



## Original Research

# Mental health of Irish adolescents following the COVID-19 pandemic: results from a population-based cross-sectional survey

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### Abstract

**Objectives:** This study provides data on the prevalence of mental health problems among adolescents in Ireland in 2021, toward the end of the COVID-19 pandemic. The importance of having recent, large-scale, mental health data for adolescents has been heightened by COVID-19, the increased demand for child and adolescent mental health services, and the rapidly changing adolescent environment.

**Methods:** As part of the Planet Youth study, a cross-sectional survey of adolescents ( $N = 4,404$ ), mostly aged 15–16, was conducted between September and December 2021. Participants were recruited from 40 schools and non-traditional educational centres across 3 regions in Ireland, one predominantly urban (North Dublin) and two predominantly rural (Cavan, Monaghan). A range of mental health outcomes were self-reported: a single-item question on mental health; the Strengths & Difficulties Questionnaire (SDQ); depressive and anxiety symptoms from the Symptom Check List 90; the Adolescent Psychotic-like Symptom Screener; and lifetime self-harm, suicidal ideation, and attempt.

**Results:** Over a quarter of adolescents described their mental health as 'bad' or 'very bad' (29%), and had SDQ total problem scores over 20 (26%). Over a third (39%) reported self-harming, 42% reported suicidal ideation, and 11% reported attempting suicide, in their lifetime. Gender-diverse youth (non-binary, trans, and undisclosed) had higher rates of poor mental health outcomes compared to cis-gendered youth (male/female), and females had higher rates of most mental health outcomes compared to males.

**Conclusions:** Many of these estimates suggest a deterioration from previous epidemiological studies. While our findings do not definitively prove youth mental health has worsened over time, these findings are highly concerning. We propose a close monitoring of mental health in future surveys of this population and encourage initiatives to improve the capacity and quality of youth mental health services.

**Keywords:** Adolescence; anxiety; COVID-19; depression; epidemiology ; self-harm; suicide

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### Introduction

Young people aged 10–24 years make up 27% of the world's population, and their wellbeing is central to the functioning of society and the economy (United Nations 2009). However, a great threat to mortality and morbidity among young people today is mental disorder (Erskine et al., 2015, Liu et al., 2022, Piao et al., 2022).

There is international evidence that mental health among adolescents and young people has worsened over the past decade. This has been observed in repeated cross-sectional surveys and healthcare data from: the United Kingdom (NHS Digital 2022), Iceland (Thorisdottir et al., 2017), Canada (Wiens et al., 2020), and the United States (CDC 2023, Weinberger et al., 2018). Females between 16 and 19 years old have been identified as a growing high-risk group for anxiety, depression, and self-harm (NHS Digital 2022, Slee et al., 2021, Thorisdottir et al., 2023, Thorisdottir et al., 2017).

Trends in mental health problems among young people in Ireland are less clear, because there is a lack of repeated survey data (Lynch et al., 2023). However, the following lines of evidence suggest rising mental health problems, both prior to, and during, the COVID-19 pandemic:

1. The MyWorld surveys investigated mental health problems in large samples of young people in Ireland in 2012 and 2018/2019. In that 6–7-year period, there was roughly a doubling in the proportion of adolescents aged 12–18 with severe depression (from 8 to 15%) and anxiety (11 to 22%). Further, the proportion of post-secondary school young people (aged 17–25) who had attempted suicide in their lifetime had increased from 7 to 10% (Dooley et al., 2015, 2019).
2. The Growing Up in Ireland study has tracked two cohorts of children, one born in 1998 and one born in 2008 ( $Ns > 8,000$ ). At age 13, the 2008-born cohort had more mental health problems compared to the 1998-born cohort, as evidenced by a 2.5% increase on the parent-reported SDQ total difficulties scale (1 point on the 40-item scale; Growing Up in Ireland 2023, Williams et al., 2018).

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3. Planet Youth West is a repeated cross-sectional survey of young people from Galway, Mayo, and Roscommon ( $N \sim 5,000$  at each wave). Average trends across its three waves (2018, 2020, 2022) suggest declining mental health and wellbeing, and increases in depressive/anxiety symptoms in this region (Silke et al., 2024a). However, rates of self-harm, suicidal thoughts, and suicidal attempt appear to have dropped between 2020 and 2022 (Silke et al., 2024b).
4. The National Suicide Research Foundation in Ireland reports annual statistics on self-harm and suicide. The latest reports show that self-harm has been more common among young people (aged 15–30) than any other age groups for the past 19 years, and that the age of onset of self-harm is decreasing (Griffin et al., 2017, 2018).
5. The number of crisis psychiatry assessments of adolescents in Irish hospitals rose significantly between 2019 and 2021 (McLoughlin et al., 2022). Referrals to specialist CAMHS units in Dublin also showed an increase between 2019 and 2020 (McNicholas et al., 2021).

