

Original Article

Trajectories of suicidal ideation and attempts across the academic year: longitudinal study of UK university students

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Background

Suicide is a leading cause of death among young adults, yet few studies have examined longitudinal trajectories of suicidal ideation and attempts across the academic year in UK university students.

Aims

The study aimed to identify demographic and psychosocial factors associated with lifetime suicide risk, examine factors associated with changes in risk trajectories, and evaluate the relationship between suicidal ideation and attempts over an academic year.

Method

Participants comprised 3295 students from 5 UK universities who completed longitudinal surveys in autumn and spring terms 2021–2024 in the Nurture-U study. Suicidal ideation and attempts were assessed with Columbia Suicide Severity Rating Scale items. Demographic, psychosocial and mental health measures were examined as potential risk and protective factors. Regression models with multiple imputation were used, with case-control analyses for smaller subgroups.

Results

Approximately 45.5% of students reported baseline lifetime suicidal ideation and 9.5% reported a past attempt. Factors associated with lifetime suicidal ideation included minoritised sexual orientation or ethnic background, male or gender-diverse identity, previous mental health treatment and adverse

childhood experiences. Among students with lifetime ideation at baseline, 61.1% did not report ideation in the spring term, whereas new-onset ideation occurred in 3.5% of participants. Among students with prior ideation only, 1.3% made a suicide attempt during the academic year, whereas 10.5% with prior attempt history made a suicide attempt. Increases in depressive symptoms and rumination were associated with new attempts at follow-up.

Conclusions

Most students experiencing suicidal ideation during university have risk factors before university entry. Suicidal ideation alone showed limited specificity for identifying those most at risk of future attempts, highlighting the importance of targeted support for high-risk groups and ongoing monitoring of symptoms throughout the academic year.

Keywords

Suicide; longitudinal data; risk assessment; university students; suicidal ideation.

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Suicide is a leading cause of death among young adults in the UK,¹ and the fourth leading cause of death among those aged 15–29 years worldwide.² In England and Wales, 1108 deaths by suicide were recorded among those in higher education between 2016 and 2023, with approximately 160 deaths per year.³ Although age-adjusted rates among students remain lower than the general UK population,³ there was an increase in student suicide rates from 2009 to 2017,⁴ with rates stabilising from 2018.⁵ However, these figures do not include suicide attempts, which may affect a greater proportion of the student population.⁶

Meta-analytic review indicates approximately 27% lifetime prevalence of suicidal ideation in university students, with 14% reporting ideation within the past year and 3% reporting a lifetime suicide attempt,⁷ whereas cross-national data from the World Mental Health initiative indicate 32.7% lifetime ideation and 4.3% lifetime attempts among first-year students, with approximately three-quarters experiencing onset before 16 years of age.⁸ Experiences of prior mental health conditions, stress, minoritised sexual orientation, male gender, adverse childhood experiences and financial anxiety are associated with increased risk.^{9,10} Moreover, factors such as alcohol use and lack of social support are associated with suicide attempts,⁶ both of which are prevalent among UK university students.¹¹

The integrated motivational–volitional model of suicidal behaviour describes domains for suicide risk: diathesis (e.g. personal, biological, early risk factors), motivation (e.g. experiences of coping, belonging, rumination, social support) and a volitional phase (e.g. active planning, impulsivity, means).¹² Some diathesis and psychosocial factors can be measured through self-report.¹³ In addition to personal risk factors, young people entering university are also exposed to new stressors, including financial pressures and academic workload,¹⁴ but more research is needed to identify factors associated with suicidal ideation and behaviour in large, representative UK samples.

Current evidence draws largely from cross-sectional analyses, with limited studies examining the trajectory of suicide risk. Mental health symptoms typically decline over the academic year,¹⁴ yet little is known about factors associated with new-onset ideation, attempts in students with no prior symptoms or recovery and persistence among those with existing risk. Understanding both support needs and factors associated with change may inform targeted prevention and intervention. Additionally, although suicidal ideation is considered an important precursor to attempts,¹⁶ research examining the relationship between suicidal ideation and suicide attempts in university populations has been limited.^{6,17,18}

Aims

The study's aims were to examine suicidal ideation and attempts among university students in the UK over an academic year, specifically to (a) identify demographic and psychosocial factors associated with lifetime suicide risk, (b) examine factors associated with no presentation and new onset of suicide risk and (c) evaluate the relationship between suicidal ideation and attempts.

Method

Study design

Participants were students who took part in the Nurture-U longitudinal survey, described in the study protocol.¹⁹ The survey was adapted from the U-Flourish survey,¹³ and administered at five UK universities (Cardiff, Exeter, Newcastle, Oxford, Southampton) in autumn and spring terms 2021–2024, with data collection in 2021 limited to the University of Oxford. The survey included measures of mental health and well-being, psychosocial outcomes and lifestyle factors. All participants completed surveys in the same academic year (for students who completed the surveys in more than 1 year, only data from the first year were analysed). Ethics approval was obtained from each university (Cardiff: Wales Research Ethics Committee, IRAS reference 155838, REC reference 16/WA/0323; Exeter: FHLS Psychology Research Ethics Committee, 519175; Newcastle: Faculty of Medical Sciences Research Ethics Committee, 24735/2022; Oxford Medical Sciences Interdivisional Research Ethics Committee, Ref. R60998; Southampton: Faculty of Medicine Ethics Board, ERGO 73178).¹⁹

Measures

Demographics and personal history

Participants self-reported demographic information, prior mental health diagnoses and treatment, family mental health history, and experiences of childhood adversity.

