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College Student Mental Health and Wellbeing Prior to and during the COVID-19 Pandemic

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Abstract: Student mental health was a growing concern globally prior to the onset of the COVID-19 pandemic. The aim of this study was to assess the impact of the pandemic and associated restrictions on the psychological wellbeing of college students. Baseline data were collected pre-pandemic in September 2019 among students attending a university in Northern Ireland and an Institute of Technology in the Republic of Ireland. Surveys were also conducted with this cohort during the pandemic, at the start of the academic years 2020 and 2021 (499 students fully completed all three waves). A follow-up survey was conducted at the end of their third year, in summer 2022 ($n = 229$). High levels of mental health problems were already present among students commencing college. The subsequent pandemic had a very negative impact on student's academic experience and other aspects of life. Rates of depression (PHQ-9) increased significantly from the onset of the pandemic and remained high. Anxiety (GAD-7) initially decreased but then escalated at the end of college. The study highlights the importance of early intervention and makes recommendations for addressing the needs of students during times of stress. Additional supports may be required to deal with the long-lasting impact of the pandemic.

Keywords: college students; mental health; depression; anxiety; pandemic; COVID-19 restrictions



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1. Introduction

Prior to the COVID-19 pandemic, research studies were reporting high levels of mental health problems among the college student population. Cross-national data from the World Mental Health International College Student Initiative (WMH-ICS) revealed that almost one third of students were beginning their university experience with pre-existing mental health conditions such as depression or anxiety, with 35% screening positively for a lifetime disorder and 31% screening positively for a 12-month disorder [1]. College students in Northern Ireland reported one of the highest percentages of lifetime (39.1%) and 12-month (36.9%) mental health disorders among all the countries studied [1]. Indeed, the Ulster University Student Wellbeing Study (UUSWS), conducted as part of the WMH-ICS in 2015, reported high levels of a wide range of mental health problems and suicidal behaviour among first year undergraduate students in Northern Ireland [2,3]. A cross-sectional study examining undergraduate students from the Republic of Ireland also reported high rates of

suicidal ideation and depressive symptoms, with just over a quarter of students reporting suicidal ideation, and over half of the students reporting depressive symptoms [4].

Starting college often coincides with the transition into young adulthood for many students and can prove to be a stressful time [5]. Students will experience many new aspects to life when they commence college, such as establishing new social relationships [5], adapting to a new social environment, which may include alcohol or drug use, becoming accustomed to a less structured academic setting [6], having to manage their own finances, and perhaps living away from home, family, and friends, for the first time. Such issues may impact on their mental health and wellbeing, which in turn may impact their college experience, academic journey, and future career.

The onset of the COVID-19 pandemic led to further unanticipated stressors for college students. The pandemic brought many changes to the social and academic lifestyle of students through the disruption of studies, with classes and exams moving to online platforms. Social distancing policies and the closure of many establishments resulted in an increase in social isolation for students [7]. Some students moved home, away from the university environment, while others were unable to return home and were isolated from family and friends, relying on social media and online communication platforms to keep in touch. Restrictions associated with the pandemic meant that many students missed out on opportunities to interact with academic staff and peers, and they were unable to enjoy the social aspects of college life. Furthermore, while efforts were made to try to ensure that students gained the knowledge and skills they required for their course, it was difficult for them to gain hands-on experience and practical skills in some instances. Uncertainty around exams and assignments was also an issue. The existing stress of university life, in tandem with the new stressors introduced by the pandemic, exacerbated the susceptibility to poor mental health for many [8].

Student populations among different regions, such as France [9], America [10], and Mexico [11], reported significant increases in depression and anxiety rates during the pandemic, regardless of differing social and academic situations. For example, a study of Mexican medical students reported that depression rates increased from 19.84% to 40.8% from April 2020 (after the onset of the pandemic) to December 2020 [11]. Furthermore, a study of French students, conducted in April/May 2020, near the start of the pandemic, found that 27.5% of students reported high levels of anxiety and 16.1% reported severe depression [9].