The population data above (#1–3) suggest worsening mental health among young people nationally, and clinical data suggests this is translating to increased demand for services (#4–5). However there remains large gaps in knowledge. For instance, while hospital presentation data are useful, they represent the tip of the iceberg of population-level mental health problems. There is an urgent need to investigate mental health symptoms in the general population of young people using recently collected data. Further, the importance of collecting data since 2020 is highlighted by studies showing the disproportionate effect the COVID-19 pandemic had on the mental health of young people (Czeisler et al., 2020; GOV.UK, 2022). Between 2020 and 2021, adolescents in Ireland had experienced two extended periods of school closures (Mar–Jun 2020; Dec 2020–Mar 2021), which was more than many other European countries (Fig. 1), but the mental health of this group has not been systematically investigated since.

This study assesses the prevalence of mental health problems in over 4,000 adolescents in Ireland, from youth-report surveys conducted between September and December 2021. The timing of this survey in relation to COVID-related school closures is illustrated in Fig. 1. This study reports the first wave of a survey series which will be repeated every 2 years.

The primary aim was to identify the prevalence of mental health problems, as measured by standardised scales of general mental health, depressive and anxiety symptoms, and self-reported rates of self-harm, suicidal ideation, and suicidal attempt. The secondary aim was to explore variation in mental health across several demographic factors (gender, geographic location, family socio-economics). Finally, given the timing of this survey, we explore whether the effects of COVID-19 lockdowns on various aspects of life was associated with mental health.

## Methods

### Study design, participants & setting

The current study follows a wider study model known as Planet Youth, based on the Icelandic Prevention Model. The model includes a research and an intervention phase, to ultimately reduce substance use and mental health problems among adolescents (Kristjansson et al., 2020; Sigfusdottir et al., 2019). In Ireland, the Planet Youth model was first adopted in 2018 with youth surveys across Galway, Mayo, and Roscommon (<https://planetyouth.ie>)

and was subsequently adopted in North County Dublin, Cavan, and Monaghan in 2021 (<https://planetyouthpartner.ie>). Surveys are repeated in these communities biannually. The study is designed to understand risk and protective factors for substance use and mental health problems among adolescents.

The data used in this study was collected from young people between September and December 2021 in North Dublin, Cavan, and Monaghan. All schools & YouthReach centres (non-traditional secondary educational settings) in these areas were invited to participate in the survey by local partner organisations (see acknowledgments). The survey was primarily aimed at students in 4<sup>th</sup> ('Transition Year') and 5<sup>th</sup> year at school, and comparable groups in YouthReach centres. Figure 1 illustrates the timing of data collection in the context of COVID-19 related school closures.

Survey completion took approximately 60 minutes, during school time. Teachers delivered standardised instructions on administering the survey, and members of the study team assisted in the delivery. Young people watched a short instructional video on how to complete the survey, in which they were informed they did not have to answer questions they were uncomfortable with.

Of the invited schools and institutions, 75% in the urban area and 100% in the rural area took part (40 in total). Of invited students, 75% in the urban area and 86% in the rural area participated (4,404 in total). Average participation rate among young people was 79%.

### Consent & ethics

Informed consent was achieved through an opt-out consent form, sent home to parents via young people. Informed assent (opt-out) was also sought from adolescents. Prior to circulating consent forms, parents received information about the survey via community events and digital communication. A recording of this information was also made available on the study website. Opt-out consent is in line with best practice in anonymous low-risk youth risk behaviour surveys (Cheng et al., 1993; Mathews et al., 2022; Petersen and Leffert 1995; Santelli et al., 1995). Alternative activities were arranged for students not participating in the survey.

After survey completion, participants were provided information on mental health, social care, and wellbeing services in their community. Mandated child protection reporters and a consultant child & adolescent psychiatrist were available during survey collection. The Research Ethics Committee of the Royal College of Physicians in Ireland (RECSAF 144) granted ethical approval.

