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Student Mental Health Crisis: Perceptions of Collegiate Flight Students

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Student mental health is worsening. On top of the mental health stressors that come with being a college student, collegiate flight students are introduced to an entirely separate set of situations that can trigger mental health disorders. Because of these added stressors, poor mental health and suicide rates among flight students are becoming a more prominent issue today. The fear of being grounded by the FAA or having a medical certificate revoked contributes to the withholding of mental health symptoms of pilots. Not only does this create a concern for suicide and self-harm, but it also creates a safety concern regarding a pilot's decision-making skills, putting themselves and others at risk. This study highlights collegiate flight students' perceptions associated with mental health. The results of this survey are examined in the context of three research questions, which guided the researcher's conclusions regarding collegiate flight student mental health. In summary, four significant findings emerged from the study: (1) mental health, including depression, anxiety, and/or stress, is a prominent issue among collegiate flight students; (2) being observed or evaluated by others, financial issues (flight costs), and FAA check rides/practical tests are a main source of depression, anxiety, and/or stress in collegiate flight students (3) collegiate flight students find underreporting of mental health concerns to be more beneficial to their career than seeking treatment, (4) students believe that change is necessary and beneficial, as it relates to the current FAA medical certification process.

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Introduction

Student mental health is worsening. In 2020, a national survey of college students found that 39% will experience depression. One in three reported having had anxiety disorder, and one in seven (13%) said they had thought about suicide in the past year (Healthy Minds Network, 2020). In addition to the mental health stressors that come with being a college student, collegiate flight students are introduced to an entirely separate set of situations that can trigger mental health disorders. Previous research has found the most stressful factor of flight training to be Federal Aviation Administration (FAA) practical tests, followed by financial concerns, written exams, flight course workload, check ride scheduling, and time management (Robertson & Ruiz, 2010). In general, college can be a defying time for eighteen- and nineteen-year-old students, but it can become more so when these students are experiencing mental health issues (Center of Collegiate Mental Health, 2018). Because of added stressors associated with flight training, poor mental health, and suicide rates among collegiate flight students are becoming a more prominent issue today.

Statement of the Problem

In October 2021, a 19-year-old student pilot at the University of North Dakota committed suicide in a plane crash. After his death, the pilot's family found letters he had written to them, revealing that he had been suffering from depression and feared this would cost him a pilot's license. He wrote to his parents that *life without flying was not worth living* (Wurzer & Gordon, 2022). More recently, in January 2024, a 23-year-old flight school student in Addison, Texas, stole a Cessna 172 from his flight school and deliberately crashed the plane into a field 80 minutes later (Hawkins, 2024). While talking with air traffic controllers, the flight student said he was going to cease communications:

> *I'm climbing up through the clouds and then just gonna head out outside of everything. And right about now, you'll realize I'm not going to listen to y'all's instructions. And I'm just heading to east Texas … I'm going to pull the Comm 1 circuit breaker and Comm 2 circuit breaker, soon as I unkey the mic."*

The pilot's death was ruled a suicide (NBCDFW, 2024). Authorities said the student left a suicide note at a residence in Dallas (Godlewski, 2024)

Even the slightest suspicion of a mental health issue can ground a pilot, and if a diagnosis is made where the FAA believes the pilot is unable to sustain flight requirements, the pilot's certificate may be temporarily or permanently revoked by the FAA (Morse & Bor, 2006). This fear of being grounded by the FAA or having a medical certificate revoked contributes to the withholding of mental health concerns of pilots. Therefore, many pilots feel as though they are unable to report their anxiety or depression and seek help without the consequences of losing flight privileges, threatening their careers. Not only does this create a concern for self-harm, but it also creates a safety concern regarding a student pilot's decision-making skills in the cockpit, putting themselves and others at risk.

Purpose of the Study

The purpose of this study was to solicit flight students' perceptions regarding mental health concerns and added stressors associated with collegiate flight training.

Research Questions

The following research questions were addressed by surveying collegiate aviation students' perceptions regarding mental health:

RQ1: Is there a stigma surrounding mental health within the aviation industry, specifically among collegiate flight students?
RQ2: Does collegiate flight training create additional stressors that can exacerbate student mental health?
RQ3: Do collegiate flight students face external pressures that deter them from reporting poor mental health?

Significance of the Study

Mental health has become a more prominent issue within the collegiate aviation environment as student pilots are challenged with a separate set of situations that can trigger mental health problems. Depression, anxiety, and/or stress among collegiate flight students have resulted in a noticeably increasing rate of suicides and thoughts of self-harm in the past few years.

This research study is significant because it provides insight into collegiate flight students' perceptions regarding mental health, as well as providing answers and information regarding the lack of reporting poor mental health among collegiate flight students due to the fear of being grounded or other repercussions that may follow. The answers and information in this study help bring more attention to the mental health of student pilots and can be useful to the collegiate community, as well as the aviation industry, in creating solutions and support systems for pilots struggling with mental health disorders.

Limitations and Assumptions

For this study, the following limitations and assumptions existed:

1. This study was limited based on the voluntary participation of collegiate flight students asked to complete the survey and submit it to the researcher.
2. This study was limited to flight students currently enrolled in a four-year collegiate flight program offering a comprehensive aviation curriculum and awarding a bachelor's degree in professional flight.
3. It is assumed that collegiate flight students answered the survey questions honestly to the best of their knowledge.

