Psychopathology of Israeli Soldiers Presenting to a General Hospital Emergency Department: Lessons for the Attending Physician and Psychiatrist

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ABSTRACT: **Background:** There is scant research on the psychopathology of Israeli soldiers who present to a general hospital emergency department (ED).

Objectives: To assess the psychopathology among a cohort of Israeli soldiers who presented to a general hospital ED for mental health assessment.

Methods: The demographic and clinical characteristics of 124 consecutive soldiers who presented to the ED for psychiatric assessment between January 2008 and September 2012 were reviewed. Twenty-seven soldiers from the cohort were contacted for follow-up by telephone on average 52 months later.

Results: The reasons for presentation to the ED, usually during the early stages of military service, included self-harming behavior, suicidal ideation, somatoform complaints, and dissatisfaction with their military service. Psychiatric diagnoses included adjustment disorder and personality disorder. Self-harming behavior/suicidal ideation was significantly correlated with unspecified adjustment disorder ($P = 0.02$) and personality disorder ($P = 0.001$). At follow-up, there was a lack of substantial psychopathology: none of the subjects engaged in self-harming behavior/suicidal ideation and a consistent trend was observed toward clinical improvement.

Conclusions: Psychiatric intervention of soldiers who present to a general hospital ED because of emotional difficulties may provide the opportunity for crisis intervention and validation of the soldier's distress. To the best of our knowledge this is the first Israeli study of psychopathology among soldiers who presented to an ED.

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Military service requires obedience, uniform appearance, disengagement from the family, and responsibility beyond the personal needs of the individual. There is a potential threat for physical injury and mental stress [1,2]. This experience can result in crisis situations, which may be expressed through complaints about conditions of service, non-approved absenteeism, disciplinary problems, and changes in role assignment. As a result, soldiers may manifest self-harming behaviors and even suicidal behaviors [3].

Depressive symptoms among soldiers during military training are common [4] and are often related to difficulties with separation from friends and families. These difficulties, together with exposure to combat situations or stress [5,6], are major causes for psychiatric consultation.

There is an increased risk of suicide during military service in Israel [7]: 50% of suicide victims met formal criteria of major depressive disorder (MDD) [8]. Another study found that 50% of soldiers with suicidal ideation were also found to be suffering from MDD [9].

Post-traumatic stress disorder (PTSD) [10-12] and alcohol use disorder (AUD) have been associated with military service. The latter has been related to suicide in the United States Army [13] and also in the Israel Defense Forces (IDF) [14,15].

Military service in Israel is mandatory for both Jewish men and women as well as men from the Druze and Circassian communities (3 years for men and 2 years for women), and is regarded as a significant part of growing up in Israeli society.

In the IDF, mental health personnel are posted in various military settings. The military has its own mental health clinics that consist of a multidisciplinary staff of social workers, psychologists, and psychiatrists, including referral centers [2]. One study suggests that the IDF should raise awareness and enhance support of special needs soldiers during their service in the military [16].

In Israel, soldiers may be examined in any public hospital emergency department (ED). Soldiers referred to the psychiatric ED, are assessed by a psychiatrist.

The aim of this study was to describe the demographic and clinical characteristics of soldiers who were referred for psychiatric assessment (n=124) at a general hospital ED. The authors of the study then followed 27 of these soldiers on average 52 months later with regard to demographic characteristics, military outcome, and psychopathology.

To the best of our knowledge, this is the first study of its kind in Israel.

PATIENTS AND METHODS

STUDY GROUP

The study group consisted of 124 consecutive soldiers who were referred for psychiatric assessment to the Shaare Zedek Medical Center ED, a general hospital in Jerusalem, Israel, between January 2008 and September 2012.

Soldiers were referred for psychiatric evaluation by a medical officer, the soldier's commander, or self-referred.

Shaare Zedek is 1000-bed general hospital affiliated with the Hebrew University of Jerusalem. The consultation-liaison psychiatry unit consists of three senior consultation-liaison psychiatrists (CG, JM, and SJ) who provide consultation to the ED and the medical departments. Every patient who participated in this research was examined by one of the psychiatrists.

