 (3.26–56.27)	**0.0001**	4.41 (2.86–6.82)	**0.0001**
Cis-male (ref)	—	—	—	—	—	—
Sexuality						
Other than straight	2.21 (1.5–3.23)	**0.0001**	4.39 (2.97–6.49)	**0.0001**	1.99 (1.64–2.4)	**0.0001**
Straight (ref)	—	—	—	—	—	—
Ethnicity						
Other than white	1.11 (0.81–1.52)	0.53	1.22 (0.87–1.72)	0.25	1.1 (0.89–1.37)	0.36
White (ref)	—	—	—	—	—	—
Relationship status						
Single or divorced or separated or Widowed or other	2.1 (1.64–2.68)	**0.0001**	2.46 (1.88–3.21)	**0.0001**	1.17 (0.98–1.4)	0.08
Married or in a relationship (ref)	—	—	—	—	—	—
Employment						
Unemployed	3.46 (2.07–5.77)	**0.0001**	5.6 (3.32–9.45)	**0.0001**	1.62 (1.3–2.02)	**0.0001**

(continued)

Table 3. (continued)

Demographic and Clinical Variables

Model Variables	Suicidal Ideation versus No Suicidal History[a]		Suicide Attempts versus No Suicidal History[a]		Suicidal Thoughts versus Suicide Attempts[b]	
	Unadjusted OR (95% CI)	p value	Unadjusted OR (95% CI)	p value	Unadjusted OR (95% CI)	p value
Other/Student/Stay at home parent/Retired	1.12 (0.85–1.48)	0.43	1.14 (0.84–1.56)	0.4	1.02 (0.83–1.26)	0.84
In employment (ref)	—	—	—	—	—	—
Financial						
Doing alright/Just about getting by	2.16 (1.68–2.78)	**0.0001**	3.18 (2.37–4.27)	**0.0001**	1.47 (1.18–1.83)	**0.0001**
Finding it quite difficult/Finding it very difficult	3.32 (1.98–5.58)	**0.0001**	9.75 (5.7–16.69)	**0.0001**	2.93 (2.22–3.87)	**0.0001**
Living comfortably (ref)	—	—	—	—	—	—
Mental health diagnosis						
yes	3.77 (2.75–5.17)	**0.0001**	11.94 (8.53–16.73)	**0.0001**	3.17 (2.64–3.8)	**0.0001**
no (ref)	—	—	—	—	—	—

Psychological variables

Model variables	Suicidal ideation versus No suicidal History[a]		Suicide attempts versus No suicidal History[b]		Suicidal thoughts versus suicide Attempts[b]	
	Unadjusted OR (95% CI)	p value	Unadjusted OR (95% CI)	p value	Unadjusted OR (95% CI)	p value
Emotional and psychological pain: Depression *(from PHQ)*	1.20 (1.17–1.23)	**0.0001**	1.3 (1.26–1.34)	**0.0001**	1.08 (1.07–1.1)	**0.0001**

(continued)

Table 3. (continued)