Literature Review

Pilot Suicides and Suicidal Thoughts

For decades, commercial airline travel has grown progressively safer. However, one cause of death has stubbornly persisted: airline pilots who intentionally crash in murder-suicides (Levin, 2022). While suicide by airplane is not a common occurrence, it does happen, and suicide is still a very prominent issue within the aviation community. In August 2018, the apparent suicide of a Horizon Air employee on an unauthorized flight with no passengers marked a rare crash for an airliner (Jansen, 2018). With no passengers aboard, this incident was treated like a general aviation accident, where a single pilot crashes a private plane alone. In October 2000, while practicing a series of landings on his Piper airplane, a pilot in South Dakota asked the air traffic controller to tell his family and friends that he loved them. Then, the pilot made a low runway approach, pulled his airplane in a vertical climb, pushed over into a dive, and crashed in the middle of the runway (Siegel, 2005).

Unfortunately, there are more prominent examples of airline-pilot suicides. Most notably, on March 24, 2015, a Germanwings commercial aircraft crashed into the French Alps, killing 150 passengers and crew members. The co-pilot of the flight committed suicide due to a history of psychological issues, including depression. Within the past 25 years, other notable instances of suicide by airplane have occurred, including the crash of EgyptAir Flight 990 in 1999, killing 217 people, and the crash of SilkAir Flight 185 in 1997, killing 104 people (Politano & Walton, 2015). The reason for the disappearance of Malaysia Airlines Flight 370 in March 2014, with 239 people on board, remains a mystery (Jansen, 2018).

As of 2020, pilot murder suicides like these, where it has been concluded through post-accident analysis and investigation that the pilot deliberately crashed a commercial aircraft, had occurred in six instances over the span of 30 years (Vuorio & Bor, 2020). A research study utilizing the National Transportation Safety Board's (NTSB) accident database system found that, of 74,573 entries between 1982 and 2014, 45 records were identified by suicide code, with an additional 30 records that were judged to be suicide based on suicidal notes and coroner findings (Politano & Walton, 2015). However, while these studies show the rate of actual airplane-assisted suicides, they do not measure the prevalence of suicidal thoughts among pilots.

A study conducted in 2016 found that 4% of airline pilots had reported having thoughts of being better off dead or self-harming within the previous two weeks of participating in the study. Furthermore, within this study group, 13% of pilots met the criteria for depression, and 14% of pilots who stated they had worked within the past seven days of participating in the study had met the criteria for depression (Scutti, 2016). Key findings of the study prove that hundreds of airline pilots are managing depression and suicidal thoughts without the possibility of treatment due to the fear of negative career impacts (Wu et al., 2016).

Mental Health and Collegiate Aviation

In 2021, the American College Health Association released its National College Health Assessment and found that just over 70% of college students report moderate to serious

psychological distress (American College Health Association, 2021). In another study, Lipson et al. (2022) found that in 2020-2021, approximately 60% of college students met criteria for one or more mental health problems. The researchers also determined that the mental health of U.S. college students has consistently worsened from 2013-2021, with a 135% increase in depression and a 110% increase in anxiety during these eight years of analyzed data. And the number of college students who met the criteria for one or more mental health problems in 2021 had doubled from 2013 (Colarossi, 2022).

According to a 2022 Student Voice study regarding college student health and wellness, more than half of the 3,000 participating college students stated they experienced chronic stress, which is associated with worse mental health (Flaherty, 2023). The findings of the study revealed that many college students see their professors as the front line of support, as more than 40% of students stated professors have a responsibility to help. Approximately 30% of the students believed it was their own responsibility, and the same percentage of students said campus counselors take responsibility (Flaherty, 2023).

A study conducted (2018) by Robertson and Ruiz surveyed 182 collegiate flight students regarding stress as a collegiate flight student. Even though collegiate flight students make up a small percentage of total U.S. college students, they have similar rates of psychological stress and mental health problems. The survey found a total of twenty-eight sources of stress, with the two most stressful factors being check rides and financial factors. Other factors that were rated as moderately stressful were written exams, flight course workload, check ride scheduling, and time management. In addition, flight students were asked whether these stressors have a positive or a negative effect on their flight performance. Approximately 20% of participating students indicated they believe the stressors have a negative effect, while 30% indicated that the effect depends on the stressor.

Psychological Evaluations and Medical Certificate Requirements

Pilots are required to meet specific medical and mental health standards for each class of FAA medical certificate (Federal Aviation Administration, 2022a). Psychiatric and psychological evaluation is required to meet these standards because mental disorders and the medications used for treatment may produce symptoms or behavior that would make an airman unsafe to perform pilot duties (Federal Aviation Administration, 2021). To obtain a first-class airman medical certificate, pilots must report any health professional visits during the previous three years and disclose all existing physical and psychological conditions and medications (Barajas et al., 2022). Additionally, pilots must show no signs of any other personality disorder, neurosis, or mental condition that may make them unable to safely perform their duties or exercise the privileges related to the medical certificate (National Archives and Records Administration, n.d.).

An Aviation Medical Examiner (AME) medically certifies pilots and is responsible for identifying any causes that call for medical certificate denial (ATP Flight School, 2022). An AME is responsible for identifying mental health conditions that affect judgment, emotional control, or mental capacity with loss of behavioral control (Nash, 2022). However, they are not responsible for conducting psychiatric and psychological evaluations. Separate evaluations and

reports are required from both a qualified psychiatrist and a qualified clinical psychologist. These evaluations and reports then assist the AME with determining an airman's medical qualifications (Federal Aviation Administration, 2021).