Files of patients were retrospectively examined. Demographic information, reason for presentation, and psychiatric diagnoses, including AUD, were reviewed for each patient. Psychiatric diagnoses were made according to DSM–IV-TR. Each soldier's psychiatric diagnosis was discussed at a weekly meeting of the three attending psychiatrists.

FOLLOW-UP GROUP

Between September 2013 and January 2014, the authors of this study made telephone contact with 27 of the original soldiers, all of whom agreed to participate in a structured interview.

The mean length of follow-up was 52 months and the median range was 25–96 months.

The remainder (n=97) were not accessible. In the original protocol of the study, it was intended that all 124 soldiers would be followed. However, only 27 soldiers were able to be contacted. Since the proportion of soldiers who were part of the follow-up was relatively small, a homogeneity comparison was performed to confirm that this sample was representative of the original larger sample.

In the interest of maximizing the compliance of the follow-up population it was decided to use a structured interview and two questionnaires that lend themselves to a telephone interview setting.

The interview included questions regarding living arrangements, employment status, alcohol use, and military service. The soldiers also completed two questionnaires: the Alcohol Use Disorder Identification Test (AUDIT) [17] and the DSM-5 Level 1 Cross-Cutting Symptom Measure (CCSM) [18]. The AUDIT was developed by the World Health Organization to improve the diagnosis of AUD by physicians. The questionnaire consists of 10 questions regarding the respondent's drinking habits, frequency of drinking, and adverse consequences of alcohol use particularly over the last year. The CCSM is a patient-rated measure that assesses mental health domains that are important across psychiatric diagnoses. The adult version of the measure consists of 23 questions that assess 13 psychiatric domains, including depression, anger, mania, anxiety, somatic symptoms, suicidal ideation, psychosis, sleep problems, memory issues, repetitive thoughts and behaviors, dissociation, personality functioning, and substance use. The measure was found to be clinically useful and to have good reliability in the DSM-5 field trials that were conducted in adult clinical samples across the United States and in Canada [19].

We validated the translation of the CCSM level 1 questionnaire from English into Hebrew in the following manner: the questionnaire was first translated from English to Hebrew by three bilingual translators. The three translations were combined to form a single version to be used for the study. This version was translated back to English by yet another translator to ensure its precision. The original English questionnaire and the Hebrew version were then answered by 45 bilingual participants, all over 18 years of age. We compared their answers for every matching question and found a strong correlation – all participants gave the same answers to the questions in both languages.

The study was approved by the hospital ethics committee as conforming to the Declaration of Helsinki.

STATISTICAL ANALYSIS

The authors of this study found descriptive statistics using numbers and percentages for qualitative variables and means, standard deviations, and ranges for quantitative variables. They then performed the statistical analysis in three steps. First, they tested the relationships between self-harming behavior and suicidal ideation and all the remaining patient characteristics using Fisher's exact tests for qualitative variables and Mann–Whitney–Wilcoxon tests for quantitative ones. In this step, the tested population was the study group.

Second, they tested the homogeneity between the subgroups with or without follow-up on all the variables using Fisher's exact tests for qualitative variables and Mann–Whitney–Wilcoxon tests for quantitative ones.

Third, they analyzed the change in variables between the first exam and the follow-up exam only by descriptive statistics, due to the low sample size. All tests were two-sided, considering a $P < 0.05$ as significant. No Bonferroni protection was used

because of the explanatory and descriptive nature of the study. The computations were performed using the SAS V9.4 statistical package (SAS Institute Inc, Cary, NC, USA).

RESULTS

STUDY GROUP

Results description

Results are presented in Table 1, Table 2, Table 3, and Table 4.

Nearly half of the soldiers (47.6%) presented to the ED due to self-harming behavior/suicidal ideation, 16.1% because of complaints of depression/anxiety, 10.5% because of somatoform complaints, and 16.9% because of dissatisfaction with their army role or desire to be discharged.

Table 4 shows a detailed list of the soldiers' psychiatric diagnoses.

Morbid personality traits were found in additional 24.4% of the soldiers.