Demographic and Clinical Variables

Model Variables	Suicidal Ideation versus No Suicidal History[a]		Suicide Attempts versus No Suicidal History[a]		Suicidal Thoughts versus Suicide Attempts[b]	
	Unadjusted OR (95% CI)	p value	Unadjusted OR (95% CI)	p value	Unadjusted OR (95% CI)	p value
Conformity to masculine norms (Emotions and Self Reliance)	1.35 (1.21–1.5)	0.0001	1.46 (1.29–1.64)	0.0001	1.08 (1–1.17)	0.05
Attitudes to emotions	1.04 (1.03–1.05)	0.0001	1.06 (1.05–1.07)	0.0001	1.02 (1.01–1.03)	0.0001
Mental pain (Flooding and Freezing)	1.17 (1.15–1.2)	0.0001	1.25 (1.22–1.28)	0.0001	1.07 (1.05–1.08)	0.0001
Entrapment	1.28 (1.24–1.33)	0.0001	1.4 (1.35–1.45)	0.0001	1.09 (1.07–1.11)	0.0001
Defeat	1.29 (1.24–1.34)	0.0001	1.4 (1.35–1.46)	0.0001	1.09 (1.07–1.1)	0.0001
Feelings about self:						
Failure (from BDI-II)	2.71 (2.33–3.16)	0.0001	4.2 (3.56–4.95)	0.0001	1.55 (1.41–1.69)	0.0001
Self-esteem scale	1.17 (1.15–1.19)	0.0001	1.25 (1.22–1.28)	0.0001	1.07 (1.05–1.09)	0.0001
Self-Liking/Self-competence	1.11 (1.1–1.13)	0.0001	1.17 (1.15–1.19)	0.0001	1.05 (1.04–1.06)	0.0001
Connections with others:						
Perceived social support	0.78 (0.73–0.83)	0.0001	0.73 (0.68–0.78)	0.0001	0.93 (0.9–0.97)	0.0001
General mattering scale	0.83 (0.8–0.86)	0.0001	0.76 (0.73–0.79)	0.0001	0.92 (0.9–0.94)	0.0001
Loneliness scale	1.70 (1.58, 1.82)	0.0001	1.99 (1.83–2.15)	0.0001	1.17 (1–1.24)	0.0001

[a]Reference category: no suicidal history.
[b]Reference category: sucidal thoughts.

Domain 3 - Connections with others: Lower levels of mattering to others and perceived social support, and higher emotional and social loneliness.

In the multivariate multinomial logistical regression, the factors that significantly increased the odds of being a man who had attempted (compared with experiencing only suicidal ideation) were: sexuality, i.e., not being heterosexual [OR (95% CI) = 1.62 (1.32–1.98) p < .0001]; having a mental health diagnosis [OR (95% CI) = 2.65 (2.18–3.22) p < .0001]; finding it financially quite difficult and very difficult [OR (95% CI) = 1.73 (1.26–2.37) p < .01]; having more restrictive attitudes towards emotional expression [OR (95% CI) = 1.01 (1.01–1.02) p < .0001]; and reporting lower rates of general mattering [OR (95% CI) = 0.96 (0.93–0.99) p < .005]. These associations are represented in Figure 1(C) and Table 4.

Discussion

The current study aimed to investigate whether increased levels of emotional and psychological pain (domain 1), negative feelings towards self (domain 2), and difficulties with interpersonal connections (domain 3) increased the odds of group membership to the suicidal ideation category (compared to controls), the suicide attempt group (compared to controls), suicide attempt group (compared to the suicidal ideation category). Our findings suggest that worse levels in all these domains (as suggested by the 3D Risk model) increased the odds of suicidal ideation and/or a suicide attempt compared to no suicidal history, and of a suicide attempt compared with suicidal ideation. Specific factors that appeared to increase the odds of suicidal ideation category membership compared to controls were higher levels of loneliness and having a mental health diagnosis. Not being heterosexual and having a mental health diagnosis increased the odds of suicide attempt category membership compared to controls. Variables that increased the odds of suicide attempt group membership compared to suicidal ideation were higher levels of restrictive attitudes to emotional expression, lower levels of mattering to others, not being heterosexual, increased financial strain, and having a mental health diagnosis. See Figure 2 for an overview.