FAA regulations prevent an AME from issuing a medical certificate to a pilot who is using antidepressants, antianxiety drugs, antipsychotics, attention deficit hyperactivity disorder medications, mood stabilizers, sedative-hypnotics, stimulants, or tranquilizers, even if they are used for reasons other than mental health (Federal Aviation Administration, 2022b). However, in 2010, the FAA approved four selective serotonin reuptake inhibitors (SSRI) to be used under an FAA Authorization of a Special Issuance (SI) or Special Consideration (SC) of a medical certificate. These FAA-approved SSRIs are (1) Prozac, (2) Zoloft, (3) Celexa, and (4) Lexapro (Barajas et al., 2022). While these four medications are effective in treating depression, no other mental health medications to address other mental health issues are approved by the FAA for pilots. So, an AME may issue an SI or SC to an applicant taking one of these four SSRIs to treat a depressive disorder if the applicant does not have symptoms or a history of suicidal ideation or the use of other psychiatric drugs in conjunction with SSRIs (Diamond, 2018).

Underreported Mental Health Issues by Pilots

Pilots suffer from anxiety and depression just as the rest of the U.S. population does. However, pilots are less likely than those in other careers to seek support and treatment (Barajas et al., 2022). However, due to FAA restrictions regarding mental health, depression, and anxiety, statistics can be difficult to measure precisely due to pilots underreporting for fear of being grounded or losing a medical certificate.

Reyne O'Shaughnessy, an airline pilot and founder of a mentoring and coaching program for pilots, understands the pressures of being a pilot and has advocated for mental health in the aviation industry for years. When asked why pilots are reluctant or afraid to seek help for mental health issues, she stated,

> None of us are eager to disclose deeply personal information. Pilots believe that being vulnerable and sharing feelings or struggles, such as anxiety, depression, and chronic stress, would be, at best, humiliating or embarrassing and, at worst, the end of their flying career (Barajas et al., 2022, para. 24).

Additionally, when asked if the FAA plays a significant role in why pilots stay quiet, O'Shaughnessy stated that FAA regulations force pilots underground (Barajas et al., 2022). Pilots are forced by FAA regulations to decide whether to seek help at the risk of being grounded.

With the fear of reporting mental health issues comes the fear of reporting medications used to treat these mental health issues. A study conducted in 2007 found underreporting of the use of antidepressants in medical examinations among a group of civilian pilots involved in fatal accidents (Sen et al., 2007). Although the FAA has approved certain medications, there are still many regulations and rules for those who disclose to an AME they are taking an SSRI. Because

pilots can be grounded for at least six months once starting a new SSRI prescription, this can account for much of the underreporting of mental health medications (Bayern, 2021).

Last, a 2023 study at Western Michigan University's College of Aviation was designed to determine if flight students had a restrictive perception of the FAA rules regarding seeking mental health assistance and if flight students had a lower desire to seek out professional mental health assistance because of their perceptions regarding the FAA. The results showed that 53% of students believed the FAA regulations were restrictive, with 47% of students reporting FAA regulations had a negative effect on their desire to seek mental health assistance (Stein, 2023).

Methodology

This exploratory study identified the perceptions of collegiate flight students regarding mental health concerns and added stressors associated with flight training. The collection of data consisted of responses of collegiate flight students, using a 4-point Likert scale, to statements using an anonymous online survey.

Selection of the Research Population

The population for this study was selected by the researchers based on characteristics needed to appropriately answer the research questions, creating a purposive sampling of flight students enrolled in four-year collegiate flight programs awarding a bachelor's degree in professional pilot. Purposive sampling is a non-probability method used to obtain a sample of the population where the researcher uses their expertise to choose specific participants that will help the study meet its goals (Frost, 2023). These participants share certain characteristics that the researcher needs to answer the research questions. In other words, the researcher picks the participants *on purpose* (Nikolopoulou, 2023).

The selection of flight students for participation in the research study was determined by their enrollment status in a collegiate flight program during the 2022-2023 academic year. The selection of flight students was not discriminated against based on gender, race, religion, or ethnicity, and all students voluntarily chose to participate in this study with no compensation benefit.

The flight students remained anonymous using the following methods: (1) the research questionnaire did not ask for the participant's names, (2) the data provided by the participants could not be linked back to a particular collegiate flight program or an identifiable email account, and (3) the data submitted by the participants were anonymously coded and electronically sent to a web-based survey tool. In addition, the participants were notified in the cover letter that contributing to this research study was strictly voluntary, and they were free to withdraw their consent and participation in this study at any time.

Description of the Research Instrument

Directed by descriptive research, this study used a research instrument (survey) developed by the researchers. The primary purpose of descriptive research is to describe the characteristics, behaviors, and attributes of a particular population (Sirisilla, 2023). The

researchers developed the survey to investigate the perceptions of collegiate flight students, as well as obtain demographic data and individual comments from each participant related to their perceptions regarding mental health concerns and added stressors associated with flight training.

