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Exploring Mental Health Disorders Among Air Traffic Controllers

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Air traffic control facilities nationwide are at approximately 81% staffing, which the Federal Aviation Administration (FAA) considers a critical shortage (Duncan, 2023; Shepardson, 2023). Despite staffing shortages, air traffic control remains a safety-critical environment where controllers must continue to perform while shouldering intensive cognitive demands and high levels of responsibility (Imroz et al., 2022; Maxwell, 1986; Raduntz et al., 2021). With studies showing that high-stress levels, shift work, long hours, and inadequate recovery time can result in mental health disorders, the mental health status of air traffic controllers should be evaluated to ensure the continued safety of the National Airspace System (Ericsson et al., 2021; Lee & Park, 2022; Skypalova et al., 2022). A lack of research exists related to controller mental health disorders; the current quantitative study aims to fill the gap in recent research and provide possible recommendations for improving controller mental health and reducing controller attrition rates.

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Introduction

Over the past couple of years, a significant amount of media coverage focused on the pilot shortage and the mental health of pilots. However, until recently, there has been minimal discussion of the severe shortage of air traffic controllers and, more importantly, the potential impact of this shortage on their mental health (Duncan, 2023; Russell, 2023; Steel & Ember, 2023). During the last decade, the number of fully certified air traffic controllers has decreased by 1,200, and 6% of current controllers are now eligible for retirement (FAA Reauthorization: Navigating the Comprehensive Passenger Experience, 2023). The United States air traffic control system is operating at 81% staffing (Duncan, 2023). Although this may not sound severe, the Federal Aviation Administration (FAA) considers a critical shortage when staffing falls below the 85% threshold (Shepardson, 2023). Although research shows that working long hours can lead to potential mental health disorders (Lee & Park, 2022), there is a lack of recent research related to controller mental health disorders (Imroz et al., 2022). The current study aims to fill the gap in recent research and provide possible recommendations for improving controller mental health and reducing controller attrition rates.

Literature Review Summary

According to the U.S. Bureau of Labor Statistics (2024), air traffic control is potentially stressful and exhausting. Air traffic controllers deal with complex work environments and must remain focused while responding to ever-changing conditions, often with little notice (Imroz et al., 2022; Maxwell, 1986; Raduntz et al., 2021). Additionally, the shortage of air traffic controllers (Duncan, 2023; Russell, 2023; Steel & Ember, 2023) has led to working long hours, shift work, and inadequate recovery time, all of which can lead to potential mental health disorders such as anxiety and depression (Ericsson et al., 2021; Lee & Park, 2022; Skypalova et al., 2022). Furthermore, poor social interactions and high workloads can negatively impact mental and physical health (Repetti, 1993).

Unfortunately, air traffic controllers avoid discussing mental health, treating mental health as a sensitive topic due to the potential for controllers to lose their medical clearance to work. As a result, air traffic controllers avoid seeking help, regardless of how difficult the struggle is, and resort to self-medicating (Counseling, Depression and Psychological Support, 2024; Hembree, 2023). For example, controllers working rotating shifts may take sleeping pills to help them sleep and then consume substantial amounts of caffeine to stay awake the next day (Hembree, 2023).

In response to the increasing need among the general population, the medical community has created instruments designed to ascertain levels of depression and anxiety quickly. The current study used two such instruments, the Patient Health Questionnaire-9 (PHQ-9) and the Generalized Anxiety Disorder-7 (GAD-7) (Kalkbrenner et al., 2023). The PHQ-9 consists of nine test items, each scored 0-3, indicating the severity of depression. The PHQ-9 has a high alpha ($\alpha = .82$) and takes less than five minutes to complete (Kalkbrenner et al., 2023; Kroenke et al., 2001). The GAD-7 is a newer instrument consisting of seven test items scored from 0-3, indicating the severity of anxiety. The GAD-7 has a high alpha ($\alpha = .89$) and takes less than five minutes to complete (Kertz et al., 2013; Spitzer et al., 2006; Sapra et al., 2020).