Sociodemographic Risk Factors

Mental Health. Our findings indicate that having a mental health diagnosis significantly increases the likelihood of experiencing suicidal thoughts or attempting suicide. These findings are consistent with the quantitative systematic review that identified depression as a significant risk factor for male suicide (Richardson et al., 2021). Still, the relationship between mental health and suicide risk is complex. Evidence suggests men are more likely to die without a mental health diagnosis or prior contact with mental health services (Fowler et al., 2022; Jordan & McNiel, 2020; Tang et al., 2022). More research is required to understand the nuances of the relationship between mental health and male suicide risk. Mental health presentations may differ between men and women,
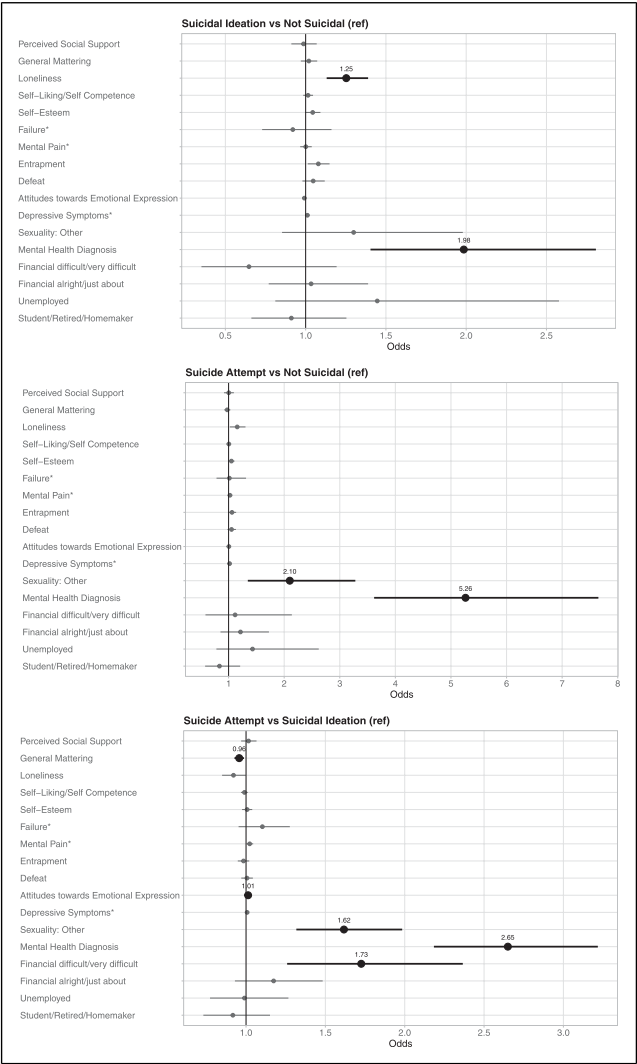
Figure 1. Forest plots of factors distinguishing group membership. (A). Factors distinguishing men with thoughts of suicide from men with no suicidal history. (B). Factors distinguishing men who have made a suicide attempt from men with no suicidal history. (C). Factors distinguishing men with thoughts of suicide from men who have made a suicide attempt.
Notes. The vertical line represents the non-significance (null) line (OR = 1). Circles represent the OR values located on the x-axis OR scale (the bigger the circle, the higher the OR value). Lines crossing the circles represent the extent of the 95% confidence intervals. 95% CI lines crossing/touching the null line indicate no association. * = Sub-scales rather than full scale used.

Table 4. Multivariate Mulnomial Logistic Regression of Psychosocial Factors Variables Associated With Suicidal History Group Membership.