Psychosocial and mental health measures

Participants completed psychosocial and mental health questionnaires for depressive symptoms (Patient Health Questionnaire-9 (PHQ-9)),²⁰ anxiety symptoms (Generalised Anxiety Disorder-7 (GAD-7)),²¹ well-being (Short Warwick-Edinburgh Mental Well-being Scale (SWEMWBS-7)),²² alcohol use (Alcohol Use Disorders Identification Test for Consumption),²³ rumination (Ruminative Responses Scale – Brooding subscale),²⁴ resilience (Brief Resilience Scale),²⁵ emotion regulation (Difficulties in Emotion Regulation Scale),²⁶ self-compassion (Self-Compassion Scale – Short Form),²⁷ sleep quality (Sleep Condition Indicator-8)²⁸ and loneliness (adapted UCLA Loneliness Scale-8).²⁹

Suicidal ideation and suicide attempts

Suicidal ideation and attempts were assessed with items from the Columbia Suicide Severity Rating Scale.³⁰ At baseline, participants were asked, 'In your past, have you had thoughts about ending your life?' and 'In your past, have you ever made any suicide attempts?'. At follow-up, participants were asked the same questions with respect to the current academic year.

Additional variables

University site and academic year were included as potential confounding variables.

Statistical analysis

Statistical analyses were conducted in R version 4.5.2 (R Foundation for Statistical Computing, Vienna, Austria; <https://www.R-project.org/>) using RStudio version 2025.09.2 (Build 418; Posit Software, PBC, Boston, Massachusetts, USA; <https://posit.co/download/rstudio-desktop/>) on Windows 11 version 25H2 (Microsoft Corporation, Redmond, Washington, USA; <https://www.microsoft.com/windows/windows-11>). Logistic regression models were fitted to evaluate changes in risk trajectories. Missing data were handled with multiple imputation by chained equations with 20 imputations.³¹ For outcomes at baseline and follow-up, inverse probability weights were computed with Firth-penalised logistic regression to account for separation owing to missingness,³² followed by exclusion of missing outcomes while maximising coverage for covariates,³³ with results pooled using Rubin's rules.

As sample size was determined by recruitment to the Nurture-U survey,¹⁹ an *a priori* power calculation was not performed. Secondary analyses examining suicidal ideation and attempts included Bayesian probability calculations alongside inferential analysis to mitigate small sample sizes ($n = 43$ – 52). Two conditional probabilities were estimated: the probability of an attempt at follow-up given prior ideation and an attempt at follow-up given a past attempt, $P(A|B) = \frac{P(B|A)P(A)}{P(B)}$. Case-control models for these subanalyses were matched on propensity scores,³⁴ including demographic characteristics and baseline mental health outcomes (GAD-7, PHQ-9, SWEMWBS-7). The threshold $\alpha < 0.05$ was used for statistical significance.

Results

Participants

Participant demographics are presented in Table 1. Before analysis, participants with more than 50% missing data ($n = 108$) were removed; among the retained sample, missingness was low, with 2574 participants (78.1%) missing 0–10% of data. The final sample comprised 3295 students completing surveys in the same academic year. Participants were majority UK domestic/home students (69.0%), female (67.4%), White (68.1%) and heterosexual (60.1%), with a mean age of 22.7 years (s.d. = 7.0; median 20 years, with approximately 50% of students aged 21 years or younger). Most reported no physical (82.3%) or mental health disabilities (76.2%). The most common level of parental educational attainment was professional degree (38.7%). Approximately 45.5% reported lifetime suicidal ideation and 9.5% reported a past suicide attempt, whereas approximately 30% met clinical thresholds for baseline depression or anxiety symptoms (scores ≥ 10).

Lifetime suicidal ideation at baseline

Table 2 presents factors associated with past or current suicidal ideation at baseline. The adjusted model significantly improved fit ($F(40, \geq 1000) = 18.15, p < 0.001$). Students who reported a minority sexual orientation indicated higher rates of suicidal ideation: odds were highest among those who identified as other sexual minority (odds ratio 2.04, 95% CI 1.46–2.84, $p < 0.001$), followed by bisexual (odds ratio 1.99, 95% CI 1.56–2.53, $p < 0.001$) and homosexual/gay/lesbian orientation (odds ratio 1.87, 95% CI 1.28–2.72, $p = 0.001$), relative to those who identified as heterosexual. History of previous mental health treatment was also associated with suicidal ideation (odds ratio 2.12, 95% CI 1.68–2.67, $p < 0.001$), whereas those reporting no previous mental health diagnoses showed reduced risk (odds ratio 0.73, 95% CI 0.56–0.94,