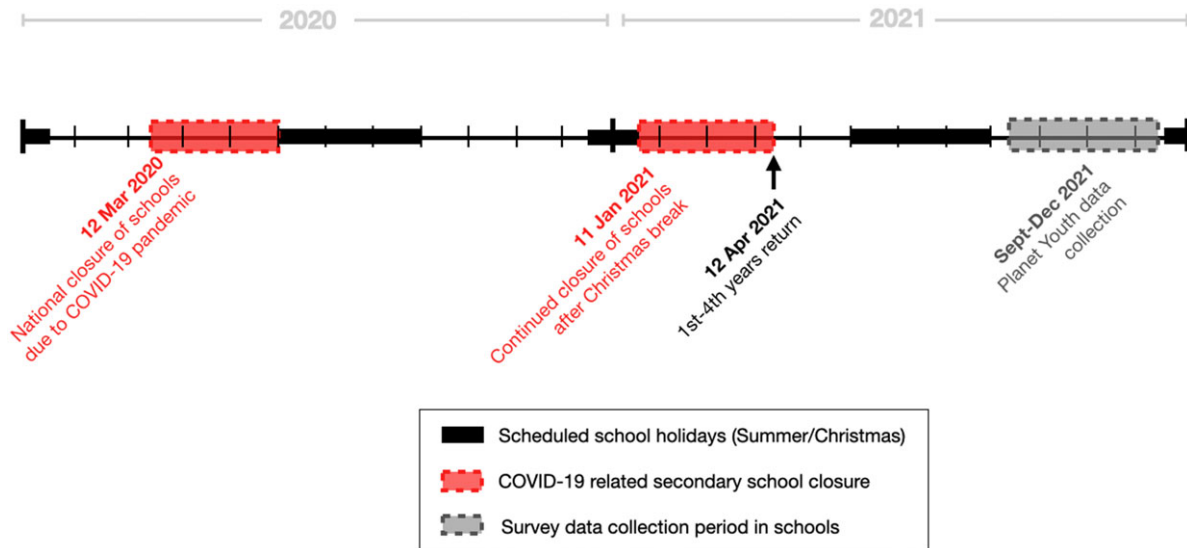
### Measures

#### Subjectively bad mental health

Participants were asked 'How would you rate your mental health?' and responded on a 5-point Likert scale. For simplicity, responses were dichotomised into 'Bad'/'Very Bad', and 'Okay'/'Good'/'Very good'.

#### Strengths and Difficulties Questionnaire (SDQ)

The Strengths and Difficulties Questionnaire (SDQ) is widely used screening tool designed to assess emotional and behavioural problems in young people. The total problems scale combines information from 20 items and ranges from 0 to 40. Response options are 'not true', 'somewhat true', and 'certainly true'. The total problems scale from the self-report version of the SDQ is a valid measure of mental health in adolescents aged 14–18 (Goodman et al., 2003; Lundh et al., 2008; Muris et al., 2003; Vugteveen et al., 2021). Scores of 20 or above are considered 'very



**Figure 1.** Time of data collection (grey) in context of planned (black) and unplanned (red) school closures in Ireland (2020–2021).

high', while scores of 18 or above are considered 'high', with respect to population norms (<https://www.sdqinfo.org/py/sdqinfo/c0.py>).

#### Depressive & anxiety symptoms

Twelve items from the depressive and anxiety dimensions of the Symptom Check List 90 were included (SCL-90; Derogatis 1973, Derogatis et al., 1972). These 12 items were selected by the Planet Youth study coordination team in Iceland, and are included in many other Planet Youth surveys internationally. For each item, participants indicated how often they experienced the symptom in the past week (almost never, rarely, sometimes, often; scored as 0,1,2,3). Depressive symptoms included low appetite, loneliness, tearfulness, and hopelessness, while anxiety symptoms included nervousness, sudden fear and tension (Table S3). Symptom scales are reported separately for depression (0–27) and anxiety (0–9), and on a combined scale (range: 0–36). Thorisdottir et al. (2017) found good internal consistency for the 9-item depressive subscale (Cronbach's  $\alpha = .91$ ) and 3-item anxiety subscale (Cronbach's  $\alpha = 0.78$ ) across 43,482 adolescents in Iceland. We also found good internal consistency for these subscales (Depressive  $\alpha = .91$ ; Anxiety  $\alpha = .87$ ) and for the combined total in our sample ( $\alpha = .93$ ; McDonald's hierarchical  $\omega = .84$ ).

#### Psychotic-like experiences (PLEs)

The 7-item Adolescent Psychotic-like Symptom Screener (APSS) was used to capture hallucinations and delusions, and has been specifically validated for use among adolescents (Kelleher et al., 2011). Each item was scored with 0, 0.5, and 1 reflecting 'not true', 'somewhat true', and 'certainly true'. A total score was calculated (0–7). Those with a score of 2 or more were considered an 'at-risk' group for clinically significant PLEs, in line with Kelleher et al. (2011).

#### Lifetime suicidality and self-harm

Lifetime self-harm was captured by the question: 'During your lifetime, how often have you harmed yourself on purpose (e.g. scratching, burning, cutting...)?'. Response options included 'Never', 'Once', 'Twice', '3-4 times' and '5 times or more' but were dichotomised into 'Never' and 'At least once'. Lifetime suicidal

ideation was captured by the question 'Have you ever had suicidal thoughts?' and lifetime suicidal attempt was captured by 'Have you ever attempted suicide?'. Response options for both suicidality questions were yes/no.

#### Predictors

**Gender identity.** Participants were asked 'How would you describe your gender' and had four response options: male, female, non-binary and/or trans, or prefer not to say. The latter two options were combined into an 'other' group representing non-cis genders and questioning youth.

**Geographical area.** Counties involved in this study were classed as urban (North Dublin), and rural (Cavan and Monaghan) based on population density and geographic location.

**Family socioeconomic.** Three variables were chosen to control for the child's socioeconomic background: maternal education level below third level (i.e. primary or secondary education only); participant ethnicity other than 'White Irish'; and relative financial difficulty. The latter was assessed by the question 'How well off financially do you think your family is in comparison to other families' with those responding 'worse off' considered to be experiencing relative financial difficulty.

**Negative impact of COVID-19 lockdown.** Participants were asked 'How did the COVID-19 lockdown effect the following areas of your life?' with areas including family relationships, friend relationships, physical health, mental health, and school experience. Responses were provided on a 5-point scale ('A lot worse', 'A bit worse', 'No change', 'A bit better', and 'A lot better'). These responses were dichotomised such that those responding 'A lot worse' or 'A bit worse' were considered to have experienced negative effects on the area in question.

