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This study evaluated the incidence of first hospitalizations for personality disorders and their association with career outcomes for Navy enlisted personnel. Gender differences, rates for subtypes, and changes in hospital admission rates over time also were examined. Personnel who were first hospitalized with a personality disorder between 1980 and 1988 were followed through 1992 and were compared with a control group that did not manifest such pathology. Hospitalized personality disorder cases demonstrated pathology very early in their military careers, which was judged to have been present prior to enlistment in more than one-half of the cases. Women were more likely than men to have a first hospitalization for personality disorders. Rates in both men and women increased during the latter one-half of the 1980s and decreased during the early 1990s.

Introduction

Personality disorders (PDs) are a leading cause of premature discharges of personnel from the naval service.¹ Clinical studies have shown that individuals with PDs have significant difficulty adjusting to military life, have limited coping skills, and may be unable to respond to the leadership, counseling, and therapeutic measures available in a military setting.² Although research interest in PDs was spurred with the assignment of PDs to their own axis (axis II) in the Diagnostic Statistical Manual (DSM-III)³ in 1980, little epidemiologic research on PDs has been conducted in the military since then, and neither the prevalence nor incidence of these disorders is known.⁴ The military population provides a unique opportunity for longitudinal study of these relatively common but poorly understood conditions. PD cases generally are not hospitalized in the civilian community. In the Navy, because of confined living and working conditions and requirements for personal reliability, cooperation, and team effort, traits that are characteristic of PD cases are conspicuous and disruptive and more often lead to hospitalization for evaluation.

A number of longitudinal studies of PD were conducted in the Navy population during the 1970s.⁵⁻⁸ These studies documented the major burden imposed on Navy commanders and medical facilities by PD cases and defined prognostic indicators for personnel hospitalized with these diagnoses. Early detection and accurate assessment of the severity of character pathology have remained a challenge to the appropriate management of these individuals. Furthermore, large numbers of women entering the Navy during the 1980s and new duty assignment policies permitting women to serve aboard ship have made it possible to examine gender differences and prognosis in diagnostic subtypes and to compare PD hospitalization rates and career outcomes among women and men. The purpose of the present study was to examine updated hospitalization data for PD among active duty Navy men and women and to extend knowledge of these diagnoses, which remain poorly understood. The present study evaluated the nature and impact of such disorders and compared PD cases with a control group that did not manifest such pathology.

Methods

The population studied included all enlisted personnel on active duty in the Navy who were first hospitalized for PDs during 1980 to 1988. This period was chosen because diagnostic categories were relatively well defined and stable⁹ and large numbers of women were enlisted in the Navy, making meaningful comparative studies by gender possible. Also, it was necessary to allow a period of at least 4 years of follow-up for short-term outcome studies. To extend the analysis of annual rates, and because shipboard medical facilities discontinued reporting of hospitalizations in the 1990s, a supplemental analysis of rates for shore-based personnel was conducted for the time period 1980 to 1995.

PDs are described in the Glossary of Mental Disorders in International Classification of Diseases⁹ (ICD-9-CM) as follows: "Deeply ingrained maladaptive patterns of behavior generally recognizable by the time of adolescence or earlier and continuing most of adult life." ICD-9, the diagnostic nomenclature used by the Department of Defense, began incorporating the classification system of the Diagnostic and

Statistical Manual of Mental Disorders, Edition 3 (DSM-III), by the American Psychiatric Association by 1980.³ A number of new diagnostic subcategories were added in 1986, but only major subtypes are used in the present study. Major current categories and ICD-9 codes are shown in Table I with numbers of cases during 1980 to 1988.

Diagnoses were made by attending physicians, often psychiatrists, at major urban military medical centers at the time of discharge from the hospital after a period of observation and, in many cases, psychological testing. Diagnoses were important in clinical and administrative decisions concerning disposition of patients. A total PD group consisting of all major subgroups shown in Table I (excluding 23 men and 1 woman who were missing demographic data) (N = 20,709) was formed to compare with a control group of randomly selected personnel (N = 11,634) who served at some time during 1980 to 1988 but were never hospitalized for mental disorder. Randomness for the control group was ensured by selecting individuals with social security numbers that ended in 5.