Table 1 Participant demographic characteristics (*N* = 3295)

Variable	<i>n</i> (%)
Age (years)	22.7 (s.d. = 7.0)
Missing	85 (2.6)
Gender	
Female	2220 (67.4)
Male	869 (26.4)
Gender diverse	135 (4.1)
Missing	71 (2.2)
Sexual orientation	
Heterosexual	1979 (60.1)
Bisexual	612 (18.6)
Homosexual/gay/lesbian	186 (5.6)
Other	297 (9.0)
Missing	221 (6.7)
Ethnic group	
White	2245 (68.1)
Black	74 (2.3)
Asian Chinese	240 (7.3)
Asian (other)	353 (10.7)
Mixed or other	314 (9.5)
Missing	69 (2.1)
Student status	
Domestic (UK)	2272 (69.0)
International	1001 (30.4)
Missing	22 (0.7)
Previous mental health diagnosis	
No	1841 (55.9)
Yes	1226 (37.2)
Missing	228 (6.9)
Family mental health diagnosis	
No	1424 (43.2)
Yes	1483 (45.0)
Missing	388 (11.8)
Parent education	
High school	832 (25.3)
University or trades	1054 (32.0)
Professional degree	1275 (38.7)
Missing	134 (4.1)
Course year	
Year 1	2213 (67.2)
Year 2 or higher	991 (30.1)
Missing	91 (2.8)
Childhood adversity: foster care	
No	3093 (93.9)
Yes	65 (2.0)
Missing	137 (4.2)
Childhood adversity: harsh parenting	
No	2129 (64.6)
Yes	883 (26.8)
Missing	283 (8.6)
Childhood adversity: hit by caregiver	
No	2672 (81.1)
Yes	337 (10.2)
Missing	286 (8.7)
Childhood adversity: bullied	
No	2022 (61.4)
Yes	991 (30.1)
Missing	282 (8.6)
Childhood adversity: sexual abuse	
No	2273 (69.0)
Yes	542 (16.5)
Missing	480 (14.6)
Past mental health treatment	
No	1844 (56.0)
Yes	1276 (38.7)
Missing	175 (5.3)
Mental health disability	
No	2511 (76.2)
Yes	432 (13.1)
Missing	352 (10.7)

(Continued)

Table 1 (Continued)

Variable	<i>n</i> (%)
Physical disability	
No	2712 (82.3)
Yes	164 (5.0)
Missing	419 (12.7)
Prior suicidal ideation	
No	1630 (49.5)
Yes	1499 (45.5)
Missing	166 (5.0)
Prior suicide attempt	
No	2816 (85.5)
Yes	312 (9.5)
Missing	167 (5.1)
PHQ-9 score ≥ 10 (depressive symptom screening)	
No	2169 (65.8)
Yes	947 (28.7)
Missing	179 (5.4)
GAD-7 score ≥ 10 (anxiety symptom screening)	
No	2157 (65.5)
Yes	984 (29.9)
Missing	154 (4.8)
SWEMWBS-7 score ≤ 19 (low well-being screening)	
No	2459 (74.6)
Yes	697 (21.2)
Missing	139 (4.2)

PHQ-9, Patient Health Questionnaire-9; AUDIT-C, Alcohol Use Disorders Identification Test for Consumption; SWEMWBS-7, Short Warwick-Edinburgh Mental Wellbeing Scale; GAD-7, Generalised Anxiety Disorder-7; BRS, Brief Resilience Scale.

$p = 0.016$). Associations were also found with experiences of childhood adversity: experience of sexual abuse demonstrated the strongest association (odds ratio 2.06, 95% CI 1.59–2.67, $p < 0.001$), followed by harsh parenting (odds ratio 1.86, 95% CI 1.49–2.33, $p < 0.001$), being hit by a caregiver (odds ratio 1.64, 95% CI 1.17–2.29, $p = 0.004$) and bullying experiences (odds ratio 1.38, 95% CI 1.13–1.69, $p = 0.002$).

Students identifying as male indicated higher risk of suicidal ideation compared with students identifying as female (odds ratio 1.71, 95% CI 1.38–2.12, $p < 0.001$), as did students identifying as gender diverse or another gender identity (odds ratio 1.68, 95% CI 1.01–2.79, $p = 0.046$). Among ethnic backgrounds, students who indicated a Chinese ethnicity demonstrated higher odds of suicidal ideation (odds ratio 1.86, 95% CI 1.29–2.69, $p < 0.001$) relative to White students. Students whose parents held professional degrees also showed elevated risk (odds ratio 1.28, 95% CI 1.02–1.61, $p = 0.031$) relative to those whose parents' highest level of educational attainment was high school equivalent. International students showed reduced odds of baseline risk compared with UK domestic students (odds ratio 0.76, 95% CI 0.60–0.96, $p = 0.021$). Additionally, students at site 5 had comparatively lower risk relative to the reference site (odds ratio 0.60, 95% CI 0.37–0.98, $p = 0.042$).

