**Table S1.**

**Concentration of risk of suicide plan or attempt in the coming 12 months**

|  |  |  |  |
| --- | --- | --- | --- |
| **% at highest predicted risk** | **Sensitivity %**  **(95% CI)** | **Specificity %**  **(95% CI)** | **PPV %** |
| 100 | 24.06 (19.05,29.66) | 99.89 (99.40,100.0) | 98.46 (89.92,99.78) |
| 95 | 29.70 (23.49,36.52) | 99.03 (98.17,99.56) | 86.96 (77.09,92.96) |
| 90 | 30.28 (22.86,38.55) | 98.05 (96.93,98.84) | 70.49 (58.66,80.09) |
| 85 | 26.26 (17.93, 36.07) | 97.46 (96.21,98.38) | 53.06 (40.16, 65.56) |
| 80 | 18.06 (9.98,28.89) | 94.55 (92.84,95.96) | 21.31 (13.35,32.25) |
| 75 | 26.67 (16.07,39.66) | 95.20 (93.52,96.55) | 28.57 (19.26,40.15) |
| 70 | 25.00 (13.19,40.34) | 93.19 (91.21, 94.84) | 16.92 (10.30, 26.54) |
| 65 | 29.41 (15.10, 47.48) | 93.23 (91.18, 94.94) | 16.67 (10.02, 26.43) |
| 60 | 25.00 (9.77, 46.71) | 94.05 (92.01, 95.70) | 12.77 (6.44, 23.72) |
| 55 | 16.67 (3.58, 41.42) | 92.98 (89.95, 94.22) | 5.66 (2.02, 14.85) |
| 50 | 21.43 (4.66, 50.80) | 90.47 (87.83, 92.70) | 5.00 (1.84, 12.88) |
| 45a | 0.00 (0.00, 28.49) | 89.28 (86.36, 91.76) | 0.00 |
| 40 | 27.27 (6.02, 60.97) | 89.23 (86.12, 91.85) | 5.45 (2.08, 13.54) |
| 35 | 11.11 (0.28, 48.25) | 85.85 (82.19, 89.00) | 1.61 (0.25, 9.55) |
| 30 | 25.00 (3.19, 65.09) | 87.84 (84.07, 90.99) | 4.26 (1.28, 13.21) |
| 25 | 33.33 (4.33, 77.72) | 80.62 (75.89, 84.77) | 3.08 (0.99, 9.14) |
| 20 | 50.00 (6.76, 93.24) | 77.86 (72.34, 82.74) | 3.33 (1.25, 8.62) |
| 15a | 0.00 (0.00, 84.19) | 69.12 (62.29, 75.38) | 0.00 |
| 10a | 0.00 (0.00, 84.19) | 41.13 (32.92, 49.73) | 0.00 |
| 5a | 0.00 | 0.00 | 0.00 |

*Note.* aNo true positive cases were not evident in these analyses.