Multiple stressors were identified that contributed to increased stress, anxiety, and depression levels during the pandemic, such as concerns related to academic performance, sleep pattern disruptions, worrying about the health of themselves and their family, concentration difficulties, and increased social isolation [12]. For example, loneliness (33%), uncertainty (12%), hopelessness (10%), and concerns about their academic performance (8%) were related to depressive thoughts among this student cohort [12]. Lack of physical activity and not living with family also contributed to poor mental health among students during the pandemic [9] and increased rates of depression and anxiety were also associated with COVID-19-related news during this period [10].

It should be noted, however, that much of the research looking at the impact of the COVID-19 pandemic on student mental health was conducted during the pandemic, with little baseline data for comparison purposes [13–15]. With baseline mental health data predating the COVID-19 pandemic, the Student Psychological Intervention Trial (SPIT), which was conducted in a four-campus university in Northern Ireland and in a third-level Institute of Technology in the Republic of Ireland as part of the WMH-ICS, is well-placed to assess student mental health prior to and during the pandemic. The study had already reported high rates of mental health disorders, substance abuse, and suicidal behaviour among students beginning third-level education, with 15.7% meeting the criteria for lifetime major depressive episode and almost one third of students experiencing lifetime suicide ideation [16].

Initial analyses of SPIT data comparing year one, collected in 2019, prior to the pandemic, with year two data collected in 2020 during the pandemic, revealed that rates of depression increased significantly overall, but especially among students attending college in NI [17]. However, contrary to what may have been anticipated, rates of anxiety decreased significantly among this cohort during this period [17]. As the pandemic continued to cause disruption into the third year of study, differences in mental health prevalence in year one, two, and three warranted further investigation. Furthermore, important information in relation to their experiences, both academic and personal, during their time at college, and how the pandemic may have impacted on these experiences could be obtained from this unique cohort of students.

The main aim of this current research was to investigate mental health symptoms in a cohort of students as they progressed through three years of third-level education, prior to and during the COVID-19 pandemic, with a particular focus on levels of depression and anxiety, in order to monitor any changes over this time period. The study also aimed to ascertain the impact the pandemic may have had in relation to their overall academic experience, plans for their future career, and general lifestyle factors.

2. Material and Methods

2.1. Survey Design and Procedure

The Student Psychological Intervention Trial (SPIT) commenced in September 2019 at a four-campus university in Northern Ireland and a third-level Institute of Technology in the Republic of Ireland. The longitudinal study was conducted as part of the World Mental Health International College Student Initiative (WMH-ICS). This study surveyed students online when they started their first, second, and third years at college. Student participants were also asked to complete a short online survey at the end of their third year at college in order to ascertain the impact the pandemic may have had on their overall college experiences. Students recruited at baseline received a college-branded hooded sweatshirt as an incentive and participants who completed the follow up surveys received a GBP 10 gift voucher at each time point. Ethical approval was obtained from the Ulster University Research Ethics Committee (REC 19/0072).

2.2. Sample

Almost 2000 students completed written informed consent. In total, 1828 students fully completed the online mental health survey in year one. The completed response rate for UU was approximately a quarter of the total intake while over 40% of new students in the ROI college participated in the study. The average age of participants was 21 (age range 18–65), with females representing 58% of the sample and 88.3% identifying as heterosexual. Overall, 96.8% of students were registered on full time courses, with 3.2% engaging part-time. Almost half the sample said that they were not dating anyone, and only 4.4% were married. All participants were over the age of 18 and were English-speaking, first-year undergraduate students at initial recruitment. They were residents of the UK or the Republic of Ireland. International students, those under the age of 18, and students repeating first year were excluded from participating in line with WMH-ICS guidelines for recruitment.

Follow-up mental health surveys of the same participants were carried out in September 2020 and September 2021 with 939 and 739 students fully completing the surveys, respectively. Overall, 499 participants fully completed the survey in all three years. The short additional survey at the end of third year was completed by 229 students. There was little variation in demographic characteristics in relation to age and gender among those who completed the survey at the different time points.

Variables and Instruments

The main survey was developed by the WMH-ICS from the WMH-Composite International Diagnostic Interview Screening Scales (CIDI-SC) [18]. In the current study,

symptoms of depression were measured across the various time points using the PHQ-9 [19]. Symptoms of generalised anxiety disorder were measured using the GAD-7 [20]. At baseline, the Cronbach's α for the PHQ-9 was 0.975 and for the GAD-7 it was 0.980. The questions in the PHQ-9 and GAD-7 relate to problems they may have experienced in the previous two weeks. Both scales are scored on a 0–3 Likert scale, with higher scores representing more severe symptoms. Individuals with scores of greater than or equal to 10 are determined to meet the criteria for the disorder.