Methodology

This quantitative study evaluated the mental health status of air traffic controllers. The researchers used purposive and snowball sampling to acquire participants by accessing private social media groups and utilizing personal contacts. Due to the sensitive nature of the assessed topic, data was collected via an anonymous survey. A recruitment script approved by the Institutional Review Board (IRB) of Southern Illinois University (SIU) was posted along with a link to the survey in the private social media groups. In addition, the research team sent the survey link and recruitment script to individual controllers known by the team members with a request for the controllers to take the survey and share it with other controllers they knew. The survey included the PHQ-9 and GAD-7 instruments and demographic questions. The PHQ-9 and GAD-7 questionnaires were used to evaluate controllers' levels of depression and anxiety, respectively. Both assessments have strong reliability and validity, take five minutes to complete, and can be completed by controllers anonymously (Kalkbrenner et al., 2023). Quantitative analytics are being conducted through IBM's SPSS statistics application.

Results

A total of 168 respondents started the survey, but only 92 (55%) completed the survey. Of the 92 respondents, 47 (51%) were from the United States, and 45 (49%) were international. Although the survey results are still being analyzed, some preliminary results were available for the conference presentation. According to Spitzer et al. (2006), approximately 5% of the general global population presents with generalized anxiety disorder (GAD). On the GAD-7, individuals who demonstrate moderate to severe anxiety would typically be referred for further assessment and treatment (Sapra et al., 2020). That being said, nine (19%) of the U.S. participants and six (13%) of the international participants presented with moderate to severe anxiety (ref. Table 1), significantly higher than the general population.

Table 1
Results of GAD-7

Anxiety Scale	*United States*		*International*	
	n	*%*	*n*	*%*
Minimal Anxiety	25	53.19%	24	53.33%
Mild Anxiety	13	27.66%	15	33.33%
Moderate Anxiety	3	6.38%	3	6.67%
Severe Anxiety	6	12.77%	3	6.67%
Total	47		45	

In addition, depression affects approximately 7% of the U.S. adult population and 5% of the global adult population (Chand & Arif, 2024; World Health Organization, 2023). Individuals scoring within the moderately severe to severe range on the PHQ-9 generally present with major depressive disorders (Kroenke et al., 2001). A total of six (12.77%) U.S. participants and five (11.11%) international participants presented with moderate-severe to severe depression (ref. Table 2), both higher than the global average.

Table 2
Results of PHQ-9

Depression Severity	*United States*		*International*	
	n	*%*	*n*	*%*
Non-minimal	23	48.94%	23	51.11%
Mild	10	21.28%	11	24.44%
Moderate	8	17.02%	6	13.33%
Moderately Severe	3	6.38%	1	2.22%
Severe	3	6.38%	4	8.89%
Total	47		45	

Discussion

Air traffic control is a challenging career with the potential for complex environments, high workloads, long hours, and limited recovery time (Ericsson et al., 2021; Hembree, 2023; Imroz et al., 2022; Maxwell, 1986; Raduntz et al., 2021). Based on existing literature, individuals exposed to high stress, shift work, long working hours, and poor social environments can experience anxiety and depression; thus, the focus of this study is on evaluating the mental health of air traffic controllers. (Lee & Park, 2022; Maxwell, 1986; Repetti, 1993; Skypalova et al., 2022).

The results of the GAD-7 indicate that nearly 20% of U.S. controller participants and 13% of international controller participants are working with moderate to severe anxiety. Individuals scoring that high on the GAD-7 in a medical office would be recommended for further evaluation and possible prescriptive treatment (Sapra et al., 2020). The results indicate that two in five U.S. controller participants should be further examined for mental health intervention to help with their anxiety.

According to Kroenke et al. (2001), individuals with PHQ-9 scores that are at moderately severe to severe levels tend to present with major depression. Based on the results of this study, over 10% of the participants scored moderately severe to severe on the PHQ-9, indicating a likelihood that one in ten controller participants is working while suffering from major depressive disorders.

Limitations and Next Steps

The current study is limited by its small sample size. Air traffic controllers tend to avoid anything related to mental health, making it challenging to obtain data (Counseling, Depression and Psychological Support, 2024). Additionally, the current data is still being analyzed; therefore, the data analysis is incomplete. The current survey results will be further analyzed using IBM's SPSS to identify potential relationships between demographic data and the GAD-7 and PHQ-9 results. The goal is to fill the research gap and provide potential recommendations for improving controllers' mental health and reducing attrition rates.

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