Model Variables	Suicidal Ideation versus No Suicidal History*		Suicide Attempts versus No Suicidal History**		Suicidal Thoughts versus Suicide Attempts**	
	Adjusted OR (95% CI)	p value	Adjusted OR (95% CI)	p value	Adjusted OR (95% CI)	p value
Emotional and psychological pain:						
Depressive symptoms (from PHQ)	1.0 (1.00–1.03)	0.116	1.02 (1.00–1.03)	0.016	1.01 (1.00–1.01)	0.045
Attitudes to emotions	0.99 (0.98–1.00)	0.163	1.01 (0.99–1.02)	0.398	1.01 (1.01–1.02)	**0.000**
Mental pain (Flooding and Freezing)	1.00 (0.97–1.04)	0.935	1.03 (0.99–1.07)	0.219	1.02 (1.00–1.05)	0.027
Entrapment	1.08 (1.01–1.15)	0.018	1.06 (0.99–1.14)	0.090	0.98 (0.95–1.02)	0.371
Defeat	1.05 (0.98–1.12)	0.174	1.05 (0.98–1.13)	0.158	1.01 (0.97–1.04)	0.761
Feelings about self:						
Failure (from BDI-II)	0.92 (0.73–1.16)	0.481	1.01 (0.78–1.31)	0.915	1.10 (0.95–1.28)	0.188
Self-esteem scale	1.04 (1.00–1.09)	0.059	1.05 (1.00–1.11)	0.058	1.01 (0.98–1.04)	0.685
Self-Liking/Self-competence	1.02 (0.99–1.05)	0.320	1.01 (0.97–1.04)	0.785	0.99 (0.97–1.01)	0.347
Connections with others:						
Perceived social support	0.99 (0.91–1.07)	0.748	1.00 (0.92–1.10)	0.947	1.02 (0.97–1.07)	0.507
General mattering scale	1.02 (0.97–1.07)	0.443	0.98 (0.92–1.03)	0.375	0.96 (0.93–0.99)	**0.005**
Loneliness scale	1.25 (1.13–1.39)	**0.000**	1.16 (1.02–1.30)	0.020	0.92 (0.85–1.00)	0.048
Sociodemographic						
Sexuality (not straight)	1.30 (0.85–1.98)	0.222	2.10 (1.35–3.28)	**0.001**	1.62 (1.32–1.98)	**0.000**
Student/Stay at home parent/ Retired	0.91 (0.66–1.25)	0.568	0.84 (0.58–1.21)	0.340	0.92 (0.73–1.15)	0.456
Unemployed	1.45 (0.81–2.58)	0.211	1.43 (0.78–2.62)	0.245	0.99 (0.77–1.27)	0.936
Doing alright/Just about getting by	1.03 (0.77–1.39)	0.824	1.21 (0.85–1.73)	0.280	1.17 (0.93–1.48)	0.178
Finding it quite difficult/Finding it very difficult	0.65 (0.35–1.19)	0.163	1.12 (0.58–2.14)	0.738	1.73 (1.26–2.37)	**0.001**
Has a mental health diagnosis	1.99 (1.40–2.81)	**0.000**	5.26 (3.62–7.65)	**0.000**	2.65 (2.18–3.22)	**0.000**

meaning mental health conditions in men may be unrecognized and underreported (Kõlves et al., 2013). We also need to understand which mental health conditions are most relevant to male suicide, and what other factors interact with mental health to elevate risk, given that most people with a mental health diagnosis do not die by suicide (Hjelmeland & Knizek, 2017). It may also be important to consider how men understand their mental health and suicidal pain. Evidence from qualitative studies suggests that being diagnosed with a mental health condition can be a source of shame or failure for men who are suicidal and that some men can reject a bio-medical framing of their suicidal distress (Bennett et al., 2023a; Creighton et al., 2017; Strike et al., 2006). Further research could enhance our understanding of effective approaches to framing discussions on mental health and suicide that genuinely engage and resonate with men who are at risk.

Financial Struggles. Differences distinguishing men who have attempted suicide from men with lifetime thoughts of suicide also included financial challenges. Previous research has suggested a link between financial debt and suicide (Meltzer et al., 2011). Male suicide rates increased after the global financial crisis in 2007–2008 (Whitley, 2021). Exploring the risk of financial challenges and male suicide risk may be more important as we confront the global economic fallout from COVID-19 and the cost-of-living crisis. It is unclear from our data what the sources of financial challenges in men's lives were. Many factors could be relevant, from insecure employment to the cost of living, gambling debts, or risky investments. More work is required to understand this context. It may also be important to consider how much men value financial stability and success as sources of masculine identity and social value. Scholars have suggested that dominant cultural norms of male financial success may leave some men vulnerable to internalizing feelings of failure if they perceive themselves to be financially struggling (Kõlves et al., 2013; Swami et al., 2008). Qualitative work suggests that across cultural contexts, including Nepal (Hagaman et al., 2018), Ghana (Andoh-Arthur, et al., 2018), Australia (Fitzpatrick, 2014), and Norway (Kiamanesh et al., 2015), men who financially struggle perceived this to represent failed masculinity and contributed to their suicidal despair.