Correlations

There was no significant correlation between gender and suicidal ideation, self-harming behavior, or suicide attempt.

There was only a trend for correlation between self-harming behavior/suicide ideation and a diagnosis of adjustment disorder ($P = 0.09$). However, there was a significant correlation between self-harming behavior/suicidal ideation and adjustment disorder unspecified ($P = 0.02$). There was also a correlation between self-harming behavior/suicidal ideation and a diagnosis of personality disorder ($P = 0.001$).

No correlation was found with suicidal ideation, self-harming and suicide attempt, and MDD. AUD also was not correlated to self-harming behavior/suicidal ideation.

There was no correlation between combat role or dissatisfaction with army service and self-harming behavior or suicidal ideation.

There was no correlation between being self-referred and dissatisfaction with army service.

Soldiers presented significantly more frequently in the first year of military service than the second year and more in the second year than their third year ($P < 0.0001$).

No statistical difference was found on the day of presentation during the working week but soldiers presented less frequently ($P < 0.0001$) during the weekends (in Israel Friday and Saturday).

FOLLOW-UP GROUP

Demographic characteristics and military outcome of the 27 individuals who could be contacted are presented in Table 2.

Table 1. Characteristics of soldiers examined in the emergency room

	N=124 (%)
Age, years, mean ± SD	19.6 ± 1.4
Age range, years	18–29
Gender	
Male	82 (66.1)
Female	42 (33.9)
Marital Status	
Single	123 (99.2)
Married	1(0.8)
Ethnic origin	
Israeli born Jew	106 (85.5)
Israel born Druze	3 (2.4)
African born	1 (0.8)
Western born	6 (4.8)
Former Soviet Union born	8 (6.5)
Nature of army service	
Combat	16 (12.9)
Non-combat	108 (87.1)
Reason for psychiatric presentation	
Suicidal ideation	27 (21.8)
Self-harm	21 (16.9)
Suicide attempt	11 (8.9)
Anxiety	14 (11.3)
Somatic complaint	13 (10.5)
Depression	6 (4.8)
Psychosis	3 (2.4)
Acute stress reaction	2 (1.6)
Dissociative state	2 (1.6)
Ideation of violence	2 (1.6)
Alcohol / Substance intoxication	2 (1.6)
Dissatisfaction with army position	14 (11.3)
Desire to be discharged from the army	7 (5.6)

	N=124 (%)
Psychiatric diagnoses	
Adjustment disorder	103 (83.1)
Depressive disorder	10 (8.1)
Anxiety disorder	8 (6.4)
Acute stress disorder	2 (1.6)
Posttraumatic stress disorder	7 (5.6)
Conversion reaction	6 (4.8)
Eating disorder	1 (0.8)
Psychotic disorder	5 (4.0)
Cluster B personality disorder	18 (14.5)
Cluster C personality disorder	10 (8.1)
Cluster A personality disorder	1 (0.8)
Personality disorder not otherwise specified	8 (6.4)
Attention deficit hyperactivity disorder	13 (10.5)
Alcohol use disorder	20 (16.1)
Discipline problem in army	14 (11.3)
Past psychological treatment	45 (36.3)
Past psychiatric treatment	15 (12.1)
Psychosocial Stressors	
Parental medical problem	15 (12.1)
Social problems	11 (8.9)
Parent child relationship difficulties	8 (6.5)
Financial stressors in family	7 (5.6)
Parent psychiatric pathology	2 (1.6)
Personal financial stressor	1 (0.8)
Parental marital status	
Married	90 (72.6)
Divorced	30 (24.2)
Widowed	4 (3.2)
Referral mode	
By army	105 (84.7)
Self-referred	19 (15.3)

	N=124 (%)
Previous presentation in emergency department	10 (8.1)
Psychiatric complaint	2 (1.6)
Medical complaint	2 (1.6)
Surgical complaint	
Months of army service at presentation	
0–6	39 (31.5)
7–12	37 (29.8)
13–24	36 (29.0)
25–3	12 (9.7)
Recommendations for ongoing treatment:	
Outpatient psychiatric follow-up	104 (86)
Recommended for discharge from military service	16 (13.2)
Other	4 (3.2)