**Table S2.**

**Prevalence of predictor variables by algorithm outcome**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Variable** | **No suicidal behaviour** | | | **Suicidal behaviour** | | |
|  | w(n) | w(%) | SE | w(n) | w(%) | SE |
| **Demographic variables** |  |  |  |  |  |  |
| Age > 18 years | 269 | 57.0 | .023 | 44 | 53.0 | .055 |
| Low socioeconomic status | 88 | 18.6 | .018 | 10 | 11.7 | .036 |
| Parental educationa | 143 | 30.3 | .021 | 35 | 42.5 | .055 |
| Sex (female) | 235 | 49.9 | .023 | 60 | 73.5 | .049 |
| Nationality (not Australian) | 48 | 10.2 | .014 | 11 | 13.1 | .037 |
| Non-heterosexual sexuality | 82 | 17.3 | .017 | 32 | 38.5 | 054 |
| **Stressful experiences** |  |  |  |  |  |  |
| Parental psychopathology | 214 | 45.4 | .023 | 59 | 82.2 | .050 |
| Physical abuse | 85 | 18.0 | .018 | 31 | 37.6 | .054 |
| Emotional abuse | 72 | 36.6 | .022 | 56 | 68.3 | .052 |
| Sexual abuse | 10 | 2.0 | .007 | 8 | 9.5 | .033 |
| Neglect | 54 | 11.5 | .015 | 30 | 36.9 | 054 |
| Illness in family | 96 | 20.3 | .019 | 32 | 38.4 | .054 |
| Death in family | 66 | 14.0 | .016 | 27 | 33.0 | .052 |
| Betrayal from partner | 87 | 18.4 | .018 | 18 | 21.5 | .046 |
| Partner cheating | 35 | 7.3 | .012 | 8 | 10.1 | .033 |
| Other betrayal | 79 | 16.8 | .017 | 14 | 17.0 | .042 |
| Arguments | 79 | 16.9 | .017 | 15 | 17.7 | .042 |
| Life-threating accident | 9 | 1.9 | .006 | 2 | 2.0 | .016 |
| Sexual assault | 6 | 0.6 | .000 | 6 | 7.7 | .030 |
| Legal issues | 13 | 2.7 | .007 | 4 | 5.2 | .025 |
| Other stressors | 112 | 23.8 | .020 | 31 | 37.9 | .054 |
| Limited social support | 77 | 16.3 | .017 | 39 | 47.2 | .055 |
| Severe overall stress | 68 | 14.4 | .016 | 31 | 37.9 | .054 |
| **Mental health symptoms** |  |  |  |  |  |  |
| ADHD 6-month | 107 | 22.7 | .019 | 32 | 39.3 | .054 |
| Major Depressive Episode 12-month | 94 | 19.9 | .018 | 56 | 68.3 | .052 |
| Generalized Anxiety Disorder 12-month | 89 | 18.8 | .018 | 40 | 48.2 | .055 |
| Panic Attack 12-month | 204 | 43.3 | .023 | 61 | 74.2 | .049 |
| Broad Mania 12-month | 10 | 2.1 | .007 | 16 | 19.4 | .044 |
| Alcohol dependence 12-month | 29 | 6.1 | .011 | 13 | 15.5 | .040 |
| Substance dependence 12-month | 11 | 2.4 | .007 | 6 | 7.9 | .030 |
| Lifetime Intermittent Explosive Disorder | 143 | 30.4 | .021 | 46 | 55.9 | .055 |
| Lifetime Post-Traumatic Stress-Disorder | 236 | 50.0 | .023 | 69 | 83.8 | .041 |
| Lifetime Binging and/or purging | 125 | 26.6 | .020 | 45 | 54.3 | .055 |
| Lifetime Psychosis | 51 | 10.9 | .014 | 28 | 34.3 | .053 |
| **Past year self-injury, suicidal thoughts, and behaviour** | | |  |  |  |  |
| Suicidal ideation 12-month | 101 | 21.4 | .019 | 71 | 85.9 | .039 |
| Suicide plan 12-month | 37 | 7.9 | .012 | 55 | 67.5 | .052 |
| NSSI 12-months | 62 | 13.2 | .016 | 14 | 16.8 | .041 |
| Suicide attempt 12-month | 9 | 1.9 | .006 | 10 | 11.8 | .036 |

*Note.* aHigh education was defined as having a least a Bachelor’s degree; w(n) = weighted number of cases; w(%) = weighted percentage of sample

**Table S3.**

**Participants’ demographic information, separated by intervention cohort**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Demographic characteristics** | | **Intervention Cohorts** | |  | **Control Cohorts** | |
| At Risk | Not At Risk |  | At Risk | Not At Risk |
| Age | |  |  |  |  |  |
|  | ≤17 | 18.5% | 16.3% |  | 10.1% | 11.1% |
|  | 18 | 41.8% | 45.8% |  | 47.3% | 50.9% |
|  | 19 | 10.3% | 12.7% |  | 14.7% | 12.2% |
|  | 20 | 7.1% | 5.2% |  | 3.9% | 4.8% |
|  | 21–35 | 17.9% | 15.4% |  | 17.8% | 16.8% |
|  | ≥36 | 4.3% | 4.5% |  | 6.2% | 4.3% |
| Gender | |  |  |  |  |  |
|  | Female | 76.1% | 63.7% |  | 73.1% | 64.6% |
|  | Male | 17.4% | 34.9% |  | 23.1% | 34.5% |
|  | Transgender or gender diverse | 6.5% | 1.4% |  | 3.8% | 0.8% |
| Sexuality | |  |  |  |  |  |
|  | Heterosexual | 42.4% | 86.1% |  | 49.0% | 85.8% |
|  | Minority sexuality | 57.6% | 13.9% |  | 50.8% | 14.2% |
| Socioeconomic status | |  |  |  |  |  |
|  | Low | 16.3% | 13.2% |  | 16.9% | 14.4% |
|  | Medium or High | 83.7% | 86.8% |  | 83.1% | 85.6% |
| Parental education | |  |  |  |  |  |
|  | Low | 17.9% | 18.2% |  | 21.5% | 18.9% |
|  | Medium or High | 82.1% | 81.8% |  | 78.5% | 81.1% |
| Nationality | |  |  |  |  |  |
|  | Australian | 89.7% | 90.2% |  | 89.2% | 91.4% |
|  | Non-Australian | 10.3% | 9.8% |  | 10.8% | 8.6% |
| Indigenous status | |  |  |  |  |  |
|  | Indigenous | 3.3% | 1.5% |  | 1.5% | 1.2% |
|  | Non-indigenous | 96.4% | 98.5% |  | 98.5% | 98.8% |
| Degree status | |  |  |  |  |  |
|  | Full-time | 94.0% | 92.0% |  | 90.8% | 93.7% |
|  | Part-time | 5.4% | 6.8% |  | 8.5% | 5.4% |
|  | Non-degree or other | 0.5% | 1.2% |  | 0.8% | 0.9% |

*Note.* No significant differences between cohorts, all *p*s<.050.