In Pirkis' et al. (2000) study exploring differences between people who are not suicidal, people who experience suicidal ideation, and people who had attempted suicide, unemployment significantly increased the odds of having attempted suicide compared to those with no suicidal history, and those with suicidal ideation. Interestingly, in our male-only data, unemployment did not increase the odds of a suicide attempt, but financial circumstances did. This suggests that a perceived lack of financial resources may be a more sensitive marker of male suicide risk than unemployment. This could have potential policy relevancy, suggesting support for economically vulnerable men may reduce the risk of suicide by alleviating their financial pressures.

Sexuality. Sexuality, i.e., not being straight, was a distinguishing factor between men who have attempted and men with no suicidal history and men with suicidal ideation.
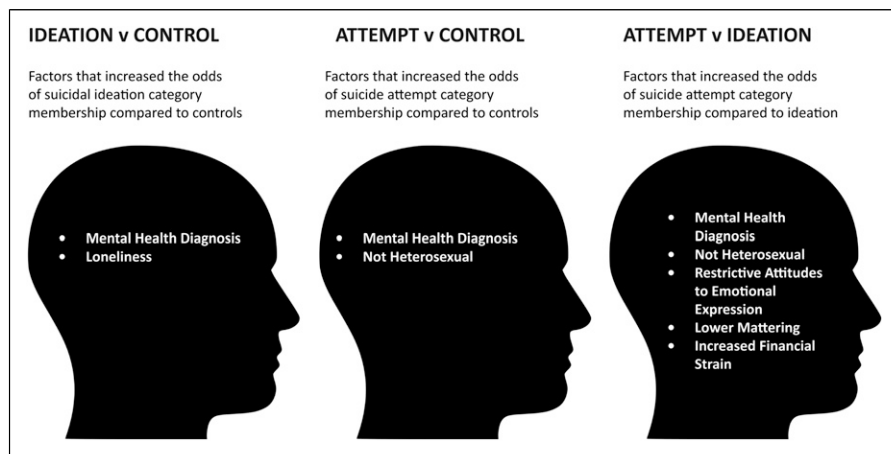
IDEATION v CONTROL

Factors that increased the odds of suicidal ideation category membership compared to controls

- Mental Health Diagnosis
- Loneliness

ATTEMPT v CONTROL

Factors that increased the odds of suicide attempt category membership compared to controls

- Mental Health Diagnosis
- Not Heterosexual

ATTEMPT v IDEATION

Factors that increased the odds of suicide attempt category membership compared to ideation

- Mental Health Diagnosis
- Not Heterosexual
- Restrictive Attitudes to Emotional Expression
- Lower Mattering
- Increased Financial Strain

Figure 2. Distinguishing factors between group membership categories.

Sexuality as a risk factor for suicide is well established (Sunderland et al., 2023). A recent systematic review and meta-analysis found that LGBTIQ people had a higher risk of suicide than heterosexual and cisgender people (Marchi, et al., 2022). It's important to contextualize these findings within a broader understanding of structural heterosexism and the burden of cultural/interpersonal homophobia placed on people with a non-heterosexual identity within these contexts. Consequentially, sexuality, as a potential suicide risk factor, has its roots in the societal stigma that marginalizes and discriminates against non-heterosexual individuals rather than the non-heterosexual identity being inherently problematic.

