

Selective Serotonin Reuptake Inhibitor Use Among Army Aviators

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- INTRODUCTION:** Mental health is an important aspect of Army aviation medicine given that it significantly impacts career longevity, readiness, and healthcare usage. One of the most commonly used classes of medications to treat mental health disorders is the selective serotonin reuptake inhibitor (SSRI). Here we present a descriptive epidemiological review of SSRI use in Army aviators over a 10-yr period.
- METHODS:** An archival dataset retrieved from the U.S. Army Aeromedical Electronic Resource Office covering the years 2005 to 2015 was queried for cases of SSRI use. Frequencies were generated by primary diagnoses and aeromedical disposition for the SSRI subset of data.
- RESULTS:** A total of 114 unique cases of SSRI use were identified (122 total aeromedical outcomes). These cases included 41 waiver recommendations, 59 suspension recommendations, and 22 cases of waiver continuations. The top five most common primary diagnoses were depressive disorder ($N = 32$), anxiety state ($N = 21$), posttraumatic stress disorder ($N = 16$), single major depressive episode ($N = 13$), and adjustment disorder with depressed mood ($N = 12$).
- DISCUSSION:** Understanding of the etiology, pathophysiology, and treatment of mental health disorders particularly within the safety-focused and unforgiving aviation environment has continued to evolve. With the application of evidence-based policy, deliberate aeromedical decision-making, and methodical risk mitigation, SSRI use does have a place within aviation. Aviators 'suffering in silence' with deleterious impact to performance and safety or aircrew seeking services 'on the outside' without knowledge or oversight of certification authorities must remain in the past.
- KEYWORDS:** mental health, SSRI, army, aviator.

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Mental health disorders account for significant morbidity, healthcare usage, and attrition among military service members in all military occupation specialties. A recent 10-yr, Department of Defense (DoD) review highlighted the scope of the issue with mental health disorders accounting for the largest total number of in-patient hospital days and the third highest total number of medical encounters for active duty U.S. Armed Forces.¹³ Adjustment disorders, depressive disorders, anxiety disorders, alcohol-related disorders, and posttraumatic stress disorder (PTSD) were among the top incident diagnoses. Efforts have continued for years across the military services and within the civilian medical community to destigmatize mental health diagnoses and promote help-seeking behavior. Regarding overseas deployments in general, disease and nonbattle injury, including mental health disorders, account for an exceedingly large proportion of medically non-ready forces, as well as a reason for evacuation from combat

theaters.^{3,4} With respect to readiness, aviation commanders rely on medically fit and effective operationally rated aviators and aircrew. The topic endures as an issue of concern within military aviation and the aviation medicine enterprise writ large.

Mental health is of paramount concern not only to the comprehensive health of the aviator as an individual, but also for occupational fitness for duty and human performance optimization. It remains among the most common diagnostic groups

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for suspension and disqualification.^{5,7} In-flight medical incapacitation can be sudden and catastrophic, or performance decrement may be subtle and indirect, affecting concentration, teamwork, fatigue, executive function, and decision-making.⁷

Among the most commonly used classes of medications to treat the aforementioned mental health disorders is the selective serotonin reuptake inhibitor (SSRI), as well as the related serotonin-norepinephrine reuptake inhibitor. These medications were first synthesized in the 1970s with the first SSRI approved by the U.S. Food and Drug Administration in 1987.¹² The use of this class of medications has grown substantially over the past two decades with indications for depression, obsessive-compulsive disorder, panic disorder, PTSD, generalized anxiety disorder, adjustment disorders, and others, with medication selection and dosage based on individual tolerability and side-effect profile.^{1,8,12}

The use of SSRIs (as well as the concomitant mental health diagnoses for which they are prescribed) was long thought to be incompatible with aviation duties, both military and civilian.⁹ In 2004, the U.S. Army became the first U.S. DoD service to permit aircrew with PTSD, anxiety, and/or depression to perform aircrew duties while taking an SSRI medication.¹⁰ This mandated a rigorous aeromedical review and waiver process, including mandatory grounding periods for initiation, stable dosing regimens, psychiatric evaluation requirements, and neuropsychological testing. In the interim, all U.S. military services, as well as the Federal Aviation Administration, now permit a controlled waiver dispositioning process through which aviators and aircrew may be granted flying status with an SSRI prescription on a case-by-case basis.^{6,14,15} Given the efficacy and relative safety profile of these medications in addition to medical advancements in diagnosis, knowledge, and treatment of the mental health conditions for which they are prescribed, the alternative is untenable. Aviators flying untreated and suffering through illness with pathophysiology degrading safety and performance or the alternative—aircrew surreptitiously seeking treatment and medications ‘on the outside’ without the knowledge, aeromedical decision-making, risk management, or control of medical specialists and certifying authorities—is perilous at best.