Mental health and psychosocial measures were also associated with baseline suicidal ideation. Higher depressive symptoms showed the strongest association (odds ratio 1.14, 95% CI 1.11–1.18, $p < 0.001$), whereas higher loneliness (odds ratio 1.06, 95% CI 1.02–1.10, $p = 0.005$), alcohol use (odds ratio 1.04, 95% CI 1.01–1.08, $p = 0.022$) and higher well-being (odds ratio 1.03, 95% CI 1.00–1.07, $p = 0.032$) were also associated with increased odds. Conversely, higher baseline anxiety symptoms (odds ratio 0.96, 95% CI 0.94–0.99, $p = 0.004$) and resilience (odds ratio 0.72, 95% CI 0.63–0.83, $p < 0.001$) were associated with reduced odds of baseline suicidal ideation. Additionally, as the PHQ-9 includes an item assessing suicidal ideation over the past 2 weeks, subsequent

Table 2 Factors associated with lifetime suicidal ideation at baseline

Variable	Odds ratio [95% CI]	p-value
Ever received mental health treatment (reference = no)	2.12 [1.68–2.67]	<0.001
Childhood adversity: sexual abuse (reference = no)	2.06 [1.59–2.67]	<0.001
Sexual orientation (reference = heterosexual/straight)	–	–
Other	2.04 [1.46–2.84]	<0.001
Bisexual	1.99 [1.56–2.53]	<0.001
Homosexual/gay/lesbian	1.87 [1.28–2.72]	0.001
Childhood adversity: harsh parenting (reference = no)	1.86 [1.49–2.33]	<0.001
Ethnic group: Chinese Asian (reference = White)	1.86 [1.29–2.69]	0.001
Gender (reference = female)	–	–
Male	1.71 [1.38–2.12]	<0.001
Gender diverse	1.68 [1.01–2.79]	0.046
Childhood adversity: hit by caregiver (reference = no)	1.64 [1.17–2.29]	0.004
Childhood adversity: bullied (reference = no)	1.38 [1.13–1.69]	0.002
Parent education: professional degree (reference = high school equivalent)	1.28 [1.02–1.61]	0.031
Baseline depressive symptoms (PHQ-9)	1.14 [1.11–1.18]	<0.001
Baseline loneliness (UCLA Loneliness Scale-8)	1.06 [1.02–1.10]	0.005
Baseline alcohol use (AUDIT-C)	1.04 [1.01–1.08]	0.022
Baseline well-being (SWEMWBS-7)	1.03 [1.00–1.07]	0.032
Baseline anxiety symptoms (GAD-7)	0.96 [0.94–0.99]	0.004
Student status: international (reference = domestic)	0.76 [0.60–0.96]	0.021
Previous mental health diagnosis: none (reference = yes)	0.73 [0.56–0.94]	0.016
Baseline resilience (BRS)	0.72 [0.63–0.83]	<0.001

PHQ-9, Patient Health Questionnaire-9; AUDIT-C, Alcohol Use Disorders Identification Test for Consumption; SWEMWBS-7, Short Warwick-Edinburgh Mental Wellbeing Scale; GAD-7, Generalised Anxiety Disorder-7; BRS, Brief Resilience Scale.

Table 3 Factors associated with lifetime suicide attempts at baseline

Variable	Odds ratio [95% CI]	p-value
Ever received mental health treatment (reference = no)	3.17 [2.12–4.75]	<0.001
Ethnic group: Asian (other) (reference = White)	3.00 [1.85–4.86]	<0.001
Childhood adversity: hit by caregiver (reference = no)	2.37 [1.62–3.45]	<0.001
Childhood adversity: sexual abuse (reference = no)	2.27 [1.66–3.10]	<0.001
Sexual orientation: homosexual/gay/lesbian (reference = heterosexual/straight)	1.79 [1.06–3.03]	0.029
Childhood adversity: bullied (reference = no)	1.57 [1.15–2.14]	0.004
Childhood adversity: harsh parenting (reference = no)	1.45 [1.04–2.02]	0.027
Baseline resilience (BRS)	1.30 [1.05–1.61]	0.016
Baseline rumination (RRS)	1.09 [1.04–1.15]	<0.001
Baseline depressive symptoms (PHQ-9)	1.09 [1.05–1.13]	<0.001
Baseline well-being (SWEMWBS-7)	1.06 [1.02–1.12]	0.009
Baseline alcohol use (AUDIT-C)	1.06 [1.00–1.12]	0.044
Baseline sleep quality (SCI-8)	0.97 [0.95–1.00]	0.016
Baseline self-care (SCS-SF)	0.77 [0.63–0.93]	0.008
Student status: international (reference = domestic)	0.67 [0.45–0.99]	0.045
Previous mental health diagnosis: none (reference = yes)	0.59 [0.39–0.89]	0.013

PHQ-9, Patient Health Questionnaire-9; AUDIT-C, Alcohol Use Disorders Identification Test for Consumption; SWEMWBS-7, Short Warwick-Edinburgh Mental Wellbeing Scale; GAD-7, Generalised Anxiety Disorder-7; BRS, Brief Resilience Scale.

sensitivity analysis examining PHQ-8 outcomes with this item removed did not change the significance or directionality of the association for depressive symptoms (odds ratio 1.13, 95% CI 1.10–1.15, $p < 0.001$).