The research survey consisted of three sections: (1) demographic information, (2) Likert scale statements, and (3) individual comments. The first section of the survey prompted demographic (personal) information characterizing each participating flight student. The personal information sought by the researcher included the participant's gender, medical certificate class, total number of flight hours, and earned flight certificates/ratings. The second section administered a series of Likert statements, requiring a strongly agree, agree, disagree, or strongly disagree response from each flight student. The list of statements was considered with the intention of gaining insight into the participating students' perceptions of mental health, including anxiety, depression, and/or stress, and additional stressors added because of flight training. The last section of the survey provided the participants an opportunity to provide their own personalized comments and observations regarding student mental health.

Reliability and Validity

The questions and statements within the survey were constructed to ensure they provided understanding of the three research questions. Each of the questions and statements within the survey were written in such a way to minimize the potential for misunderstandings within the participating student pilots.

The research survey was reviewed by several collegiate faculty members prior to being administered to the collegiate flight students. In addition, each collection of answers for every survey question or statement was statistically evaluated to ensure variation amongst answers and identify any statistical discrepancies within.

Data Collection Procedure

The researchers purposively contacted eleven collegiate flight programs offering a four-year professional pilot or similar flight degree option. Due to participants not identifying their collegiate flight program or other geographic identifiers, the distribution of the final participating educational institutions was unknown.

The survey developed for this study was distributed using Qualtrics, a web-based survey tool that allows the collection of anonymous data. The participating collegiate flight students were asked to complete the survey using a secure password-protected weblink designed to protect participants' responses. The researchers were the only people who had access to this password-protected, private, and encrypted web link.

The survey was distributed to the collegiate flight students via an email invite. The researchers sent an email to aviation faculty members employed at the collegiate flight programs. The body of the email provided (1) precursory information regarding student mental health, (2) the name, email address, and institutional affiliation of the researchers, (3) the title of the research study, (4) the purpose of the study, (5) time required to complete the survey, (6) inform

the students the responses are anonymized, and participation is voluntary, and (7) an embedded link to the online survey. Subsequently, the collegiate flight programs (faculty) were asked to distribute the email to their flight students.

If the student decided to participate in the study, they were required to acknowledge a consent form. The consent form provided (1) voluntary consent information, (2) requirements to participate in the study, (3) time requirement to complete the survey, (4) information regarding the protection of privacy and confidentiality, (5) contact information for the researchers, and (6) two buttons for students to consent and decline consent to participate in the survey. All participating students were required to be at least 18 years old and a collegiate flight student. If a student did not meet these requirements or chose not to participate in the survey, they selected the button to decline consent and exited the survey.

A follow-up email was sent to the aviation faculty two weeks later. After thirty-two days, the researchers reviewed and evaluated the data from all participants, completing the data collection process in summer 2023. To ensure a more thorough and complete understanding of collegiate flight students' perceptions of mental health, including anxiety, depression, and/or stress, each question of the survey was coded into Qualtrics to require a response from the participant, ensuring that each submitted survey was completed in its entirety.

Statistical Analysis of the Data

Following the data collection, all participant information from the survey questions and statements was categorized in terms of quantitative data. The demographic data and the perceptions of the collegiate flight students were examined and explained through descriptive statistics. Descriptive statistics are used to present quantitative data concisely and meaningfully and provide a foundation for further analysis, decision-making, and communication of findings (Simplilearn, 2023). A benefit of using descriptive statistics is that it allows the researchers to effectively describe and communicate patterns that might emerge from the data. Descriptive statistics helps define and summarize data using percentages, rates, graphs, and frequency distributions (Laerd Statistics, 2018).

The open-ended question responses in the last section of the survey were exported to an Excel document, allowing the researchers to review all individual comments from the flight students and make an initial assessment of patterns and trends among answers. Combining the hard data that quantitative research provides and the soft data that qualitative analysis provides allowed the researchers to develop accurate and comprehensive conclusions (Stsiopkina, 2022). The qualitative data provided in the comments section allowed the researchers to better understand the Likert scale responses provided by the participating students and allowed the students to provide additional thoughts regarding mental health concerns in their own words.

All data collected from the research surveys was analyzed by the researchers using data analysis tools within Qualtrics, ensuring the validity and accuracy of the results to appropriately support the study's three research questions.

Findings

Participant Response Rate

The researchers contacted eleven collegiate flight programs that offer a four-year professional pilot or similar flight degree option. After thirty-two days, responses were collected from 144 collegiate flight students. Of the 144 participants, 39 (27%) provided an additional comment at the end of the survey.

Collegiate Flight Students' Demographics

Question 1 of the survey asked each participating student to indicate their gender. Table 1 shows that 93 (65%) of the students indicated they were males, 51 (34%) of the students were females, and one student selected the third gender option, the other.

Table 1
Collegiate Flight Students' Gender

Gender	Responses	Percentage of Responses
Male	93	65
Female	51	34
Other	1	1

The second survey question asked each flight student to indicate which ethnicity best describes themselves. Table 2 shows that 128 (90%) students indicated they were White, three (2%) students indicated they were American Indian or Alaska Native, three (2%) students indicated they were Asian, three (2%) students indicated they were Black or African American, and three (2%) students indicated they were Native Hawaiian or Other Pacific Islander. Of the four remaining students, two (1%) indicated they were Middle Eastern or Northern African, and two (1%) indicated they were a Non-Resident Alien (of any race or ethnicity).