#### Statistical analysis

We provide tables of means, standard deviations and prevalence's across all mental health measures for the full sample and selected sub-groups (split by gender, age-group, and geographical area), to allow comparison with other studies.

Using logistic mixed models, we included demographic factors (gender, age, geographic location), socioeconomic factors (maternal

**Table 1.** Descriptive statistics of sample characteristics

	Full Sample N = 4,404	Urban (North Dublin) N = 2,677	Rural (Cavan & Monaghan) N = 1,727	Urban - Rural difference <sup>b</sup>
<b>Gender Identity</b>				
Male	51.2%	51.7%	50.3%	
Female	44.3%	42.7%	47.0%	**
Other <sup>a</sup>	4.5%	5.6%	2.8%	***
<b>Age</b>				
<15	11.5%	18.5%	0.5%	***
15	37.8%	39.0%	25.8%	*
16	37.3%	29.6%	49.2%	***
>16	13.5%	12.9%	14.5%	
<b>Family socio-demographics</b>				
Maternal highest education level: primary/secondary school	28.4%	26.9%	30.7%	*
Perceives family as worse off than others (financially)	11.7%	12.6%	10.3%	*
Ethnicity other than White Irish	29.9%	32.3%	26.1%	***
<b>COVID-19 lockdown had negative impact on . . .</b>				
Mental health	57.8%	60.4%	53.9%	***
Family relationships	26.7%	28.4%	24.2%	**
Friend relationships	32.7%	33.8%	31.1%	
Physical health	40.9%	43.7%	36.5%	***
School experience	63.4%	63.3%	62.1%	

<sup>a</sup>Non-binary, trans, or preferred not to say.<sup>b</sup>Chi-square test.\* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$ .

education, relative household poverty, ethnicity), and perceived impacts of the COVID-19 pandemic, as predictors of each outcome. Variation in mental health across participating schools ( $n = 40$ ) was captured using a random intercept. Given the multiple outcomes, a Bonferroni-corrected  $p$ -threshold was used to highlight significant predictors ( $0.05/7 = 0.007$ ).

## Results

Seventy-five percent of participants were aged 15–16 years, 95% identified as cis-gendered (male/female), 83.5% were born in Ireland, and 70% identified their ethnicity as White Irish. The majority (57.8%) of this sample felt their mental health had worsened throughout the COVID-19 pandemic (Table 1). Across all mental health measures, there was a gender gradient such that adolescents with non-cis gender identities had the highest symptom scores, or highest rates of poor outcomes, followed by females, and then males (Fig. 2).

### General mental health

Over a quarter of adolescents described their mental health as 'bad' or 'very bad' (28.58%). A similar proportion scored in the 'very high' range of the SDQ total problems scale (25.53%; Table 2). Significant risk factors for subjectively bad mental health included having a non-cis gender identity (OR = 9.44, 95% CI = 6.26–14.24), being female (OR = 2.80, 95% CI = 2.35–3.34), relative household poverty (OR = 2.23, 95% CI = 1.75–2.85), having experienced negative effects of COVID-19 on