Lifetime suicide attempts at baseline

Table 3 presents factors associated with past suicide attempts reported at baseline. The adjusted model including demographic and psychosocial covariates significantly improved overall fit ($F(40, \geq 1000) = 10.16$, $p < 0.001$).

History of previous mental health treatment showed the strongest association with past suicide attempts (odds ratio 3.17, 95% CI 2.12–4.75, $p < 0.001$). Students reporting no personal mental health diagnosis demonstrated reduced risk (odds ratio 0.59, 95% CI 0.39–0.89, $p = 0.013$). Adverse childhood experiences exhibited several associations with past suicide attempts: being hit

by a caregiver was most strongly associated (odds ratio 2.37, 95% CI 1.62–3.45, $p < 0.001$), followed by sexual abuse (odds ratio 2.27, 95% CI 1.66–3.10, $p < 0.001$), bullying experiences (odds ratio 1.57, 95% CI 1.15–2.14, $p = 0.004$) and harsh treatment (odds ratio 1.45, 95% CI 1.04–2.02, $p = 0.027$). Students who identified as homosexual/gay/lesbian indicated higher risk of past suicide attempts (odds ratio 1.79, 95% CI 1.06–3.03, $p = 0.029$) relative to students identifying as heterosexual. Non-Chinese Asian students also demonstrated substantially higher odds of past suicide attempts (odds ratio 3.00, 95% CI 1.85–4.86, $p < 0.001$) compared with White students. International students showed reduced odds compared with domestic students (odds ratio 0.67, 95% CI 0.45–0.99, $p = 0.045$).

Baseline mental health and psychosocial measures were also associated with suicide attempts. Higher depressive symptoms (odds ratio 1.09, 95% CI 1.05–1.13, $p < 0.001$), rumination (odds ratio 1.09, 95% CI 1.04–1.15, $p < 0.001$), well-being

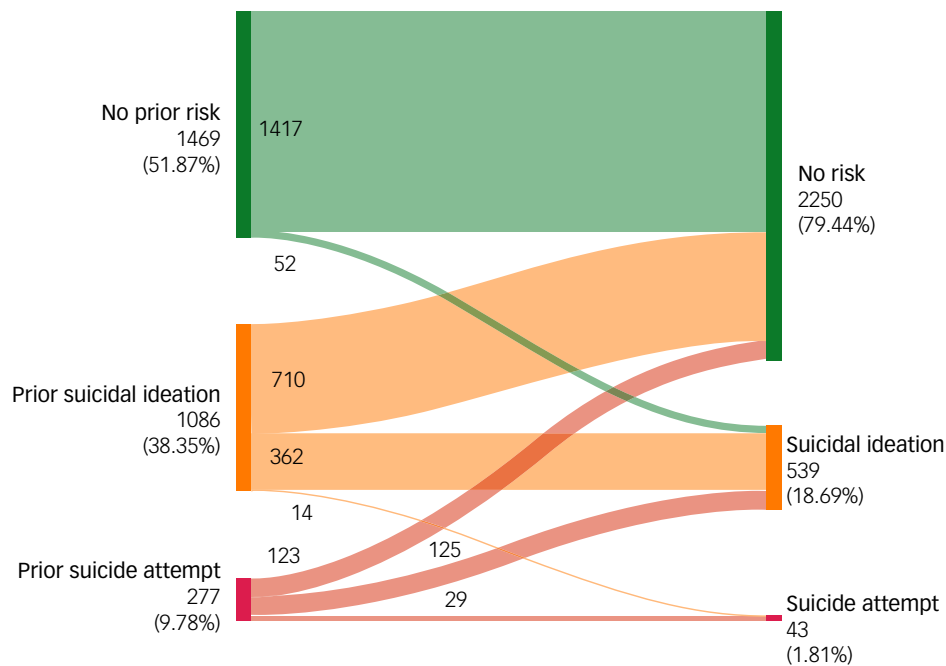


Fig. 1 Trajectories of suicidal ideation and suicide attempts in university students during the academic year.

(odds ratio 1.06, 95% CI 1.02–1.12, $p = 0.009$), alcohol use (odds ratio 1.06, 95% CI 1.00–1.12, $p = 0.044$) and resilience (odds ratio 1.30, 95% CI 1.05–1.61, $p = 0.016$) were associated with increased likelihood of a past suicide attempt. Conversely, better sleep quality (odds ratio 0.97, 95% CI 0.95–1.00, $p = 0.016$) and engagement in self-care activities (odds ratio 0.77, 95% CI 0.63–0.93, $p = 0.008$) were associated with reduced likelihood of past suicide attempt.

Follow-up reduction of suicidal ideation

Among 1366 students reporting no lifetime history of suicidal ideation at baseline, 835 (61.1%) did not report suicidal ideation during the academic year. Coefficients are available in Supplementary Table 1. The adjusted model significantly improved overall fit ($F(27, \geq 1000) = 3.30$, $p < 0.001$).