Table 2
Collegiate Flight Students' Ethnicity

Ethnicity	Responses	Percentage of Responses
White	128	90
American Indian/Alaska Native	3	2
Asian	3	2
Black or African American	3	2
Native Hawaiian/Pacific Islander	3	2
Middle Eastern/Northern African	2	1
Non-Resident Alien	2	1

Question 3 of the research survey asked each flight student to indicate their current marital status. Table 3 shows that 139 (97%) students indicated they were single (never married),

three (2%) students indicated they were married, and two (1%) students indicated they were separated or divorced.

Table 3
Collegiate Flight Students' Marital Status

Marital Status	Responses	Percentage of Responses
Single (Never Married)	139	97
Married	3	2
Separated/Divorced	2	1

The fourth survey question asked each student to identify the class of FAA issued medical certificate they held at the time of completing the survey. In addition to those flying with a BasicMed alternative medical certification, which is not applicable to commercial operations, the FAA offers three classes of medical certificates to pilots (FLYING, 2022). Each of the three classes of medical certificates has varying requirements and years of applicability. As Table 4 demonstrates, 102 (70%) students held a first-class medical, 20 (14%) students held a second-class medical, 21 (15%) students held a third-class medical, and one (1%) student held the BasicMed alternative certification.

Table 4
Collegiate Flight Students' Medical Certificate Class

Medical Certificate Class	Responses	Percentage of Responses
First	102	70
Second	20	14
Third	21	15
BasicMed	1	1

The fifth demographic question asked each student to identify their total number of logged flight hours. Table 5 indicates 88 (62%) students had less than 200 flight hours. Of the remaining students, 51 (35%) had logged 200-299 flight hours, three (2%) had logged 300-399 hours, and two (1%) had logged more than 400 hours of flight time.

Table 5
Collegiate Flight Students' Total Number of Flight Hours

Number of Hours	Responses	Percentage of Responses
0-49	14	10
50-99	20	14
100-199	54	38
200-299	51	35
300-399	3	2
400+	2	1

The last demographic question asked the flight students to indicate which FAA pilot ratings and certificates they had earned at the time of the survey. In descending order of most frequent response, Table 6 shows 135 (94%) students had earned a private pilot certificate, 74 (51%) students had earned an instrument rating, and 41 (28%) students had earned a commercial pilot single-engine rating. Furthermore, 29 (20%) students had a commercial pilot multi-engine add-on rating, 13 (9%) students had earned a certified flight instructor rating, and eight (5%) students earned a certified flight instructor-instrument rating. None of the flight students indicated they had earned a multiengine instructor rating or a restricted Airline Transport Pilot (R-ATP) license.

Table 6
Collegiate Flight Students' Pilot Ratings and Certificates

Certificates/Ratings	Responses	Percentage of Responses
Private Pilot Certificate	135	94
Instrument Rating	74	51
Commercial Pilot Single-Engine	41	28
Commercial Pilot Multiengine Add-On	29	20
Certified Flight Instructor	13	9
Certified Flight Instructor-Instrument	8	5
Multiengine Instructor	0	0
R-ATP	0	0

Note: The total percentage of responses is greater than 100% because this question allowed the flight students to select more than one answer.

Collegiate Flight Students' Perceptions and Realities

The second section of the survey asked the flight students to indicate their own personal perceptions regarding student mental health concerns by answering fourteen Likert scale statements. Each statement had four options for the students to rank their perceptions, including Strongly Agree (SA), Agree (A), Disagree (D), or Strongly Disagree (SD). A summary of data from the Likert scale statements is presented in Table 7.

A four-point Likert scale for agreement with options ranging from strongly agree to strongly disagree was used by the researcher to force the collegiate flight students to form an opinion regarding mental health concerns. The four-point scale allows the researcher to get specific responses since there is no safe (neutral) option (ProProfs, 2023).

Table 7
Collegiate Flight Students' Perceptions Regarding Mental Health Concerns and Flight Training

Likert Scale Statement	SA	A	D	SD
As a collegiate flight student, I have noticed more prominent signs of anxiety, depression, and/or stress since beginning flight training.	38 (26%)	79 (55%)	21 (15%)	6 (4%)

As a collegiate flight student, at times, I have struggled to make my mental health and well-being a priority.	44 (31%)	73 (51%)	23 (16%)	4 (3%)
As a collegiate flight student, I feel comfortable taking mental health days off from my flight training.	8 (6%)	36 (25%)	58 (40%)	42 (29%)
As a collegiate flight student, I am concerned that if I told others that I occasionally feel depressed or anxious, then I would be grounded and would no longer be allowed to complete my flight training.	70 (49%)	50 (35%)	17 (12%)	7 (5%)
As a collegiate flight student, I have been continually depressed, anxious, and/or stressed about different events or activities in my life.	21 (15%)	63 (44%)	40 (28%)	20 (14%)
As a collegiate flight student, I have experienced continued obsessions and compulsions that cause distress or anxiety.	13 (9%)	53 (37%)	59 (41%)	19 (13%)
As a collegiate flight student, I have experienced sudden rushes of intense fear or discomfort (panic attacks).	9 (6%)	44 (31%)	44 (31%)	47 (33%)
As a collegiate flight student, when I am being observed or evaluated by others, I feel fearful, anxious, or nervous.	55 (38%)	70 (49%)	19 (13%)	0 (0%)
As a collegiate flight student, financial issues (flight costs) elevate my depression, anxiety, and/or stress levels.	52 (36%)	55 (38%)	28 (19%)	9 (6%)
As a collegiate flight student, FAA check rides/practical tests elevate my depression, anxiety, and/or stress levels.	78 (54%)	56 (39%)	8 (6%)	2 (1%)
As a collegiate flight student, I am aware that elevated levels of depression, anxiety, and/or stress can have a significant impact on my decision-making in the cockpit.	69 (48%)	66 (46%)	8 (6%)	1 (1%)
As a collegiate flight student, at times, I have been unable to become excited/enthused about anything related to flight training.	46 (32%)	60 (41%)	30 (21%)	8 (6%)
Being a collegiate flight student has negatively affected my overall mental health and well-being.	11 (8%)	41 (28%)	73 (51%)	19 (13%)