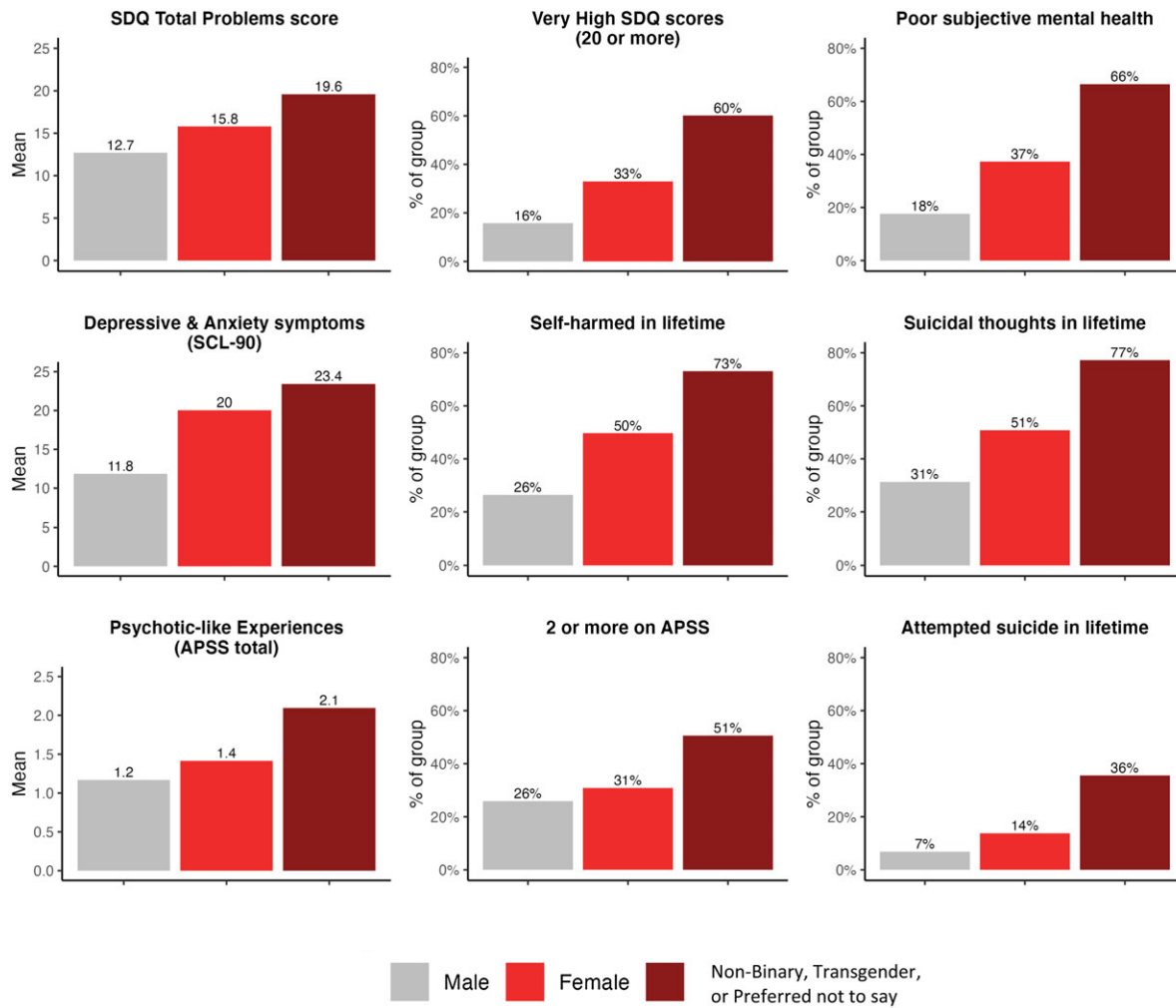
family relationships (OR = 1.86, 95% CI = 1.54–2.23), friend relationships (OR = 1.46, 95% CI = 1.22–1.74), physical health (OR = 1.76, 95% CI = 1.48–2.09) and on school experience (OR = 1.43, 95% CI = 1.18–1.72; Table 3). Most of these factors also predicted scoring in the very high range of the SDQ (Table 3).

### Depression & anxiety symptoms

Mean score on the SCL-90 scale of depression and anxiety was 16 (range: 0–36; Table 2). Significant predictors of higher SCL-90 scores were: having a non-cis gender ( $B = 9.99$ ,  $SE = 0.72$ ,  $p < .001$ ), being female ( $B = 7.60$ ,  $SE = 0.30$ ,  $p < .001$ ), relative household poverty ( $B = 3.26$ ,  $SE = 0.45$ ,  $p < .001$ ), living in an urban area ( $B = 2.49$ ,  $SE = 0.52$ ,  $p < .001$ ), and negative impacts of COVID-19 on each included area of life: family relationships ( $B = 2.56$ ,  $SE = 0.33$ ,  $p < .001$ ); friend relationships ( $B = 2.05$ ,  $SE = 0.31$ ,  $p < .001$ ); physical health ( $B = 2.68$ ,  $SE = 0.30$ ,  $p < .001$ ); and school experience ( $B = 1.60$ ,  $SE = 0.30$ ,  $p < .001$ ).

### PLEs

Mean score on the APSS scale of PLEs was 1.32 (range: 0–7), and just over 29% of the sample scored 2+ (clinically significant PLEs; Table 2). Risk factors for clinically significant PLEs included non-cis gender (OR = 2.46, 95% CI = 1.69–3.58), urban geographical location (OR = 1.63, 95% CI = 1.30–2.03), relative household poverty (OR = 1.73, 95% CI = 1.37–2.19), minority ethnicity (OR = 1.50, 95% CI = 1.26–1.80), and having experienced negative



**Figure 2.** A common gender-based pattern across various mental health outcomes (unadjusted group differences)[endif].

effects of COVID-19 on relationships with family (OR = 1.60, 95% CI = 1.33–1.91) and friends (OR = 1.46, 95% CI = 1.23–1.73; Table 3).

### Self-harm & suicidality

The rate of lifetime self-harm was 38.75% in this adolescent sample (Table 2). Odds of self-harm were elevated for females (OR = 2.74, 95% CI = 2.34–3.21) and non-cis genders (OR = 6.37, 95% CI = 4.21–9.67) compared to males. The odds of self-harm were also higher in urban geographical settings (OR = 1.57, 95% CI = 1.26–1.95), homes experiencing relative poverty (OR = 1.75, 95% CI = 1.38–2.23), and ethnic minorities (OR = 1.52, 95% CI = 1.28–1.81). Negative experiences of COVID-19 on physical health, and relationships with family and friends, were also associated with increased odds of self-harm (ORs between 1.42 and 1.61; Table 3).