In the survey at the end of year three, student participants were also asked how they felt the COVID-19 pandemic and the associated restrictions may have impacted their college experiences (15 questions and their life in general (8 questions—)). The questions were rated on a 5-point Likert scale ranging from very positive to very negative. Students had the option of indicating that two of the questions related to placement experience or hands-on/practical experience were not applicable.

2.3. Data Analysis

Qualtrics software was used to collect survey data and survey responses were cleaned and coded. The analyses were undertaken using IBM SPSS Statistics (version 26). A one-way repeated measures ANOVA was conducted to compare the PHQ-9 and GAD-7 scores from data collected at the beginning of each academic year. Wilks' Lambda was the multivariate test utilised to examine statistically significant effects for time and the effect size was explored utilising Partial Eta squared. Post hoc tests were then conducted to identify differences between the time points. Only students who fully completed the PHQ-9 or the GAD-7 questionnaires in all three years were included in this analysis ($n = 499$). The mean scores were also calculated for the survey at the end of year three. The GAD-7 and PHQ-9 scores were also totalled and those with a score of greater than or equal to 10 were determined to have depression or generalised anxiety disorder and the prevalence rates of disorders were examined. Descriptive statistics explored the impact of the COVID-19 pandemic on their college experiences and other aspects of life.

3. Results

3.1. Depression (PHQ-9) Scores

When considering the data collected at the start of each academic year, the university year in which the questionnaire was completed had a significant effect on depression scores as measured by the PHQ-9 ($p < 0.0005$, Wilks' Lambda = 0.919, $F(2, 495) = 21.790$, multivariate partial eta squared = 0.081). The sample was split by cohort to compare the differences in PHQ-9 scores between the three years in Northern Ireland (NI) and the Republic of Ireland (ROI). In NI, significant differences were found for PHQ-9 scores ($p < 0.0005$, Wilks' Lambda = 0.874, $F(2, 408) = 29.346$, multivariate partial eta squared = 0.126). However, in ROI, there was no significant effect ($p = 0.741$, Wilks' Lambda = 0.993, $F(2, 90) = 0.300$, multivariate partial eta squared = 0.007).

Overall, PHQ-9 scores were significantly lower in year one ($M = 4.67$) than year two ($M = 6.44$, $p = 0.0005$) and year three ($M = 6.05$; $p = 0.0005$). There was no significant difference in scores between year two and three (Table 1). In NI, PHQ-9 scores were significantly lower in year one ($M = 4.33$) than year two ($M = 6.42$; $p = 0.0005$) and three ($M = 6.04$; $p = 0.0005$); however, there was no significant difference between year two and three. In ROI, there was no significant difference in scores between any of the years (Table 1), although it should be noted that the PHQ-9 score in the ROI was much higher than in NI in year one.

When examining the smaller sample of participants who completed the end of year three survey ($n = 229$), the average PHQ score was very high at 7.41 (NI 7.25, ROI 8.04). Further analysis revealed that 30.1% of participants ($n = 69$) met the criteria for depression ($\text{PHQ} \geq 10$), with 29.4% of NI participants ($n = 53$) and 32.7% of ROI participants ($n = 16$) meeting the criteria; these are much higher than the prevalence rate of 14.9% reported when they first started college (13.1% NI; 21.6% ROI).

Table 1. Descriptive statistics for depression (PHQ-9) scores in year 1, year 2, and year 3 for Northern Ireland (NI) and the Republic of Ireland (ROI).

| PHQ-9 Scores | N | Total M | SD | N | NI M | SD | N | ROI M | SD |
|-------------------|-----|------------|------|-----|---------|------|----|----------|------|
| Year 1 (2019) | 497 | 4.67 | 5.43 | 406 | 4.33 | 5.20 | 91 | 6.18 | 6.17 |
| Year 2 (2020) | 497 | 6.44 | 5.63 | 406 | 6.42 | 5.59 | 91 | 6.52 | 5.81 |
| Year 3 (2021) | 497 | 6.05 | 5.74 | 406 | 6.04 | 5.70 | 91 | 6.08 | 5.92 |
| End Year 3 (2022) | 229 | 7.41 | 6.19 | 180 | 7.25 | 5.98 | 49 | 8.04 | 6.97 |

N, number of participants surveyed; M, mean; SD, standard deviation.