There have been times I have seriously considered quitting flight training because my depression, anxiety, and/or stress levels have become too overwhelming.	17 (12%)	40 (28%)	31 (22%)	56 (39%)

Note: Due to rounding, the reflected percentages in some Likert statements are greater than 100% of total responses.

Most students (81%) agreed they had noticed more prominent signs of anxiety, depression, and/or stress since beginning flight training. One of the students who strongly agreed with this statement added, "Personally, my stress/anxiety regarding flying is not chronic. However, since beginning flight training, my level of stress/anxiety has become more acute. Part of this is a combination of being a flight student, attending classes, having to work, and fatigue/burnout." Similarly, 82% of students agreed there have been times when they have struggled to make their mental health and well-being a priority.

Only 31% of students agreed they feel comfortable taking mental health days off from flight training. Regarding mental health days, one of the student pilots said:

> I think some of the collegiate flight schools have accepted too many students, and this causes added stress. In my case, we are only allowed two fatigue days a semester, but at the end of the day, we are college students, so that means there are days that some of us are up studying late or got up early that morning to fly. Flight students are stressed because we constantly must decide between studying for a test or sleeping for a morning flight. This can cause some major safety issues.

Moreover, most students (83%) agreed they would be concerned if they told others they occasionally feel depressed or anxious because they could be grounded and would no longer be allowed to complete their collegiate flight training. One of the participating flight students commented, "Even though I am mentally okay, I would never see a psychologist on the very small chance they would diagnose me with something that could be used against me from getting my medical." Another student added, "Student pilots are highly uncomfortable when talking about mental health due to the fear of the FAA getting involved. No matter what others say about protecting you, you can trust no one about this topic." Furthermore, a student stated:

> I have struggled with depression and anxiety but have been scared to see a university therapist since I do not want to be grounded and delay my flight training further than it already has been. I would love to get professional help and support but am not willing to risk my future as a pilot. I try to find different ways to handle my anxiety and depression such as meditation and daily journal writing.

Over half (58%) of the students agreed they have been continually depressed, anxious, and/or stressed about different events or activities in their daily lives. Conversely, about half (54%) of the students disagreed that they have experienced continued obsessions and compulsions that cause distress or anxiety. And 64% of students also disagreed that they had experienced sudden rushes of intense fear or discomfort (panic attacks) as a collegiate flight student.

Most students (87%) agreed they become fearful, anxious, or nervous when being observed or evaluated by others. Even more students (93%) agreed that FAA check rides and or

practical tests elevate their depression, anxiety, and/or stress levels. Regarding check rides, a student commented, "There is the constant stress of failing a check ride or stage check. There is the added daily stress of messing up and the idea that any violation can go on your flight record, ruining your dreams of becoming an airline pilot."

Moreover, 74% of flight students agreed that financial issues associated with flight training elevate their depression, anxiety, and/or stress levels. A participating flight student stated, "I have been tempted to quit flight training due to the massive costs of flight training. Every year, it seems the school increases the flight costs. But I only experience stress regarding my financial situation, not depression."

And last, 94% of students are aware that elevated levels of depression, anxiety, and/or stress can have a significant impact on their decision-making in the cockpit. Although not directly related to decision-making in the cockpit, one student said:

> Having so many bad experiences with flight instructors has had a strong negative impact on my flight training and my mental health. I have thought about leaving collegiate flying because I am sick of being treated poorly while I am trying to learn. My university does not seem to do a thorough job screening their flight instructors before hiring them. Most instructors make very little effort to teach because they are only in it for the flight hours to get to the airlines.

And another student added:

> I have had two flight instructors go off on me and left me feeling awful because I made a simple mistake, or it was their lack of communication. Currently, I feel so uncomfortable flying with my instructor which has led me to feel even more anxious throughout my training flights because I am unsure of what might set them off.

Almost three-fourths (73%) of students agreed there are times they have been unable to become excited about or enthused about anything related to flight training. Regarding this statement, one student commented:

> We are all college kids, and college kids get stressed. However, there is an additional stress added to flight training. Lack of enthusiasm is common for me regarding my flight training. I constantly feel I am not having as much fun as I used to in my flight training since I am getting into the more advanced certifications, thus making flight only pertinent to learning. This adds stress to my daily life, but overall, I love flying.

Yet, 64% of students disagreed that being a collegiate flight student has negatively affected their overall mental health and well-being. However, one of the participating pilots stated:

> Collegiate flight training has affected me in an extremely negative way all because I can no longer be on medication that used to help me a lot. I hope things change because I want to fly, but the FAA is destroying any future pilot opportunities for me.