All of the information used in the study was gathered from official personnel files and medical records. Data were edited for accuracy using multiple medical and administrative records for each individual. Hospitalization data were obtained from the Naval Medical Information Management Center (Bethesda, Maryland). Demographic, occupational, and service history information was obtained from the Naval Military Personnel Command (Washington, DC). Sets of measures were obtained at the time of entry into service or the beginning of the observation period, at the time of hospitalization, and at the time of separation from the service. Demographic measures at service entry included age, pay grade, and highest educational level. A mental group score was derived from aptitude test scores by converting to percentiles and grouping into five equivalent categories. Measures at the time of hospitalization included pay grade, length of service, days hospitalized, and assessment by the attending physician as to whether the condition existed prior to entering service. Measures at the time of discharge included number of

hospitalizations during service, unauthorized absences, desertions, promotions, demotions, recommendations for re-enlistment at the time of discharge, early attrition, medical disability discharge, and remaining in the Navy after 1992, providing at least 4 years of follow-up for all cases. The early attrition measure was a dichotomy based on whether the individual completed obligated service. If the individual was separated from the Navy for any reason before his or her term of enlistment expired, he or she was classified as early or premature attrition. The only exceptions were recommendation for officer training or status and leaving the service within 3 months of expiration of enlistment to attend school. Reasons for attrition included medical disability, misconduct, unsuitability, and convenience of the government. First hospitalization incidence rates per 100,000 person-years were calculated using the Epidemiological Interactive System.¹⁰ Follow-up data analyses were conducted using SPSS Statistical Data Analysis software.¹¹ Chi-square tests of significance evaluated differences between cases and controls and gender differences.

Results

The distribution of all PD cases by diagnostic subtype and gender is shown in Table I. By far the most common diagnostic category used was other PDs (approximately 50% of all PD diagnoses were coded as 301.80-301.89 during the study period). The largest number of cases for remaining major categories was for dependent, followed by schizoid and antisocial.

Comparisons of the PD and control groups on demographic and military status variables at the beginning of the observation period are shown in Table II. Women were overrepresented among the cases. Female controls were slightly younger than PD cases. Controls were slightly more likely to have higher pay grades at entry than the case group. Approximately three-fourths of PD cases were in the lowest pay grade. PD cases were clearly less likely to have completed high school than controls, but the two groups were similar with respect to mental aptitude. Overall, educational attainment showed the largest difference between the two groups.

Table III summarizes the characteristics of PD cases at the time of first hospitalization. More than two-thirds of the cases were in the lower pay grades (E1-E3) and less than one-third had progressed to the level of petty officer (E4-E6). More than one-half had served 1 year or less before hospitalization. More than one-half were judged to have had the condition before enlistment in the Navy. Hospitalization stays were short-5 days or fewer in most cases.

Differences between PD cases and controls at the time of discharge are shown in Table IV. As expected, PD cases were younger, served a much shorter time, and achieved lower pay grades than controls; for example, 58% of male controls had achieved petty officer status compared with 30% of PD cases. One-half of the male controls had received more than two promotions compared with 26% of PDs. Notably, PD cases had received more demotions than controls, despite shorter periods of service. Also, PD cases were more likely to have unauthorized absences and/or desertions than controls during shorter periods of service. The groups did not differ on marital status; slightly more controls were married or divorced/separated, but this finding could well have been a function of age differences. Far more PD cases failed to complete obligated service than controls, and a much larger proportion were not recommended for re-enlistment at the time of discharge.

The relationships of demographic variables and mental aptitude at entry into service to early attrition are shown in Table V. For controls, both education and mental aptitude were related to early attrition; for PD cases, education but not mental aptitude was related to early discharge. Low pay grade, but not younger age, predicted early attrition in both cases and controls.