3.2. Anxiety (GAD-7) Scores

Overall, the university year in which the questionnaire was taken had a significant effect on anxiety (GAD-7) scores ($p = 0.004$, Wilks' Lambda = 0.978, $F(2, 497) = 5.623$, multivariate partial eta squared = 0.022). The sample was split by cohort to compare the differences in GAD-7 scores between the three years in NI and ROI. In NI, significant differences were found for GAD-7 scores ($p = 0.003$, Wilks' Lambda = 0.973, $F(2, 411) = 5.759$, multivariate partial eta squared = 0.020). However, in ROI, there was no significant effect ($p = 0.249$, Wilks' Lambda = 0.980, $F(2, 84) = 0.856$, multivariate partial eta squared = 0.020).

GAD-7 scores were significantly higher in year one ($M = 6.70$) in comparison to year three ($M = 5.58$; $p = 0.003$), but there was no significant difference between year one and two, and year two and three (Table 2). In NI, GAD-7 scores were significantly higher in year one ($M = 6.83$) in comparison to year two ($M = 5.78$; $p = 0.012$) and year three ($M = 5.58$; $p = 0.003$). However, there was no significant difference between year two and three. In ROI, there was no significant difference in scores between any of the years (Table 2).

Table 2. Descriptive statistics for anxiety (GAD-7) scores in year 1, year 2, and year 3 for Northern Ireland (NI) and the Republic of Ireland (ROI).

| GAD-7 Scores | N | Total M | SD | N | NI M | SD | N | ROI M | SD |
|-------------------|-----|------------|------|-----|---------|------|----|----------|------|
| Year 1 (2019) | 499 | 6.70 | 6.54 | 413 | 6.83 | 6.67 | 86 | 6.08 | 5.87 |
| Year 2 (2020) | 499 | 5.90 | 5.24 | 413 | 5.78 | 5.17 | 86 | 6.50 | 5.55 |
| Year 3 (2021) | 499 | 5.58 | 5.25 | 413 | 5.58 | 5.23 | 86 | 5.69 | 5.37 |
| End Year 3 (2022) | 229 | 6.85 | 5.73 | 180 | 6.67 | 5.62 | 49 | 7.51 | 6.15 |

N, number of participants surveyed; M, mean; SD, standard deviation.

When examining the smaller sample of participants who completed the end of year three survey ($n = 229$), the average GAD score was very high at 6.85 (NI 6.67, ROI 7.51). Further analysis revealed that 25.8% of participants ($n = 59$) met the criteria for generalised anxiety disorder ($GAD \geq 10$), with 23.9% of NI participants ($n = 43$) and 32.7% ROI participants ($n = 16$) meeting the criteria; these results are similar to the overall prevalence rate of 25.5% reported when they first started college. This was lower than the 26.2% rate reported in NI at the start of year 1 but higher than the 22.6% rate reported in ROI.

Figure 1 shows the comparison of both depression (PHQ-9) and anxiety (GAD-7) scores among this cohort from the start of year one to the end of year three. Anxiety scores were much higher than depression scores when students first started college. Depression scores increased during this period of time, while anxiety decreased at the start of year two and year three but increased again towards the end of year three.

3.3. Impact of Pandemic on College Experiences

Students ($n = 229$) were asked how much of an impact they thought the COVID-19 pandemic and the associated restrictions had on their college experiences in a number of areas (Figure 2; Table 3). As might be expected, the pandemic had very negative impact on social aspects of college life, having a sense of belonging, and having the opportunity

to interact with others. Almost three quarters of those surveyed said that it had had a negative (29.3%) or very negative impact (43.2%) on social aspects of college life. Over half of the participants said that the pandemic had had an impact on opportunities for summer work, internships, or exchanges, or that it had impacted on gaining hands-on experience or practical work. However, it should be noted that a sub-group of around 10% of participants said that it had had a very positive impact on obtaining either hands-on experience or placement experience.