The U.S. Army Aeromedical Activity hosts a database that archives aeromedical records, physicals, waivers, and suspensions known as the Aeromedical Electronic Resource Office (also referred to as the Aeromedical Epidemiological Data Repository). This system presents opportunity for epidemiological review and study with respect to holistic or specific pathophysiological conditions or diagnoses.⁵ This current study is a descriptive epidemiological review of medical records of the U.S. Army Aeromedical Electronic Resource Office characterizing 10 yr of SSRI use among Army rated aviators.

METHODS

Prior to analysis, the study was reviewed and approved according to the U.S. Army Aeromedical Research Laboratory’s Human

Subjects Research Protection Plan. The archival dataset is composed of a total of 24,568 aviators, of which 5.2% ($N = 1282$) are women [approximately 5.2% of U.S. Army aviators are women (personal communication, Human Resources Command, 2016)]. The archival dataset is composed of a total of 181,471 cases between June 2005 and June 2015. Age ranged from 17 to 73 yr ($M = 37.60$, $SD = 8.46$, $Med = 37$, $N = 146,156$ cases). All diagnoses are coded using the International Classification of Disease-9 (ICD-9). The dataset is de-identified such that the 19 published protected health information data types listed in the Health Insurance Portability and Accountability Act (HIPAA) have been stripped and patients are labeled by an arbitrary identification number in order to account for the longitudinal nature of the database, enabling individual cases/observations to be discerned. The dataset consists of 77 variables, a subset of which was isolated for the purposes of this study that included demographic information (e.g., age, rank), aeromedical disposition, and ICD-9 codes.

The dataset was queried for all cases that included the ICD-9 codes C9390 (current use of SSRIs) and J9390 (use of SSRIs within the past year of exam). Frequencies of aeromedical disposition and primary diagnoses were calculated. Details regarding inclusion/exclusion are as follows:

- Only the aeromedical summaries were counted when paired with an associated physical.
- If a patient received multiple waiver/suspension recommendations, only the first instance was counted.
- Age was computed by finding the age of the first reporting of waiver recommendation, suspension recommendation, or waiver continuation.
- The total number of unique instances of SSRI use was limited to waiver recommendations, suspension recommendations, and waiver continuations.
- For calculations of suspensions and waiver recommendations, associated visits (i.e., physical attached to an aeromedical summary) and multiple instances were filtered out.

RESULTS

Overall, there were 114 unique cases of SSRI use. This is less than 1% of the total number of cases in the dataset ($N = 24,568$). These cases only include waiver continuations, waiver recommendations, and suspension recommendations. For these cases, the average age of initial visit for SSRI use was 37.78 yr. Moreover, 97 of the patients were men (0.42% of all male aviators) and 17 were women (1.33% of all female aviators). The distribution of waiver recommendations, suspension recommendations, and waiver continuations is displayed in **Fig. 1**. The sum of waiver continuations, waiver recommendations, and suspensions does not equal the number of unique patients presenting with SSRI use because eight patients presented with a combination of waiver recommendations, waiver continuations, or suspension recommendations. There were 41 waiver recommendations made for SSRI use. It should be noted that all

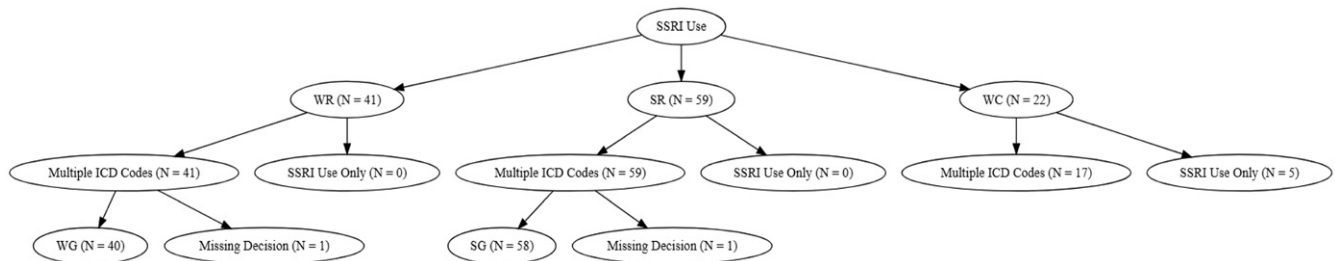


Fig. 1. Tree diagram of aeromedical dispositions associated with SSRI use.