Gender Differences

Overall, women were more likely than men to have a PD diagnosis. Rates of each PD by gender subgroup are shown in Table I. Statistically significant gender differences

were found in several subgroups. Exceptions were for paranoid, compulsive, and dependent PDs, where no differences were found. Men had higher rates of schizoid, explosive, and antisocial PDs, whereas women had higher rates of affective, histrionic, other, and unspecified PDs. These gender differences remained after controlling for age differences (data not shown).

Gender differences between the PD and control groups on demographic variables are shown in Table II. For controls, women tended to be older, more often had 12 or more years of education, and had higher mental aptitude scores than men. Men, however, tended to have higher pay grades than women at the beginning of the observation period; this was because men on the average had longer service at the time. At the time of hospitalization, women tended to have higher pay grades (E2-E3) than men while having less time in service (see Table III). There was no difference in length of hospitalization, and only a small difference was present with respect to the condition existing prior to enlistment.

At the time of discharge, female PD cases tended to be older than male cases (age 25-34 years) and have longer service (3-6 years), as shown in Table IV. Female controls were more likely to be married than male controls or female cases. More female cases than male cases were petty officers (E4-E5) and far fewer were in the lowest pay grade (E1). Male cases were more likely to have no promotions and one or more demotions. Finally, among controls, women were more likely to be discharged early; among cases, men were more likely to attrite. Men also were less likely to be recommended for re-enlistment (10% vs. 16%).

Change over Time

First hospitalization rates for PDs over the period 1980 to 1988 are shown in Figure 1. Across the entire 9-year period, overall increases of approximately 75% occurred for men and approximately 50% for women; increases between 1984 and 1988 were approximately 80% for men and 45% for women. A χ^2 test of linear-by-linear

association showed no difference in trend by gender ($\chi^2 = 0.520$). To extend these observations, a subset consisting only of shore-based personnel was examined through 1995. Figure 2 shows that the increase in rates began in 1984, continued until 1989, then declined dramatically in the early 1990s. Shipboard men were two to three times more likely than shipboard women to have a first hospitalization for PD. Women during that time period were assigned to material support ships (destroyer and submarine tenders) but not combat ships. Submariners, who have their own medical and psychological screening programs, had the lowest risk. The rates in personnel assigned aboard ships approximately doubled from the low point in 1983 to the high point in 1988 for both men and women.

Discussion

Mental and emotional disorders are a major public health problem in the Armed Forces as they are in society generally. This longitudinal analysis of PDs in the military has demonstrated the incompatibility of a PD diagnosis with successful completion of obligated service. This was an initially healthy population that in the course of military service manifested serious symptoms of mental disorder, which resulted in removal from the work site and, in many cases, termination of military careers.

Women with a PD diagnosis were at overall greater risk for a first hospitalization in this population. This study is one of few that have examined gender differences for hospitalized PD cases in detail. The large number of other PDs diagnosed included borderline PD, which in civilian populations has sometimes been found to be more common in women than men.¹² This has not been a routine finding, and, indeed, other studies have shown that men are more likely to meet diagnoses for borderline PD¹³ or have found no gender differences.^{14,15} The present findings were, however, consistent with studies that have found men more likely to be diagnosed with schizoid and antisocial PD.^{13,15} These findings and that of the greater likelihood of affective and histrionic PD diagnoses found among women in this

population may represent a potential gender bias in the diagnosis of PD. The varied and complex sources of such a bias have been discussed by Widiger¹⁶ and cannot be discounted in the present study. Furthermore, this study does not control for axis I diagnoses that may be associated with axis II psychopathology and may differentially affect the rates in men and women.^{14,15} Further research on gender differences using personality questionnaires and structured diagnostic interviews is clearly warranted in this population.