Similarly, 61% of students disagreed there have been times they have seriously considered quitting flight training because their depression, anxiety, and/or stress levels have become too overwhelming. One flight student provided an emotional response to this statement,

stating, “Unfortunately, my passion for aviation has been almost completely drained to the point that it is hard to see a future for myself in the industry.”

Even though the researchers did not have the participating students respond to a statement regarding the effects the FAA, as a regulatory agency, has on a collegiate student’s mental health, surprisingly, many of the students provided individual comments. One of the students stated:

> The FAA has an archaic viewpoint on mental health issues that alienates current and potential pilots. Their refusal to update medical policies and listen to science and medical professionals will l continue to create serious safety issues as pilots attempt to secretly manage serious mental health issues.

And one student said:

> Due to the FAA and the aviation industry's backward approach to mental health, I have avoided taking reasonable measures to address general mental health and even mental health associated with the passing of family members. It is better to avoid generating any sort of paper trail related to mental health than actually address mental health and begin to repair it. As far as I know, there is no other industry that operates like this. Pilots should feel safe enough to seek the same reasonable care that anyone else would.

Last, a student added:

> The FAA has a long way to go in addressing mental health needs. Mental health cannot be ignored, and I find their policies about mental health to be absolutely barbaric. There needs to be systematic change from within before it can be accepted instead of being stigmatized. Far too many of us remain quiet, but another suicide is waiting to happen if the FAA does not change.

Conclusions

The findings of the study emphasized the connection between mental health and collegiate flight students with quantitative and qualitative data derived from a twenty-four-question survey. The participating students’ responses defined their perceptions surrounding the studied topic, in addition to demographics and other pertinent information.

Summary of RQ 1

Is there a stigma surrounding mental health within the aviation industry, specifically among collegiate flight students?

Mental health is a prominent issue for collegiate flight students. Eighty-one percent of students indicated they had noticed more prominent signs of anxiety, depression, and/or stress since beginning flight training. Furthermore, almost 60% of students indicated they have been continually depressed, anxious, and/or stressed about different events or activities in their daily lives.

Despite most collegiate flight students self-identifying their own mental health concerns, nearly 70% of students indicated they disagreed with the Likert statement, "As a collegiate flight student, I feel comfortable taking mental health days off from my flight training." Surprisingly, 75% of the students agreed with the Likert statement, "As a collegiate flight student, I have noticed more prominent signs of anxiety, depression, and/or stress since beginning flight training," and yet, most students also indicated they are not comfortable taking mental health days. This indicates flight students who have identified mental health concerns within themselves do not feel comfortable taking appropriate action to treat their mental health issues or make their mental health a priority. Furthermore, 81% of participants students agreed there have been times when they have struggled to make their mental health and well-being a priority.

Many of the students provided individual comments regarding their perceptions on the stigma surrounding mental health in aviation. Several participants commented on the FAA's poor regulation of mental health and their perception the aviation industry's *backward approach to mental health has caused them to avoid taking any action to address their overall mental health as collegiate flight students*. One of the students specifically referred to mental health as being a "taboo topic in a field where we are expected to be 100% physically and mentally fit." Other students stated there needs to be a systematic change from within the FAA regarding mental health instead of it being stigmatized.

Summary of RQ 2

Does collegiate flight training create additional stressors that can exacerbate student mental health?

Although most students (64%) disagreed with the Likert statement, "Being a collegiate flight student has negatively affected my overall mental health and well-being," the survey results show that specific aspects of collegiate flight training create additional stressors that can negatively affect the mental health of flight students.

Approximately 90% of students agreed they feel fearful, anxious, or nervous when being observed or evaluated by others. Moreover, 93% of flight students agreed with the Likert statement, "As a collegiate flight student, FAA check rides/practical tests elevate my depression, anxiety, and/or stress levels." And similarly, 74% of collegiate pilots agreed that financial issues (flight costs) elevate their depression, anxiety, and/or stress levels as a flight student. The survey data was evidence that most collegiate flight students are depressed, anxious, and/or stressed due to many different contributing factors of flight training.

As a collegiate flight student, 94% were aware that elevated levels of depression, anxiety, and/or stress can have a significant impact on their decision-making in the cockpit. To make matters worse, several of the students added individual comments that identified their flight instructors as being an additional stressor in the cockpit. One student stated they had several instructors who would raise their voices when they became frustrated and that having so many bad experiences with flight instructors had a strong negative impact on their flight training experience and overall mental health.

Summary of RQ 3

Do collegiate flight students face external pressures that deter them from reporting poor mental health?

Eighty-three percent of participating students agreed with the Likert statement, "As a collegiate flight student, I am concerned that if I told others that I occasionally feel depressed or anxious, then I would be grounded and would no longer be allowed to complete my flight training." Over half of these students strongly agreed with this statement. Many respondents provided additional comments regarding this statement. One respondent stated, "There is no one who cares or is safe to vent to." Another student added, "There is an incredible stigma to having any mental health struggles because if they are reported on the medical, the chances of getting deferred by an Aviation Medical Examiner (AME) and being grounded is high." More than half of the students who left a comment acknowledged the fact they could not seek therapy or other treatments for their mental health concerns for fear of losing their medical certificate and being grounded by the FAA or their flight program. These results show a common theme among collegiate flight students that they are electing to leave their mental health issues untreated to avoid any delays in flight training.