Suicidal ideation in students with prior mental health treatment was significantly less likely to reduce (odds ratio 0.52, 95% CI 0.37–0.74, $p < 0.001$). Older students demonstrated slightly higher odds of symptom improvement (odds ratio 1.03, 95% CI 1.01–1.05, $p = 0.014$), as did students reporting physical disabilities (odds ratio 1.68, 95% CI 1.04–2.71, $p = 0.033$). Increases in rumination over the academic year were associated with reduced likelihood of symptom improvement (odds ratio 0.95, 95% CI 0.91–1.00, $p = 0.041$). Students reporting harsh parenting in childhood also exhibited lower odds of symptom reduction (odds ratio 0.74, 95% CI 0.55–1.00, $p = 0.052$).

Follow-up onset of suicidal ideation

Among 1469 students reporting no lifetime history of suicidal ideation at baseline, 52 (3.5%) developed new-onset ideation during the academic year. Of these, 51 students reporting new symptoms were matched with 153 controls (ratio 1:3) on demographic characteristics and baseline GAD-7, PHQ-9 and SWEMWBS-7 outcomes, as described in the Method section.

Supplementary Fig. 1 presents baseline and follow-up mental health scores for matched groups. Groups were well-matched on demographic and baseline measures depressive symptoms

(mean 6.71, s.d. = 3.94 in those with new-onset ideation; mean 6.81, s.d. = 4.92 in the matched group), anxiety symptoms (mean 7.74, s.d. = 5.44 in those with new-onset ideation; mean 7.80, s.d. = 5.32 in the matched group) and well-being (mean 22.47, s.d. = 4.99 in those with new-onset ideation; mean 22.37, s.d. = 4.61 in the matched group). At follow-up, students with new-onset ideation demonstrated substantially higher depressive symptoms (mean 11.37, s.d. = 6.47) compared with the matched group (mean 7.38, s.d. = 5.22), higher anxiety symptoms (mean 10.34, s.d. = 5.71 in those with new-onset ideation; mean 7.69, s.d. = 5.13 for the matched group) and lower well-being (mean 20.41, s.d. = 4.54 in those with new-onset ideation; mean 22.50, s.d. = 4.49 for the matched group).

Students with new onset showed significantly greater increases in depressive symptoms (estimated difference 4.06, 95% CI 2.36–5.76, $p < 0.001$) and anxiety symptoms (mean difference 2.69, 95% CI 1.12–4.25, $p = 0.001$), as well as greater decreases in well-being (mean difference –2.09, 95% CI –3.41 to –0.76, $p = 0.002$).

Relationship between past suicidal ideation and attempts

Figure 1 presents trajectories of student suicidal ideation and attempts over the academic year. Of the sample ($n = 2832$), 1469 students (51.9%) began the year without suicidal thoughts or attempts. Of these students, 1417 (96.5%) reported no suicidal ideation or attempts at follow-up, 52 (3.5%) developed new suicidal ideation without an attempt and no students reported attempting suicide, preventing a trajectory analysis for this subgroup.

Among 1086 students (38.4%) who began the academic year with suicidal ideation but no prior attempts, 710 (65.4%) reported no ideation in the spring, 362 (33.3%) continued to experience ideation without making an attempt and 14 (1.3%) made a new attempt.

Of 277 students (9.8%) who began the year with a history of both suicidal ideation and attempts, 123 (44.4%) experienced no suicidal ideation, with no attempts during the academic year; 125 (45.1%) continued to experience ideation without attempts and 29 (10.5%) made a new attempt.

The conditional probability of making an attempt at follow-up given the presence of lifetime suicidal ideation at baseline was calculated as approximately 3.2%. The conditional probability of making a suicide attempt at follow-up given the lifetime history of prior attempts was approximately 10.5%.

Suicide attempts during university reported at follow up

To identify factors associated with new suicide attempts over the course of the academic year, case-control analysis was conducted with 43 participants who made a new attempt during the academic year. Of these students, 40 were matched with 156 at-risk students who reported experiencing ideation only or ideation and attempts at baseline, with fixed proportions such that those experiencing both ideation and attempts comprised approximately 61–65% of both samples (96 students with both ideation and attempts and 60 with ideation only in the matched group; 26 with ideation and attempts and 14 with ideation only for those who made a suicide attempt). Participants were further matched on demographic characteristics (gender, ethnic group, sexual orientation, academic year) and baseline PHQ-9 scores (mean 16.67, s.d. = 6.23 for those who made a new suicide attempt; mean 16.16, s.d. = 5.84 for the matched group). Significant associations were found between increases in depressive symptoms (odds ratio 1.11, 95% CI 1.01–1.24, $p = 0.039$) and rumination (odds ratio 1.21, 95% CI 1.04–1.42, $p = 0.016$) at follow-up.

Discussion

The present study evaluated factors associated with suicidal ideation and suicide attempts in approximately 3000 UK university students over an academic year. Increased risk factors included previous mental health history, adverse childhood experiences, minoritised identities, and several psychosocial and mental health outcomes. Approximately 50% of students presented with no prior suicide history and 61% of students with lifetime suicidal ideation at baseline did not experience thoughts at follow-up. Notably, although suicidal ideation demonstrated limited association with subsequent attempts overall, students with prior attempt history faced elevated risk of recurrence, with increases in depressive symptoms and rumination presenting as key risk factors for new attempts reported. These findings highlight the importance of targeted screening for high-risk groups at university and better support for students with prior suicide attempt history.