The prevalence of lifetime suicidal ideation and attempt was 42 and 11% respectively (Table 2). Common predictors of both ideation and attempt were: female gender (ORs: 2.11–2.15), non-cis gender (ORs: 5.62–6.70), relative household poverty (ORs: 2.06–2.29), minority ethnicity (ORs: 1.63–1.76), and having experienced negative impact of COVID-19 on physical health (ORs: 1.47–1.51) and family relationships (ORs: 1.75–1.77).

Factors associated with an increased risk of suicidal ideation, but not attempt, included urban geographical location (OR = 1.30, 95% CI = 1.07–1.58) and negative impact of COVID-19 on friend relationships (OR = 1.45, 95% CI = 1.23–1.70). Low maternal education was significantly associated with an increased risk of suicidal attempt, but no other outcome (OR = 1.57, 95% CI = 1.23–2.00; Table 3).

Supplementary Table S1 shows the unadjusted prevalence of all mental health outcomes, split by gender, age, and geographical area. A correlation heatmap in supplementary Figure S1 shows that there was significant overlap between all mental health measures in this study. Of note, more negative responses on the single-item measure of general mental health 'how would you rate your mental health?' (very bad, bad, okay, etc.) were significantly correlated with higher total problem scores on the SDQ ( $r(3871) = 0.58, p < .001$ ), the anxiety and depressive total from the SCL-90 ( $r(4170) = 0.70, p < .001$ ) and the APSS total score ( $r(3879) = 0.26, p < .001$ ).

### Discussion

This study provides an important update on adolescent mental health in Ireland, following the COVID-19 pandemic. Our findings suggest that the mental health of this cohort is considerably poorer than noted in previous epidemiological studies in Ireland.

**Table 2.** Descriptive statistics (prevalence/mean score) for various mental health outcomes

	% Prevalence / Mean (SD)	N available
<b>General mental health</b>		
% reported bad/very bad mental health	28.58%	4,349
SDQ Total Mean (SD)	15.00 (6.35)	3,894
% with SDQ Total $\geq 20$ ("very high")	25.53%	3,894
% with SDQ Total $\geq 18$ ("high")	35.44%	3,894
<b>Depressive &amp; Anxiety Symptoms (past week)</b>		
Mean anxiety symptoms /9 (SD)	4.48 (2.84)	4,176
Mean depressive symptoms /27 (SD)	11.53 (7.39)	4,212
Mean total symptoms /36 (SD)	16.00 (9.69)	4,195
<b>Psychotic-like experiences (PLEs; past 6 months)</b>		
Mean APSS score (SD)	1.32 (1.50)	3,902
Clinical risk group (APSS $\geq 2$ )	29.19%	3,902
<b>Lifetime suicidality &amp; self-harm</b>		
% self-harmed	38.75%	4,191
% suicidal ideation	41.99%	4,180
% attempted suicide	11.14%	4,167

### Prevalence of mental health issues in context

The rates of many mental health problems were higher than other studies of young people in Ireland. In Table S2 we compare our findings to Irish studies which were comparable in terms of sample age and mental health measures used, some of which are summarised below.

Approximately 29% of adolescents in this 2021 survey said their mental health was 'bad' or 'very bad' compared to 21% of adolescents answering the same question in 2020 from the West of Ireland (Table S2). Similarly, over 25% of participants in this study scored 'very high' on the SDQ ( $>20$ ), indicating high risk for a diagnosable mental disorder (Goodman et al., 2003, Lundh et al., 2008, Muris et al., 2003, Vugteveen et al., 2021). These values are higher than the range provided by a recent systematic review on the prevalence of mental disorders in Irish children (Lynch et al., 2023), which suggested 4.8–17.8% of children and adolescents in Ireland score above the clinical cut-offs on screening questionnaires indicative of mental disorder.

The average 'total problems' score from the SDQ (15.0) in this study is also higher than the sample average from the Northern Ireland Youth Wellbeing Study (11–16-year-olds) conducted in 2019–2020 (10.1; Bunting et al., 2022) and approximately double the parent-reported average from the Growing Up in Ireland study cohorts (6.5–8.0; Table S2).

Average anxiety and depression scores in this sample were 4.5 and 11.5 respectively, as measured by the 12-item version of the SCL-90. In comparison, a repeated youth survey in Iceland (2006–2016) also used a 12-item version of the SCL-90, and found average anxiety scores ranged from 1.9 to 2.5, and depression scores ranged from 6.2 to 7.3, depending on the year (Thorisdottir et al., 2017). That study also showed that the rise in depressive and anxiety symptoms over time (2006–2016) was accelerated in females, compared to males. Further waves of these Icelandic and Irish

surveys will clarify whether these results represent an effect of country (symptoms in Ireland  $>$  Iceland), chronological time (symptoms in 2021  $>$  2016), or both.

While PLEs are relatively common in childhood and can be harmless, individuals reporting PLEs in childhood/adolescence have a 3-fold increased risk for developing a mental disorder, compared to those without PLEs (Healy et al., 2019). We found that 29% of this sample reported clinically relevant PLEs (scores of 2+ on the APSS) in the past 6 months. This value is more than double the prevalence rates suggested by previous studies in Ireland (Table S2) and is triple the prevalence rates suggested by international meta-analyses (9.8% among 11–18-year-olds [Healy et al., 2019]; 7.5% among 13–18-year-olds [Kelleher et al., 2012]). The reason for this large difference is currently unclear, but we recommend close surveillance of PLEs in future surveys of this population. In future waves of this survey (2023, 2025), we plan to include more detailed questions around the PLEs (e.g. distress experienced).