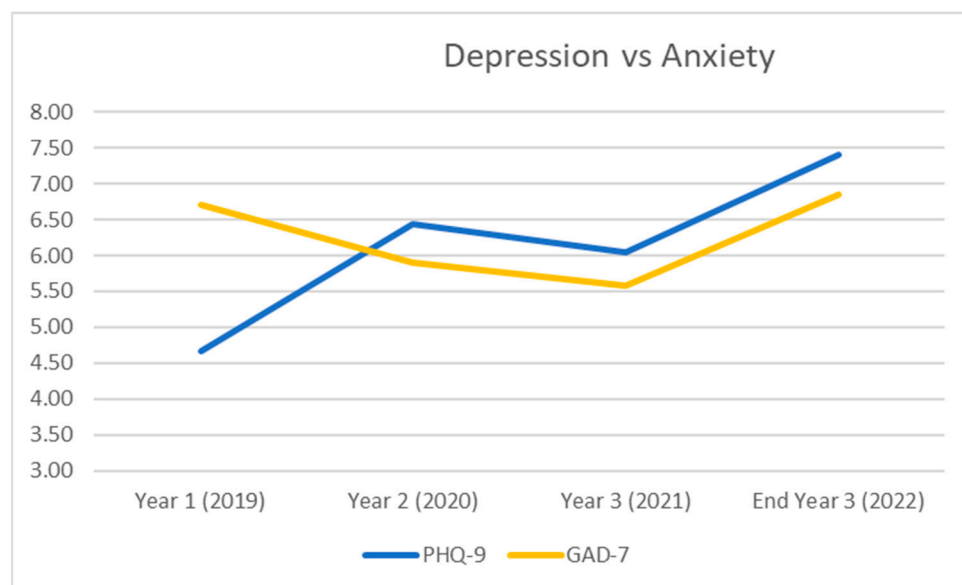


Figure 1. Comparison of mean depression and anxiety scores from start of year 1 to end of year 3.