**Table S4.**

**Prevalence of predictor variables, separated into pre- and during/post-COVID-19 cohorts.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable** | **Pre-COVID-19 Cohorts**  % | **During/Post-COVID-19 Cohorts**  % | **Inferential statistic**  χ2(df), *p*-value  Cramers’ V |
| **Demographic variables** |  |  |  |
| Age > 18 years | **54.0%** | **44.3%** | 51.53 (1), *<*0.001, 0.10 |
| Low socioeconomic status | **18.2%** | **13.4%** | 23.58 (1), *<*0.001, 0.07 |
| Parental education (low) | **26.8%** | **18.2%** | 57.71 (1), *<*0.001, 0.10 |
| Sex (female) | 67.1% | 66.1% | 0.61 (1), 0.437, 0.01 |
| Nationality (not Australian) | 10.0% | 9.8% | 0.06 (1), 0.811, <0.01 |
| Non-heterosexual sexuality | 18.3% | 17.0% | 1.50 (1), 0.221, 0.02 |
| **Stressful experiences** |  |  |  |
| Parental psychopathology | **45.6%** | **38.2%** | 30.91 (1), <0.001, -0.08 |
| Physical abuse | **21.0%** | **17.6%** | 10.34 (1), 0.001, -0.04 |
| Emotional abuse | **39.8%** | **34.0%** | 19.94 (1), <0.001, -0.06 |
| Sexual abuse | 3.9% | 3.6% | 0.24 (1), 0.625, -0.007 |
| Neglect | **15.2%** | **12.0%** | 11.66 (1), <0.001, -0.05 |
| Illness in family | **24.0%** | **20.3%** | 11.03 (1), <0.001, -0.05 |
| Death in family | 19.4% | 19.2% | 0.04 (1), 0.842, -0.03 |
| Betrayal from partner | **20.0%** | **15.1%** | 22.23 (1), <0.001, -0.06 |
| Partner cheating | 6.4% | 4.7% | 7.70 (1), 0.006, -0.04 |
| Other betrayal | 17.7% | 15.7% | 4.24 (1), 0.039, -0.03 |
| Arguments | **21.3%** | **16.7%** | 19.28 (1), <0.001, -0.06 |
| Life-threating accident | 3.0% | 1.9% | 6.62 (1), 0.010, -0.04 |
| Sexual assault | 2.1% | 3.3% | 7.73 (1), 0.005, 0.04 |
| Legal issues | 2.0% | 1.5% | 1.88 (1), 0.170, -0.02 |
| Other stressors | **16.6%** | **11.1%** | 33.93 (1), <.001, -0.08 |
| Limited social support | **11.4%** | **15.8%** | 21.00 (1), <.001, 0.06 |
| Severe overall stress | **16.8%** | **13.0%** | 14.90 (1), <.001, -0.05 |
| **Mental health symptoms** |  |  |  |
| ADHD 6-month | 30.4% | 31.4% | 0.59 (1), 0.442, 0.01 |
| Major Depressive Episode 12-month | **20.2%** | **16.1%** | 15.14 (1), <0.001, -0.05 |
| Generalized Anxiety Disorder 12-month | **13.4%** | **4.1%** | 144.72 (1), <0.001, -0.16 |
| Panic Attack 12-month | **8.9%** | **6.2%** | 14.49 (1), <0.001, -0.05 |
| Broad Mania 12-month | 5.4% | 5.0% | 0.37 (1), 0.544, -0.01 |
| Alcohol dependence 12-month | 5.8% | 5.4% | 0.57 (1), 0.449, -0.01 |
| Substance dependence 12-month | 4.4% | 3.2% | 4.69 (1), 0.030, -0.03 |
| Lifetime Intermittent Explosive Disorder | **29.1%** | **17.7%** | 97.57 (1), <0.001, -0.13 |
| Lifetime Post-Traumatic Stress-Disorder | **51.0%** | **40.6%** | 59.92 (1), <0.001, -0.11 |
| Lifetime Binging and/or purging | **27.6%** | **23.3%** | 13.19 (1), <0.001, -0.05 |
| Lifetime Psychosis | 10.6% | 10.9% | 0.15 (1), 0.696, 0.01 |
| **Suicide and self-injury** |  |  |  |
| Lifetime suicide attempt | 8.1% | 7.4% | 0.93, 0.336, 0.01 |
| NSSI 12-months | **21.9%** | **12.0%** | 92.95(1), *<*0.001,0.13 |
| Suicidal ideation 12-month | **29.7%** | **26.1%** | 8.82 (1), *<*0.001, 0.04 |
| Suicide plan 12-month | **15.8%** | **11.9%** | 17.27(1), *<*0.001, 0.06 |
| Suicide attempt 12-month | 2.1% | 2.3% | 0.30 (1), 0.583, 0.01 |

*Note.* aHigh education was defined as having a least a Bachelor’s degree. Pre-COVID-19 comprised of the 2016, 2017, 2018, and 2019 cohorts. Post/During COVID-19 comprised of the 2020, 2021, and 2022 cohorts. Associations were *p* ≤ 0.001 are bolded