The average rate of lifetime deliberate self-harm was 39% in this sample (and 50% among females). This is higher than the average for adolescents aged 12–19 in the MyWorld2 survey (23%) and more similar to the that observed among young people aged 18–25 in MyWorld2 (38%; Dooley et al., 2019). This cross-study comparison supports recent findings from the National Self-harm Registry, that the age of onset of self-harm is decreasing in Ireland (Griffin et al., 2017, Joyce et al., 2020), and is consistent with reports that more adolescents are presenting to acute hospital services with self-harm since COVID-19 (The Irish Times 2023, Wong et al., 2023). These worrying trends highlight the need for preventative interventions in youth settings in Ireland which are effective in preventing self-harm.

Rates of lifetime suicidal ideation (42%) were similar to those found by the MyWorld2 survey, conducted several years prior (2018–9). In that survey, 41% of adolescents between 12 and 19 years responded 'yes' to the question 'Have you ever thought about taking your life, even though you would not do it?' (Dooley et al., 2019). Other youth mental health surveys have phrased the question on suicidal ideation with a stronger focus on intent (e.g. 'Did you ever seriously consider attempting suicide?') and these studies have observed lower rates of endorsement ( $\sim 20\%$ ; Centers for Disease Control and Prevention 2023; Planet Youth West <https://planetyouth.ie>). This emphasises the importance of question wording when comparing rates of suicidal ideation across studies. We have included additional questions on suicidal ideation in our 2023 survey, to improve comparability with other studies.

Rates of lifetime suicidal attempt observed in this study (11%) were higher than all previous Irish adolescent estimates, including the MyWorld2 survey (6%; Dooley et al., 2019), Planet Youth West (8–9%; Table S2) and the Saving and Empowering Young Lives in Europe study (4%; McMahan et al., 2017). It may be that differences in the sample age and calendar year in which data was collected explain differences in rates of suicidal attempt across studies (Table S2). However, there is also international evidence that youth suicide attempts are increasing since the early 2010s, particularly in the United States (Centers for Disease Control and Prevention 2023, Van Meter et al., 2023). The potential rising trend of suicidal attempt among Irish adolescents is of grave concern and requires close monitoring, particularly as Ireland already has the 4<sup>th</sup> highest teenage suicide rate among EU/OECD countries (Brazier 2017).

**Table 3.** Multivariate model predicting six binary mental health outcomes. Estimates are adjusted odds ratios (and their 95% confidence interval)

	“Bad” or “Very bad” mental health	Very high SDQ score <sup>d</sup>	Psychotic-like experiences <sup>e</sup>	Self-Harm	Suicidal ideation	Suicidal attempt
<b>Demographic Factors</b>						
Male (reference)	-	-	-	-	-	-
Female	2.80 (2.35–3.34)**	2.57 (2.14–3.10)**	1.23 (1.04–1.45) <sup>§</sup>	2.74 (2.34–3.21)**	2.15 (1.84–2.51)**	2.11 (1.63–2.73)**
NB, trans or PNTS	9.44 (6.26–14.24)**	7.31 (4.92–10.86)**	2.46 (1.69–3.58)**	6.37 (4.21–9.65)**	6.70 (4.30–10.44)**	5.62 (3.63–8.70)**
Lives in urban area <sup>a</sup>	0.98 (0.80–1.20)	1.51 (1.15–1.98)*	1.63 (1.30–2.03)**	1.57 (1.26–1.95)**	1.30 (1.07–1.58) <sup>§</sup>	1.38 (1.01–1.88) <sup>§</sup>
Age 15/16 (reference)	-	-	-	-	-	-
Age <15	1.04 (0.79–1.37)	0.87 (0.65–1.16)	1.06 (0.82–1.36)	0.94 (0.73–1.20)	0.85 (0.66–1.09)	1.04 (0.72–1.51)
Age >16	0.93 (0.72–1.20)	0.81 (0.61–1.06)	0.75 (0.59–0.97) <sup>§</sup>	1.19 (0.95–1.51)	1.10 (0.88–1.38)	1.50 (1.09–2.08) <sup>§</sup>
<b>Socio-economic Factors</b>						
Relative financial poverty <sup>b</sup>	2.23 (1.75–2.85)**	2.07 (1.62–2.65)**	1.73 (1.37–2.19)**	1.75 (1.38–2.23)**	2.06 (1.61–2.62)**	2.29 (1.72–3.05)**
Low maternal education <sup>c</sup>	1.24 (1.03–1.49) <sup>§</sup>	1.21 (1.00–1.47) <sup>§</sup>	1.00 (0.84–1.20)	1.00 (0.85–1.19)	0.90 (0.76–1.06)	1.57 (1.23–2.00)**
Ethnicity not white Irish	1.21 (1.00–1.46)	1.02 (0.84–1.25)	1.50 (1.26–1.80)**	1.52 (1.28–1.81)**	1.63 (1.37–1.93)**	1.76 (1.37–2.27)**
<b>Effects of COVID-19</b>						
Worse family relationships	1.86 (1.54–2.23)**	1.69 (1.40–2.04)**	1.60 (1.33–1.91)**	1.61 (1.35–1.93)**	1.75 (1.47–2.08)**	1.77 (1.38–2.28)**
Worse friend relationships	1.46 (1.22–1.74)**	1.75 (1.46–2.10)**	1.46 (1.23–1.73)**	1.42 (1.20–1.67)**	1.45 (1.23–1.70)**	1.08 (0.84–1.38)
Worse physical health	1.76 (1.48–2.09)**	1.59 (1.33–1.90)**	1.12 (0.95–1.33)	1.47 (1.25–1.73)**	1.51 (1.29–1.77)**	1.46 (1.14–1.87)*
Worse school experience	1.43 (1.18–1.72)**	1.11 (0.91–1.34)	(0.82–1.17)	1.07 (0.90–1.26)	1.23 (1.04–1.45) <sup>§</sup>	1.30 (0.99–1.71)