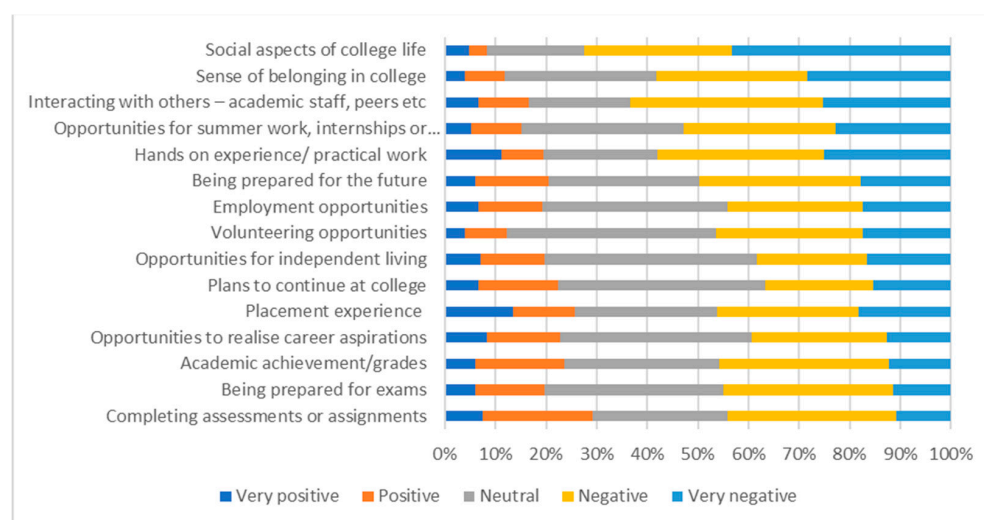


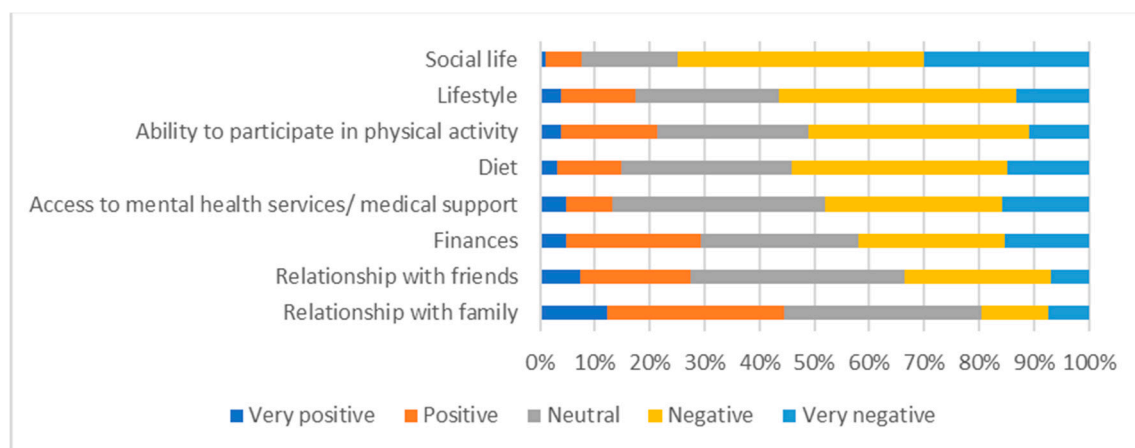
Figure 2. Impact of the COVID-19 pandemic and associated restrictions on college experiences ($n = 229$).

3.4. Impact of Pandemic on Other Aspects of Life

When asked about life outside college, students reported that it had had a very negative impact on their social life, as shown in Figure 3 and Table 4. While the pandemic generally had a positive impact on family relationships, relationships with friends were negatively impacted. The pandemic also had a negative impact on their diet and ability to participate in physical activity, as well as the ability to access mental health services.

Table 3. Impact of the COVID-19 pandemic and associated restrictions on college experiences ($n = 229$).

| | Very Positive % | Positive % | Neutral % | Negative % | Very Negative % |
|---|-----------------|------------|-----------|------------|-----------------|
| Social aspects of college life | 4.8 | 3.5 | 19.2 | 29.3 | 43.2 |
| Sense of belonging in college | 3.9 | 7.9 | 30.1 | 29.7 | 28.4 |
| Interacting with others—academic staff, peers, etc. | 6.6 | 10.0 | 20.1 | 38.0 | 25.3 |
| Opportunities for summer work, internships or exchanges | 5.2 | 10.0 | 31.9 | 30.1 | 22.7 |
| Hands on experience/practical work (10.9% not applicable) | 10.0 | 7.4 | 20.1 | 29.3 | 22.3 |
| Being prepared for the future | 6.1 | 14.4 | 29.7 | 31.9 | 17.9 |
| Employment opportunities | 6.6 | 12.7 | 36.7 | 26.6 | 17.5 |
| Volunteering opportunities | 3.9 | 8.3 | 41.5 | 28.8 | 17.5 |
| Opportunities for independent living | 7.0 | 12.7 | 41.9 | 21.8 | 16.6 |
| Plans to continue at college | 6.6 | 15.7 | 41.0 | 21.4 | 15.3 |
| Placement experience (18.8% not applicable) | 10.9 | 10.0 | 22.7 | 22.7 | 14.8 |
| Opportunities to realise career aspirations | 8.3 | 14.4 | 38.0 | 26.6 | 12.7 |
| Academic achievement/grades | 6.1 | 17.5 | 30.6 | 33.6 | 12.2 |
| Being prepared for exams | 6.1 | 13.5 | 35.4 | 33.6 | 11.4 |
| Completing assessments or assignments | 7.4 | 21.8 | 26.6 | 33.2 | 10.9 |

**Figure 3.** Impact of the COVID-19 pandemic and associated restrictions on various areas of life ($n = 229$).**Table 4.** Impact of the COVID-19 pandemic and associated restrictions on various areas of life ($n = 229$).

| | Very Positive % | Positive % | Neutral % | Negative % | Very Negative % |
|--|-----------------|------------|-----------|------------|-----------------|
| Social life | 0.9 | 6.6 | 17.5 | 45.0 | 30.1 |
| Lifestyle | 3.9 | 13.5 | 26.2 | 43.2 | 13.1 |
| Ability to participate in physical activity | 3.9 | 17.5 | 27.5 | 40.2 | 10.9 |
| Diet | 3.1 | 11.8 | 31.0 | 39.3 | 14.8 |
| Access to mental health services/medical support | 4.8 | 8.3 | 38.9 | 32.2 | 15.7 |
| Finances | 4.8 | 24.5 | 28.8 | 26.6 | 15.3 |
| Relationship with friends | 7.4 | 20.1 | 38.9 | 26.6 | 7.0 |
| Relationship with family | 12.2 | 32.3 | 35.8 | 12.2 | 7.4 |