Like mental health, more research is required to explore the dynamic between sexuality and suicide, given that most gay or bisexual men do not die by suicide. What puts specific non-heterosexual men at risk? Findings also suggest the potential importance of continued population-level campaigns to tackle homophobia. Considering the global scope of our study, it's also important to consider the significant variations in cultural attitudes towards sexuality across our data. For instance, in some regions, certain sexualities are criminalized. Thus, future research should explore not only the individual-level factors but also the broader societal contexts that shape the experiences of non-heterosexual individuals and their susceptibility to suicidal behaviors.

Psychological Risk Factors

Attitudes to Emotional Expression. More restrictive attitudes towards emotional expression significantly increased the odds of group membership to the suicide attempt category over men with suicidal ideation. This potential relationship is borne out in previous qualitative work. Studies suggest a potential association between increased

male suicide risk and male emotional suppression, disconnection, and dysregulation (Bennett et al., 2023b; Cleary, 2005). Quantitative studies have also shown emotional suppression to predict increased suicidal ideation within a German mixed in-patient sample (Forkmann et al., 2014), and higher restrictive emotionality has been linked to increased suicidality in US high school students (Jacobson et al., 2011). A meta-analytic review of the relationship between emotional regulation and psychopathologies found that emotional suppression had medium to large effects on anxiety, depression, eating, and substance-related disorders (Aldao et al., 2010). Our findings require further investigation but support the potential utility of exploring interventions and tools to support men's emotional regulation and expression. This work may also need to entail population-level campaigns to change cultural attitudes toward male emotionality, normalize male distress expression, and upskill the public's response to men in distress (Bennett et al., 2023b).

Mattering. Our findings suggest that men who have attempted suicide may perceive themselves as mattering less to others than men who only experience suicidal thoughts. The General Mattering Scale (GMS) used in this study is a 5-item measure relating to things such as how important a person feels to others, and how much attention and interest is paid to them. Higher rates of general mattering may have protective health values, with studies suggesting a link between general mattering and wellness in men (Rayle, 2005) and reduced depression and anxiety (Dixon et al., 2009). Joiner et al. (2009) explored mattering within a mixed-gender sample aged 19 to 26 and found it predictive of the severity of suicidal ideation. Elliott et al. (2005) used a different mattering measure in their study with adolescents aged 11 to 18. Still, they found lower rates of mattering predictive of increased suicidal ideation, mediated by reduced self-esteem and higher depression. While mattering was significant in our study the mediating role of depression and self-esteem could be explored in future studies.

Future research could also explore gender dimensions of mattering and how different genders construct their sense of mattering. The General Mattering Scale (GMS) has been used in research with adolescent populations where findings suggest women perceive themselves as mattering more to others (Rayle, 2005). Studies using other measures of mattering have supported this hypothesis (Taylor & Turner, 2001). It may be that certain cultural norms impact how men evaluate their sense of mattering. Scholars have suggested that traditional masculine norms can place cultural emphasis on men as economic providers rather than relational beings. This emphasis may isolate some men from the protective values of sharing and cultivating intimate connections with others (Levant, 1996; Swami et al., 2008). Cultural norms that devalue men's interpersonal needs could leave some men vulnerable to not perceiving how they matter to others in an emotional/relational context. Similarly, there may be a potential link between financially struggling, reduced mattering, and male suicide risk. If some men understand they matter through their ability to provide financially, then financial struggles could reduce some men's sense of mattering, and increase suicide risk. Our findings require further investigation, including qualitative work, to explore the

phenomenological experience of mattering - what makes a man feel like he matters to others? It is important to emphasize that mattering is a personal perception and not necessarily a reflection of the value, regard, and affection held by significant others towards a man who is suicidal. Men's perceptions of mattering may also relate to other psychological phenomena. For example, restrictive attitudes to emotional expression may limit intimacy in men's interpersonal connections and inhibit men from asking for, and receiving validation of themselves, as meaningful to others.