Factors associated with lifetime suicidal ideation at baseline

Students identifying as a sexual minority or gender-diverse, male students, and those of Chinese ethnicity all showed elevated odds of lifetime suicidal ideation. These findings are consistent with research documenting higher suicide risk among minoritised populations,⁶ with minority stress theory suggesting that experiences of marginalisation may contribute to poorer mental health outcomes in these groups.³⁵ International students demonstrated reduced odds of risk compared with domestic students, although this warrants cautious interpretation given potential cultural differences in disclosure,³⁶ as well as the possibility that students with a prior history of mental health difficulties may be less likely to pursue study abroad. Elevated risk among students whose parents held professional degrees may reflect greater perceived pressure to achieve, willingness to disclose or selective participation, warranting future investigation. Lower risk at site 5 may reflect

recruitment of all first-year students, reducing self-selection toward elevated risk or interest in mental health research.

Childhood adversity exhibited associations with baseline suicidal ideation, with experiences of sexual abuse demonstrating the strongest association, consistent with dose-response models linking adverse experiences to suicidality.³⁷ Within the integrated motivational-volitional framework, early adversities may be conceptualised as diathesis factors increasing vulnerability to suicidal behaviour through effects on mood, interpersonal relationships and stress regulation.¹² History of mental health treatment was associated with suicidal ideation, likely reflecting treatment history as a marker of severity and persistence of symptoms and a potential protective factor through access to support.¹⁶

Baseline psychosocial functioning was strongly associated with suicidal ideation. Depressive symptoms showed the most robust association, consistent with models suggesting depressive symptoms often contribute to suicidal thinking.¹⁶ Higher loneliness and alcohol use were also associated with increased odds, consistent with previous literature.³⁸ However, the positive association with wellbeing was unexpected, potentially reflecting statistical suppression, given the strong inverse correlation between well-being and depression, or collider bias from selective participation: students with a history of mental health problems may have been more motivated to participate, while having sufficient current well-being to complete the survey.³⁹ Conversely, higher resilience and higher anxiety symptoms were independently associated with reduced risk. The latter contrasts with research reporting positive associations between anxiety and suicide risk,⁹ and may reflect a distinct relationship in this population, artefact of recruitment or sampling, or the predominantly subclinical anxiety severity in this sample, warranting future study.

Factors associated with lifetime suicide attempts at baseline

Previously receiving mental health treatment was most strongly associated with past suicide attempts at baseline, with over three times greater risk. Students identifying as non-Chinese Asian ethnic background showed elevated odds relative to White students, and those identifying as homosexual/gay/lesbian demonstrated increased risk compared with heterosexual students. As with ideation, international students showed reduced odds of reporting a past attempt, again warranting cautious interpretation.³⁶

Childhood adversity was also associated with past suicide attempts. Being hit by a caregiver demonstrated the strongest association, followed by sexual abuse, bullying and harsh parenting. The pattern mirrors that observed for suicidal ideation, consistent with dose-response models linking adverse childhood experiences to later suicidal behaviour.¹²

Baseline psychosocial functioning showed several associations with past suicide attempts. Depressive symptoms and rumination were both positively associated with lifetime attempt history, consistent with research highlighting repetitive negative thinking as a cognitive mechanism that may contribute to suicidal risk beyond ideation.^{12,40} Higher alcohol use was also positively associated, whereas better sleep quality and greater self-care were protective, consistent with previous literature.^{6,9} Similar to ideation, higher well-being was also associated with past attempts, which may also reflect collider bias from selective participation.³⁹ Likewise, higher resilience was also positively associated with past attempts, potentially reflecting adaptation or response bias among those with attempt histories. Students with no previous mental health diagnosis were less likely to report a past attempt, reinforcing the strong link between clinical history and suicidal behaviour.⁶

Reduction of suicidal ideation

Among students beginning the academic year with past suicidal ideation, 61% presented no symptoms at follow-up. Older students were slightly more likely to experience symptom reduction, potentially reflecting more developed coping strategies. Students reporting physical disabilities also showed higher odds of improvement, although this should be interpreted cautiously, given the heterogeneity of physical disabilities and varied support needs.

Conversely, students reporting prior mental health treatment were less likely to report no symptoms at follow-up, potentially reflecting treatment history as an indicator of severity.¹⁶ Similarly, increases in rumination over the academic year were associated with lower risk of reduction, consistent with research linking repetitive negative thought to maintenance of depressive symptoms.⁴⁰ Notably, concurrent change in rumination and suicidal ideation does not suggest directionality, but highlights an association between the two across the academic year.