<sup>a</sup>Urban = North County Dublin; reference ‘rural’ group = Monaghan and Cavan.

<sup>b</sup>Participant considers their family worse off than others.

<sup>c</sup>Mother completed primary or secondary school, but no further education.

<sup>d</sup>SDQ total problems score of 20 or more.

<sup>e</sup>APSS score of 2 or more.

<sup>§</sup> $p < .05$  (not significant at Bonferroni-corrected threshold).

\* $p < .007$  (Bonferroni-corrected threshold).

\*\* $p < .001$ .

### Gender differences

Across all mental health outcomes included in this study, the strongest predictor of each was having “other” or non-cis gender identity (trans, non-binary, undisclosed). There is therefore a significant mental health risk associated with gender-diverse identities, even after controlling for other well-known risk factors such as household financial deprivation, and the effects of COVID-19 (Table 3). Males had the lowest rates of all poor mental health outcomes, those identifying as non-binary/trans had the highest, and females had intermediate rates (Fig. 2).

Particularly concerning among the non-binary/trans group were the high prevalence of lifetime self-harm (73%) and suicidal attempt (36%). International evidence strongly supports the association between trans or non-conforming gender identity and mental health difficulties in youth (Becerra-Culqui et al., 2018; Anderssen et al., 2020) as does the limited data from Ireland (Cullinan et al., 2022; Kearns et al., 2022). As increasing numbers of young people are identifying as trans and non-binary in contemporary Ireland (Arcelus et al., 2015; Judge et al., 2014), this should be a key group of concern for mental health policy and community interventions.

### COVID-19 as a potential explanation

The proximity of this survey to the COVID-19 pandemic may partially explain why we found relatively high rates of many mental health outcomes in this sample (Fig. 1). Future waves of this survey (2023, 2025) will determine the extent to which these results were specific to teenagers in 2021.

Over half of participants reported that COVID-19 had detrimental effects on their mental health (Table 1). Of all investigated areas of mental health, a worsening of family relationships was the COVID-19-related effect most strongly related to poor mental health outcomes (Table 3). This is consistent with previous literature on the strong impact of child-parental conflict on adolescent psychopathology, generally (Healy et al., 2022) and in the context of COVID-19 (Sinko et al., 2022). In the event of another pandemic, national social services should consider additional supports for children and adolescents in households with a history of parent-child conflict and parent mental health problems.

### Strengths & Limitations

The strengths of this study include (1) the inclusive recruitment of seldom-heard voices of young people from non-traditional school

settings (i.e. Youthreach); (2) use of the SDQ, which is well-validated and highly utilised in international youth mental health research; (3) control for potential confounds such as effects of the COVID-19 pandemic and socioeconomic factors; and (4) conservative acknowledgement of multiple testing with correlated outcomes (Bonferroni).

The limitations of the study are that: (1) the sample was not random selected from all youth in Ireland and 21% of invited young people did not consent to take part, limiting national generalisability; (2) our list of mental health outcomes was not exhaustive, for instance not capturing eating or neurodevelopmental disorders; and (3) some children with reading or attentional problems may have been less likely to complete the survey accurately or fully, which may bias results. Future waves of this survey will screen for special education needs, learning disabilities and neurodevelopmental conditions.

## Conclusion

Our results suggest higher rates of mental health problems among adolescents in Ireland than previously estimated. The consequences of rising emotional problems, self-harm, and suicidality among young people in Ireland may be disastrous, both in terms of human and economic costs. Our results point to a need for careful monitoring of these trends, and improved community-level youth mental health services.

**Supplementary material.** The supplementary material for this article can be found at <https://doi.org/10.1017/ipm.2024.16>.

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**Competing interests.** The authors declare none.

**Ethical standards.** The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committee on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008. The authors assert that ethical approval for publication of this study has been provided by their local Ethics Committee.

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