Loneliness. Higher feelings of loneliness also significantly increased the odds of suicidal ideation over men with no suicidal history. In a recent Delphi study working with lived experience experts to develop an agenda of priorities for male suicide research, the highest endorsed item was "investigating loneliness and isolation for men who are suicidal" (98% endorsement) (Bennett et al., 2023b). Further research is needed to explore the specific areas of life where men experience loneliness, such as family, friendships, and romantic relationships, the barriers that hinder men from forming meaningful connections, and strategies to overcome these.

Theoretical and Clinical Implications

Findings to suggest loneliness and mattering to others may be relevant to male suicide risk support the theoretical importance of interpersonal connections to understanding suicide (Joiner, 2005; Leenaars, 1996). Prevention and intervention work that broadly seeks to support and provide men with the tools and opportunities to build meaningful connections with others may be valuable. Similarly, therapeutic interventions that work with men and significant others may also be useful to bring men into a sense of mattering to those who matter to them. Randomized controlled trials (RCTs) of family interventions for suicidal adolescents have yielded positive outcomes (Diamond et al., 2010; Pineda & Dadds, 2013). Similarly, restrictive attitudes to emotional expression among men who have attempted suicide support the suggestion that understanding men's emotional regulation be theoretically integrated into understanding male suicide risk (Bennett et al., 2023b). From a clinical perspective, interventions that support men's emotional regulation and expression, support to overcome the psychological damage of homophobia, and/or manage mental health challenges may be valuable. Additionally, the potential link between financial challenges and suicide risk suggests the potential importance of interventions that take a holistic view of men's pain, such as providing emotional and financial support in combination. A recent pilot randomized trial of an intervention that combined psychosocial and financial support for people admitted to hospitals in acute distress showed feasibility (Barnes et al., 2018). Integrating suicide awareness and interventions within agencies that support men with financial challenges, debt, and/or gambling problems may also be valuable.

Implications for the 3D Risk Model

This study is the first exploratory investigation of the applicability and utility of the 3D Risk model in illuminating male suicide risk. The model posits that dysregulation in the domains of emotions, self, and connections with others, could elevate men's suicide risk and that this dysregulation may intensify as a suicidal crisis escalates from distal risk to proximal risk. Our findings suggest broad support for this view. Dysregulation in all domains increased as a function of suicidal history, from men with no suicidal history to men with thoughts of suicide to men who have made a suicide attempt. However, there is still much to explore. The 3D Risk model is based on qualitative evidence, which, while insightful, cannot precisely map onto quantitative psychometric measures. The domains identified by the model as important - emotions, self, and connections with others - are broad and multi-faceted; without doubt, there are dimensions of these that were not explicitly explored in this study. For example, future research using measures of emotional regulation, alexithymia, and conflict resolution styles may be useful.

Additionally, suicide is a complicated behavior with multiple drivers (Shneidman, 1993). A shortcoming of this study, like much other suicide research, is that it has studied risk factors in isolation rather than in interaction. As such it can only yield a simplified, unidimensional insight into a much more complex behavior (Franklin et al., 2017; Van Orden et al., 2010). We do not have a robust enough understanding of risk factors in dynamic interaction, meaning findings such as ours are limited in what they can illuminate. The 3D Risk model is built on the hypothesis that the *interaction* of harms within the domains of emotions, self, and others may be critical to elevating men's suicide risk (Bennett et al., 2023b). The design of this study did not permit us to explore this interaction which will require further investigation. The high collinearity in two of our models suggests the constructs examined are potentially related, and future research using a methodology such as a network analysis to explore complex interactions between risk variables is necessary.

Additionally, the 3D Risk model comprises numerous components. Exploring all of them in a single study was not practical, necessitating compromises on which components were investigated. The model suggests factors such as interpersonal challenge/conflict, emotional disconnect, substance abuse, and childhood adversity are also relevant to male suicide and were not explored in this study. Future research should explore the role of these factors too.