4. Discussion

Rates of mental health problems in students were high before the emergence of the COVID-19 pandemic, and many universities were already struggling with the growing mental health crisis [21]. As part of the WMH-ICS, the SPIT study collected data from students in September 2019, when they started third-level education, and surveyed them again throughout their time at college. This allowed for the identification of any changes in mental health over the course of their studies. This was particularly important as the year one survey was conducted prior to the COVID-19 pandemic. Findings from the follow-up timepoints allowed investigation of the impact of the pandemic on student wellbeing and educational experiences.

The SPIT study had already found high rates of mental health problems at baseline [16]. Rates of depression further increased, however, in years two and three, which coincided with the COVID-19 pandemic. Interestingly, anxiety rates decreased significantly during this same time period, confirming initial observations of this cohort [17]. Notably, however, there was an increase in anxiety levels in the end of year three survey and depression levels increased further.

Many students can find the months leading up to commencing college very challenging, as they may have been completing exams and awaiting results, or they may be anxious about taking the step into further education. This may partially explain the high rates of mental health problems found in the baseline study, and the lower rates of anxiety reported at the start of year two and year three. The increase in depression scores across this period would suggest, however, that the pandemic may have contributed to low mood. Students reported that the pandemic and associated restrictions had a very negative impact on their social life, sense of belonging, interacting with others, and relationships with friends, as well as their plans for the future, all of which may have affected their mood and overall wellbeing.

A recent meta-analysis of studies which considered the association between COVID-19 restrictions and mental health outcomes in the general population during the first year of the pandemic reported increases in depression and loneliness, but not anxiety [22], which concurs with the preliminary findings from the SPIT study, comparing year one and year two data [17]. Another meta-analysis which considered studies involving children and young people, reported that the prevalence rates of depression and anxiety were higher in studies where the data were collected later in the pandemic, particularly among older adolescents [23], which is also in line with the findings in this current study.

Other recent studies have reported increases in both depression and anxiety among student cohorts. A longitudinal study investigating student mental health, among 419 undergraduate students, before and during the pandemic (June/July 2020), reported an increase in both depression, from 21.5% to 31.7%, and anxiety, from 18.1% to 25.3% [21]. In another study, conducted with Indian medical students ($n = 217$), anxiety also significantly increased between baseline data collected prior to the pandemic in December 2019 and during the pandemic in June 2020 [24]. These increases correlated with the first outbreak of COVID-19, and the switch from on-campus to remote learning. However, it should be noted that these follow-up surveys were conducted during examination periods, which would already be a stressful time for students, so it is difficult to separate the impact of pandemic-related stressors versus academic pressures.

While anxiety scores decreased at the start of year two and year three in the current study, in comparison to the rates reported at baseline, the scores increased at the end of year three. Depression scores also increased even further. Therefore, the time when the survey was conducted must be considered [25]. As most students were coming to the end of their time at college, the increase in mental health issues may reflect increased concern about pending assignments and upcoming exams [25]. Moreover, as the majority of this cohort were completing college, they may have been concerned about making the transition to the next stage in their lives following college [26] and their future prospects. Indeed, many

students in this study reported that the pandemic had a very negative impact on their college experiences and plans for the future.

Students endured many changes to learning during this time, with the disruption of courses, the move to an online learning environment, and increased social isolation. Furthermore, the pandemic may have impacted on their future career prospects due to a reduction in practical experience, laboratory work, etc., for some courses, as a result of not being on campus for the majority of their time at college. Therefore, it will be important for these students to have support to gain these skills in the future.

The elevated rates found among students in the ROI in the end of year three survey may relate to the fact that the students were required to complete in-person exams for the first time since the onset of the pandemic, while students in NI completed their exams online. Research has reported that many students find traditional assessments stressful, and these can impact negatively on student wellbeing [27,28]. There have been calls for assessment methods to be re-considered in light of recent findings. It has been suggested that the pandemic may have provided a unique opportunity to rethink higher education systems [29,30], with recommendations that educators should consider what students want and need, following on from the pandemic, and that flexibility is key.