One of the most striking findings in this study was the fluctuation in rates across time. It is unknown to what extent the 1984 to 1989 increase reflected an actual increase in incidence or instead a change in admission policies or diagnostic practices. Although the advent of DSM-III-R in 1987" coincides with the subsequent increase in the first hospitalization rate noted in 1987 and 1988, it would not account for the rate decline in the 1990s. Anecdotal reports from staff psychiatrists suggest that this admission pattern may reflect the relative difficulty in obtaining service discharges or separations for these individuals. Prior to 1990, hospitalization may have facilitated administrative releases from the service. During the draw down to reduce the size of the military, which began in 1990, separations could be processed while patients were in crisis intervention programs or outpatient facilities. This explanation is supported by an examination of total Navy population (strength) figures during this period. From 1984 to 1989, the population (end strength) increased by 28,000 sailors; from 1990 to 1995, the population decreased by approximately 145,000 sailors. Future comparisons between inpatient and outpatient rates may help elucidate this issue.

One of the most important findings among the case group was that the pathology was frequently judged to be present prior to enlistment. These findings are in general agreement with those of Kilbourne et al.,¹⁸ who noted a somewhat higher proportion (67%) of hospitalized PDs with a pre-Navy enlistment condition than that observed in the present study (56%). That study, however, included all hospitalizations from 1981 to 1984, in contrast to first hospitalizations only from 1980 to 1988 included in the present study, and it had a slightly lower proportion of

women (10%) than the 12.4% in the present study. The inclusion of multiple hospitalizations and the observation that men were more likely than women to have their condition deemed pre-existing (Table III) may account for the difference in pre-existing conditions in the two studies.

The demographic pattern of gender differences at entry, such as women's older age, higher education, and mental aptitude scores, gave women an advantage or better prognosis with respect to successfully completing their enlistments. Men's poorer performance in terms of numbers of promotions and demotions and recommendations for re-enlistment may be explained by the fact that men were more often involved with disciplinary problems than women, leading to more negative evaluations.

Overall, basic demographic and performance information provided limited predictive power for potential screening efforts. Any lowering in enlistment standards involving years of education completed at the time of entry would adversely affect attrition rates. However, the large proportion of cases designated as existed prior to entering service strongly suggests that more intensive screening aimed at identifying a history of psychopathology in applicants for enlistment would be worthwhile to reduce early attrition, particularly when antisocial tendencies are evident. This conclusion has been reported in several studies.^{2,7,18-20} With the development of assessment and screening instruments designed in conjunction with current standardized diagnostic criteria, the identification of an inexpensive, valid, and reliable screening device for use in this population may now be possible. At the same time, the issue of diagnostic specificity and reliability among this group leaves effectiveness of a PD screening program open for debate. The frequent choice of other PD diagnoses reflected considerable uncertainty with respect to the specific features of these conditions. The addition of new diagnostic subcategories after 1985 reduced this ambiguity somewhat, but the diagnosis with the second largest number of cases remained PD, unspecified. Furthermore, the higher rate of PD observed for shipboard men than for shipboard women or screened submariners suggests that there is a higher risk of being diagnosed with PD aboard a combat ship. Together

with the overall higher rates observed for women, it may be that this diagnosis reflects the difficulty symptomatic individuals have in being accepted in closed military environments. It is unknown to what extent clinically based diagnostic criteria are followed in making these diagnoses or to what extent such diagnoses are being used as expedient means of discharging unhappy, maladaptive individuals. The diagnostic process within the military and the nonmedical, organizational influences on it are substantial and have been described previously.²¹ Evaluation of a standardized, clinical, criteria-based screening instrument in this population and continuing assessment of service adjustment and mental health of active duty personnel are recommended research directions. In addition, closer examination of the 20% of cases who manage to successfully complete their tour of duty after hospitalization may provide clues toward retaining trained personnel in the service.

In summary, hospitalized PD cases as a group had short and unsatisfactory military careers. Pronounced gender differences, particularly in assignment of diagnostic subtypes, need further investigation to determine relationships to pre-enlistment experiences, behavior patterns, and career outcomes. Further investigation is also needed to identify correlates or determinants of the marked increase observed in first hospitalization admissions for PDs and consequent manpower loss. Similar studies across all service branches will be useful in ascertaining the scope of this problem throughout the military. Understanding factors that affect incidence rates of PD under various environmental and social conditions should help develop strategies to deal more effectively with the large degree of premature attrition that occurs because of these conditions.

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