In summary, while our study provides valuable insights into the alignment of our findings with some aspects of the 3D Risk model, much more research is warranted to fully elucidate the intricacies of this model and its implications for understanding and preventing male suicide.

Future Research

Many of the effect sizes for psychological variables were relatively small and our findings need to be replicated in future research. Throughout the discussion, we have

suggested potential recommendations for some of this work. Additionally, while our results provide insight into potential cross-sectional distal psychological distinctions between men experiencing different degrees of suicidality, they do not give insight into what factors are relevant when a shift from thinking about suicide to attempting happens in real-time (Bryan & Rudd, 2016). An important area for future research will be real-time monitoring of psychological shifts as men move in and out of feelings of suicide and attempting. While biological factors are related to male suicide risk, our study focused primarily on the socio-cultural role. Most of our sample identified as male (97%), with 3% identifying as genderqueer or transgender. Further exploration to understand how gendered norms impact individuals with different gender identities falling within a masculine expression could be valuable. Additionally, further research into the biological factors that may distinguish men who attempt suicide from men who have suicidal ideation, or no history of suicidal behavior is required. Lastly, future research to develop measures of masculinity more appropriate to different cultural milieu may be beneficial (Thompson & Bennett, 2015).

Limitations

The validity of our findings are limited by the fact that men who have died by suicide cannot be directly studied and may be qualitatively different to men with thoughts of suicide and/or men who have attempted. This limitation applies to all suicide research. Our cross-sectional, retrospective design means we cannot comment on directionality or causality. Unless men in our sample were actively suicidal at the time of participating in the survey, their responses may not provide an accurate insight into risk factors at the exact point of a suicidal crisis, and participants' responses may be subject to recall bias (De Leo et al., 2006). In keeping with previous research, predominately white men from Western contexts dominated our sample (O'Connor & Nock, 2014). Men of different ethnic backgrounds, sexualities, and abilities, and in different cultural locations, may experience risk factors uniquely. Similarly, 61% of our sample was aged between 18 and 30, so our findings may not be as relevant to older men. To keep the number of variables in our study manageable, we may have lost some nuance in our exploration of socio-demographic risk factors. For instance, the amalgamation of categories such as "sexuality" and "relationship status" into broader classifications led to grouping bisexual and gay men together, as well as combining single and divorced men. Doing so may obscure important differences and mean we potentially overlooked key risk factors inherent to specific subgroups, such as bisexual men distinct from gay men, or men who are divorced or separated distinct to single men.

Our data is also subject to self-selection bias. Findings must be considered in the context of these limitations.

Conclusion

Building a more nuanced understanding of potential psychosocial differences between men who are not suicidal, men who have thoughts of suicide, and men who attempt

suicide is an area of critical theoretical and clinical importance. A richer insight into these different states could help develop more insightful and impactful interventions to prevent a suicide crisis from escalating. Findings from this study contribute to advancing our understanding of potential distinguishing factors. This information can enrich models to understand psychological profiles and stressors as a suicidal crisis intensifies. Results broadly suggest that the factors indicated by the 3 "D" Risk model (increased emotional/psychological pain, more negative feelings and thoughts about the self, and reduced connections with others) seem important to understanding the increased risk of suicidal thoughts and behaviors in men. Specific factors that seemed to increase the odds of suicidal ideation category membership compared to controls were higher levels of loneliness and having a mental health diagnosis. Factors that increased the odds of suicide attempt category membership compared to controls were not being heterosexual and having a mental health diagnosis. Particular factors associated with an increased risk of suicide attempt compared to ideation were financially struggling, having a mental health diagnosis, not being straight, having more restrictive attitudes towards emotional expression, and a reduced sense of mattering to others. Further research is required to confirm the significance of these findings, including longitudinal data collection, and prospectively monitoring potential shifts from thoughts of suicide to planning and making an attempt in real-time as well as exploring risk factors in interaction.

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Supplemental Material

Supplemental material for this article is available online.

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