The current study found that the pandemic also had a negative impact on students' ability to participate in physical activity and their diet; these are key lifestyle factors affecting physical and mental health. In addition, it impacted their ability to access mental health services. Together these could have long-term repercussions in relation to both their physical and mental health and wellbeing. Low levels of physical activity, poor sleep, and increased sedentary screen-time during the pandemic are associated with higher levels of mental health problems [31]. Increased uncertainty in relation to education, job security and social connections is also associated with mental health problems among young people [32]. It is important therefore to help young people adapt to change and to tolerate uncertainty. Resilience building programmes within schools and colleges may be beneficial [33,34].

This cohort of students endured significant changes to their learning and their lifestyle during this time, with many repercussions for their wellbeing, relationships with others, and their future career. It is vital that educators learn from these experiences and take a flexible approach, adapting to the needs of students, while providing them with a comprehensive learning environment and the skills to carry forward into their future career.

Student support services could be re-assessed and provided with sufficient resources to ensure that the needs of students are met in a timely and effective manner. While young people who were attending college during the time of the pandemic were negatively affected, the mental health of school-age children was also impacted [35], which may have long-term consequences. It will be important for colleges to be adequately prepared for this cohort when it is time for them to start third-level education.

The use of existing evidence, guided by theoretical frameworks, to create a specifically tailored mental health programme to meet the needs of higher education students has been called for, especially now, due to the long-term mental health effects related to the COVID-19 pandemic [36,37]. It is important to promote mental health awareness for students commencing university life [38] and for colleges to be equipped to address these issues.

Limitations

This longitudinal study has many strengths, but a number of limitations should be considered when interpreting the results. Notably, not all participants fully completed the survey in all three years, leaving a relatively small sample size, particularly for the end of the year three survey; therefore, the findings cannot be generalised to the wider student population. It should also be noted that the questionnaire to ascertain the impact of the pandemic on the student's academic experience, plans for their future career, and general lifestyle factors was developed for this study and was not a validated instrument. Due to the self-report nature of the questionnaires, the prevalence rates for poor mental health

may be inaccurate, as students may not fully report mental health issues due to stigma and unwillingness to disclose that they have a problem. An alternative theory, however, is that sometimes those with mental health problems may be more likely to complete such surveys, due to their personal interest in the topic. This may partially contribute to the high prevalence rates reported, particularly in the end of the year three survey.

It could also be argued that the changes in mental health problems identified among this cohort are a normal consequence of the pressures of progressing through their courses rather than as a consequence of the pandemic, and that the increases are merely coincidental with the pandemic. Further longitudinal research among the student population in the absence of a pandemic would be highly beneficial.

5. Conclusions

This study provides a valuable insight into the mental health and wellbeing of college students, prior to and during the COVID-19 pandemic. The findings demonstrate that the prevalence of mental health disorders among students is a cause for concern for educators, policy makers, practitioners, and those with an interest in student mental health and wellbeing. Comparing the baseline data to the data collected during the pandemic led to the following findings: (1) levels of depression increased very significantly, coinciding with the start of the pandemic and remaining high; (2) levels of anxiety initially decreased, though less significantly, and they rose again above baseline levels at the end of year three. Furthermore, the findings would suggest that students were negatively impacted by the pandemic in relation to both their college life and personal life, which may have long-term implications in relation to their wellbeing and future careers.

Targeted interventions may be beneficial to address these issues and it is important to encourage students to seek help when needed. Third-level education institutions must be equipped to meet the demand for student mental health problems. Ongoing support for those who attended college during this unprecedented time, and left college or graduated after the pandemic may also be warranted. Furthermore, as many children and young adolescents were greatly affected during the pandemic colleges must be braced to address their needs when they commence college over the coming years. Many young people did not have the opportunity to develop social skills which may impact on them during their time at college and indeed into the future. Furthermore, a lack of examinations or assessment experiences may have long-term implications. It may be beneficial for colleges to consider continuing blended learning and alternative assessment approaches to help cater to the needs of their students.

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