The responses from the students also determined the FAA's strict guidelines regarding mental health issues are a major external pressure that many students face, and consequently, their mental health issues go unreported and untreated. Twenty-three percent of students providing individual comments specifically mentioned that they believe the FAA has failed to make mental health a priority for pilots. As a result, collegiate flight students are afraid of retaliation or being ignored if they publicly address their mental health concerns with others. One student stated, "The FAA is destroying the Gen-Z pilot opportunities," and another commented, "The FAA has a long way to go in addressing mental health needs."

Last, in response to RQs 1-3, 73% of the students agreed there have been times they have been unable to stay excited or enthused about anything related to flight training. As a result, 40% of the participating students have seriously considered quitting flight training because their depression, anxiety, and/or stress levels have become too overwhelming. Many students provided comments about their consideration of quitting flight training because there is a common lack of enthusiasm regarding flight training.

Conclusion of the Study

After analyzing the data, four significant findings emerged from the research study: (1) mental health, including depression, anxiety, and/or stress, is a prominent issue among collegiate flight students; (2) being observed or evaluated by others, financial issues (flight costs), and FAA check rides/practical tests are a main source of depression, anxiety, and/or stress in collegiate flight students (3) collegiate flight students find underreporting of mental health concerns to be more beneficial to their career than seeking treatment, (4) students believe that change is necessary and beneficial, as it relates to the current FAA medical certification process.

Collegiate flight students perceive that their mental health has become a more prominent issue since beginning flight training. Most flight students participating in this study have noticed more signs of depression, anxiety, and/or stress since beginning flight training, and almost half of the students have experienced continued obsessions and compulsions that cause distress or anxiety. And most students struggle to make their mental health and well-being a priority. Not only have mental health issues altered collegiate flight students' daily lives, but these issues have also affected their ability to stay consistently enthused about flight training. Almost three-fourths of participating students indicated there are times they have been unable to remain enthused about flight training. And close to half of the students have seriously considered quitting flight training because their mental health concerns have become too overwhelming.

Furthermore, the research data has shown that students choose to leave their mental health issues unreported and/or untreated to comply with the FAA's regulations regarding mental health. Most students are concerned if they told others they occasionally feel depressed or anxious, they would be grounded and would not be allowed to complete their flight training. This information presents the concern that student pilots are flying regardless of their mental state, which creates a major safety issue. Nearly all flight students reported they are aware that elevated levels of depression, anxiety, and/or stress can have a significant impact on their decision-making in the cockpit, and yet collegiate flight students are refusing treatment for their mental health issues despite knowledge of the risks and dangers associated with underreporting. Most students are intentionally not reporting or seeking treatment for fear of losing their medical certificate.

Recommendations

Based on the research findings, in addition to conclusions drawn from the students' individual comments, the researchers provide the following three recommendations.

Recommendation 1:

Eighty-one percent of the participating student pilots admitted it is a struggle to make their mental health and well-being a priority, to the extent that 58% of the students agreed it has affected events or activities in their daily lives. Therefore, collegiate flight students should identify positive mental health practices, such as peer support groups or hobbies (outside of flying), and make them as much a priority as their other daily responsibilities. One student commented, "It is so important for pilots, in particular, to practice good lifestyle habits to combat mental health." Incorporating mental health management techniques into their daily schedules not only educates them on proper mental health management but also makes them aware of the FAA's requirements regarding mental health and the medical certification process. This knowledge and awareness will help flight students achieve mental health goals both desired personally and required by the FAA.

Recommendation 2:

Additionally, collegiate flight training personnel, including flight instructors, should continuously promote mental health management practices to all flight students. Results of this study have shown that a flight instructor's attitude can directly impact a student's mental health. Many students voluntarily mentioned their flight instructors were a primary source of their

mental health issues. One student provided explicit information regarding an experience with a flight instructor who consistently raised their voice in the cockpit, unnerving the student and creating an unsafe environment for both student and instructor. Flight instructors, young adults themselves, should be trained to identify and mitigate student mental health issues. Simple things such as (1) lending a listening ear, (2) requiring mental health days from flight training, and (3) remaining professional in the cockpit can help alleviate their students' mental health issues.

Recommendation 3:

Several students provided their individual opinions of current FAA regulations regarding mental health. A common perception among students was that the FAA needs to modernize its rules and regulations for obtaining a medical certificate, as well as being grounded for seeking advisement for mental health concerns. The researchers recommend that the FAA review and consider revising their rules and regulations regarding mental health. A willingness to revise outdated regulations related to mental health would make pilots, especially student pilots, more confident and trusting of the FAA and its required mandates. As a result, students would feel more comfortable with addressing their mental health concerns, thereby reducing depression, anxiety, and/or stress levels.

Recommendations for Further Research

1. Further research studies are necessary to determine how current FAA regulations and requirements for a medical certificate affect a student's ability or willingness to become a pilot or complete professional pilot) bachelor's degrees. Additionally, a study that determines whether students withhold or give dishonest information during the FAA medical process would provide valuable information. The results of this study could provide researchers with more understanding regarding collegiate flight students' perceptions of mental health and pilot medical requirements.

2. Another recommended research study is to survey US airline pilots who graduated from a collegiate flight program within the past three to five years to determine if they had similar mental health concerns in college. The findings would determine how these newly hired pilots coped with their mental health issues in college and if they continue to experience similar mental health issues with the airlines. The focus of this study could examine the airlines to determine if they incorporate mental health support programs into their flight operations and, if so, how productive and successful they are to the newly hired pilot.

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