New onset of suicidal ideation

New onset of suicidal ideation occurred in 3.5% of students without baseline suicidal ideation. When matched with students on baseline risk and demographic characteristics, the transition to new ideation was associated with declines in mental health, particularly anxiety, depression and well-being, similar to associations with baseline symptoms. This aligns with ideation-to-action frameworks suggesting depression primarily functions as a risk factor for ideation rather than attempts.¹⁸

The rarity of new-onset suicidal ideation has potentially meaningful implications for university mental health screening practises. Findings suggest the majority of students who experience suicidal ideation during university already demonstrate lifetime risk factors or symptoms, indicating that early identification and intervention during the transition to university may be particularly important.¹⁶ Additionally, findings suggest that among students without baseline risk, monitoring for symptoms of mental health deterioration may be useful in identifying students most at risk, consistent with research demonstrating that current psychiatric symptoms are better predictors of suicidal ideation than demographic risk factors.¹⁷

Relationship between suicidal ideation and attempts

Approximately 50% of students reported no suicidal ideation or attempts at either time point, with over 70% presenting without risk indicators at follow-up. Additionally, no risk at follow-up was the most common outcome for students with a history of risk, suggesting the university environment likely did not exacerbate existing vulnerability. Among students with suicidal thoughts but no prior attempts, 3.2% made a new attempt during the academic year, whereas 10.5% of those with a prior attempt made a new attempt, consistent with research demonstrating that the majority of individuals with suicidal ideation do not progress to suicide attempts.¹⁸ The ideation-to-action framework posits that development of suicidal ideation and progression to attempts are distinct processes with different predictors, with capability and thoughts operating as distinct mechanisms.¹²

These findings may have implications for how university systems approach suicide risk assessment. Although any suicidal ideation warrants clinical attention, presence of suicidal thoughts may have limited predictive potential in identifying those at risk of a future suicide attempt without considering additional risk factors. This may suggest that universal screening approaches focused primarily on detecting suicidal ideation potentially identify large numbers of students requiring support while having limited precision for identifying those at highest risk of a future suicide attempt.¹⁸ Alternative

approaches might include screening that considers both ideation and broader risk profiles, or enhanced support for students with ideation who demonstrate other high-risk factors, such as previous suicide attempts, previous intervention for mental health difficulties and disclosure of mental health disability at university entry.

Strengths and limitations

Key strengths of this study include the large, multi-institutional sample and longitudinal design capturing changes over the academic year, use of validated measures and robust statistical methods. Additionally, examination of both baseline risk factors and trajectories of change provides further understanding of suicide risk patterns among UK university students.

Several limitations should be noted. First, although the sample is representative of student populations, it may not be representative of all UK young adults; the majority of students identified as female, White and did not report a disability, whereas male students and those from minoritised backgrounds generally present with greater risk,³ and may be underrepresented in the study. Second, suicide risk was assessed with self-report questions from the Columbia Suicide Severity Rating Scale, rather than measures from clinical interviews and case records, potentially limiting specificity of measurement. The ideation question in particular may have been subject to variable interpretation, capturing momentary thoughts as well as active planning, potentially elevating lifetime prevalence relative to meta-analytic estimates.⁷ Third, the sample was drawn from five UK universities and may not be representative of all UK higher education institutions. Moreover, although the sample included approximately 3000 participants, a relatively small number of students experienced new-onset suicidal ideation or made suicide attempts, limiting statistical power for some analyses; these subgroup findings should be considered exploratory. Finally, data were analysed over the course of a single academic year, making it difficult to draw conclusions about longer-term trajectories beyond the follow-up period. Additionally, data collection (2021–2025) overlapped with later stages of the COVID-19 pandemic, which disrupted social connectedness, academic experiences and support services, and may partly contribute to observed prevalence and within-year change; although academic year was adjusted for, generalisation to future cohorts warrants caution.

In conclusion, the present study provides important insights into patterns of suicidal ideation and attempts among UK university students. Findings suggest that minoritised and disadvantaged groups experience elevated baseline suicide risk, and that new onset of suicidal ideation and attempts during university are rare and difficult to identify beyond symptoms of mental health deterioration. Moreover, results suggest suicidal ideation in isolation may have limited predictive ability in identifying those most at risk of a future suicide attempt. These results underscore the importance of early identification and support for at-risk students during the transition to university, as well as ongoing monitoring of mental health symptoms and the need for screening approaches that consider both ideation and factors associated with progression to attempts. With further research to refine how to target and implement early interventions, universities may be better able to support student mental health within higher education settings.

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Supplementary material

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Data availability

The data supporting the findings of this study are available on reasonable request from the corresponding author, K.F.M. The data are not publicly available due to the sensitive nature of the data and potential to compromise the privacy of research participants.

Author contributions

K.F.M. contributed to study methodology, formal analysis and writing the original draft of the manuscript. E.R.W. contributed to study conceptualisation and funding acquisition. L.J.R. contributed to study methodology, supervision and funding acquisition. A.D., N.B., S.R.C., K.S. and L.F. contributed to funding acquisition. S.B. contributed to study methodology and data curation. K.F.M., S.B., K.A.M., J.D., L.D., A.N. and T.M. contributed to data curation. All authors contributed to reviewing and editing the manuscript, and approved the final version of the manuscript.

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