of these waiver recommendations were combined with other ICD codes. Of the waiver recommendations, 40 were granted, with 1 recommendation not receiving a decision (missing data point in the system). Additionally, there were 59 suspension recommendations given for SSRI use. Of the 59 suspension recommendations, 58 were granted and 1 case was missing a suspension decision. Again, all cases of suspension occurred with multiple diagnoses. There were 22 cases of a waiver continuation, with 5 occurring with SSRI use as the only ICD code and 17 occurring with multiple ICD codes.

In terms of primary diagnoses, the top five most frequently occurring were depressive disorder ($N = 32$), anxiety state ($N = 21$), PTSD ($N = 16$), single major depressive episode ($N = 13$), and adjustment disorder with depressed mood ($N = 12$). Further examining those who were suspended, there were 117 different conditions associated with suspensions when SSRI use was present, including nonpsychiatric conditions (e.g., migraine). The most common conditions were depressive disorder ($N = 15$), anxiety state ($N = 9$), PTSD ($N = 9$), major depressive disorder - single episode ($N = 6$), and use of other medications such as tranquilizers ($N = 6$), anticonvulsants ($N = 6$), and other sedatives ($N = 6$).

Overall, 18 more suspensions were recommended compared to waiver recommendations. Given the number of conditions associated with SSRI use, a straight-forward conclusion regarding SSRI use and suspensions is difficult to make. It is not necessarily that SSRI use tends to result in more suspensions, but rather the conditions associated with SSRI use that are driving the suspensions. Therefore, the underlying psychological condition likely heavily influences the decision for suspension, not just SSRI use in general.

DISCUSSION

Antidepressant use is common—one of the three most commonly used therapeutic drug classes in the United States—and trends in use are increasing.¹¹ However, within this dataset of Army aviators, the number of cases of SSRI use is relatively rare, with less than 1% of the cohort. This is not surprising given the self-selection of those individuals pursuing a career of military aviation service, as well as the rigorous prescreening procedures executed for aviator candidates prior to initiation of flight training. With respect to gender, 1.33% of women compared to 0.42% of men in the dataset used SSRIs, which agrees with

findings in the general population, whereby female use is more common.^{11,13} Likewise, the average age for use in this cohort differs from the larger civilian medical community based on National Center for Health Statistics data.¹¹ This is also not unexpected given the unique characteristics of military aviators from the general population, predominantly younger age of the military flyer cohort, and prescreening procedures for aviator applicants. The etiology of antecedent mental health diagnoses for patients in this sample likely differ considerably from the general population, possibly reflecting exposure to the trauma of deployment and combat, as well as the significant stressors of military life.

The most prevalent concomitant mental health diagnoses generally match those seen among the larger DoD service member population, including depression, anxiety, PTSD, and adjustment disorder. It is worthwhile to note that a sizable number of cases were recommended for suspension rather than waiver, which highlights the importance of judicious case-by-case aeromedical decision-making and risk mitigation. For those cases ultimately resulting in suspension, it is the underpinning mental health diagnosis and case specifics that likely heavily influence the decision vs. the use of SSRI medication itself.

Mental health disorders remain an issue of concern within the aviation medicine community, both military and civilian.² SSRIs remain among the most common classes of medication used within treatment regimens and rates of antidepressant medication use within the United States have continued on a considerably increasing trend.¹¹ Since 2004 the U.S. Army has permitted such use within the aviation community within a framework of rigorous procedures and multidisciplinary application of policy. Whenever policy changes are made, it is important to maintain surveillance data with regular iterations of review. This manuscript outlines 10 yr of SSRI data within Army aviators highlighting that use is rare, suspensions are common, but a sizeable number of flyers can be treated while maintaining flight status.

Understanding of the etiology, pathophysiology, and treatment of mental health disorders, particularly within the safety-focused and unforgiving aviation environment, has continued to evolve. With the application of evidence-based policy, deliberate aeromedical decision-making, and methodical risk mitigation, SSRI use does have a place within aviation. Aviators 'suffering in silence' with deleterious impact to performance and safety or aircrew seeking services 'on the outside' without

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