Table 2. Demographic characteristics of the follow-up group including change in military status

	n=27 (%)
Age, years	22.7 ± 1.56
Age range, years	21–27
Gender	
Male	18 (66.7)
Female	9 (33.3)
Marital status	
Married	2 (7.4)
Single	25 (92.6)
Living arrangement	
With parents	20 (74.1)
Independent	7 (25.9)
Employment status	
Employed	18 (66.7)
Student	7 (25.9)
Unemployed	2 (7.4)
Military service status outcome Following presentation to the emergency department	
Psychiatric discharge	11 (40.7)
Army role changed	11 (40.7)
Army role did not change	5 (18.5)
Currently serving	0 (0)

None of the follow-up sample soldiers were still in active military service; 40.7% (n=11) of them were prematurely discharged for psychiatric reasons.

The authors of the study compared psychiatric diagnoses of the follow-up group with the diagnoses of each soldier during their military service [Table 3].

HOMOGENEITY TESTING OF THE FOLLOW-UP GROUP

When the follow-up group of 27 soldiers was compared with the remaining group of 97 soldiers, no difference was found in any of the variables. On the basis of these findings, the two groups were considered homogeneous from a statistical perspective.

DISCUSSION

In our study group, we found a correlation between self-harming behavior/suicidal ideation and a diagnosis of adjustment disorder unspecified to military service ($P = 0.02$) or to a personality disorder ($P = 0.001$). At follow-up, after military service, none of the subjects reported suicidal ideation. Our findings are in agreement with previous research, which found that suicide attempts, especially impulsive attempts of low lethality, are more likely to be associated with adjustment disorder and personality disorder [20].

In an Israeli study of self-harming soldiers [21] the most prevalent psychiatric diagnosis was personality disorder, which was found in 45% of the sample, and adjustment disorder, which was found in 16.8% of the sample. The higher prevalence of personality disorder in this study compared with our study may relate to the fact that in our study only 25% of the subjects presented with self-harming behavior. A smaller proportion of subjects presenting with self-harming behavior in our study is likely to increase the probability of an underlying adjustment disorder rather than a personality disorder.

Table 3. Psychiatric symptoms of follow-up group

Diagnosis	Diagnosis at presentation n=27 (%)	Presence of symptoms at follow-up (%)
Self-harming ideation/behavior	16 (59.2)	0 (0)
Alcohol use disorder	2 (7.4)	1 (50)
Somatoform/conversion symptoms	5 (18.5)	0 (0)
Dissociative symptoms	1 (3.7)	0 (0)
Anxiety disorder/AD with anxiety/PTSD	8 (29.6)	3 (11.1)
Depressive disorder/AD with depressed mood	3 (11.1)	0 (0)
Psychosis	1 (3.7)	0 (0)

AD = adjustment disorder, PTSD = post-traumatic stress disorder

Table 4. Detailed psychiatric diagnoses

Diagnosis	N=124 (%)
Adjustment disorder	103 (83.1)
AD unspecified	70 (56.5)
AD with anxiety	17 (13.7)
AD with depression	12 (9.7)
AD with mixed anxiety and depression	5 (4)
Anxiety/depressive disorder	18 (14.5)
Personality disorder	36 (29.1)
Borderline PD	10 (8.1)
Antisocial PD	5 (4)
Avoidant PD	5 (4)
Dependant PD	4 (3.2)
Histrionic PD	2 (1.6)
Narcisstic PD	1 (0.8)
Obsessive compulsive PD	1 (0.8)
Schizoid PD	1 (0.8)
PD not otherwise specified	8 (6.4)

AD = adjustment disorder
PD = personality disorder

The low presentation rate during the weekends may be related to the fact that most of the soldiers in our study belonged to non-combat units and therefore had weekend leave from their base. However, an earlier study demonstrated a significant reduction in suicide rates by Israeli soldiers with a change of policy reducing access to firearms over the weekend [22].

In a previous Israeli study [9], 50% of the soldiers with suicidal ideation were also diagnosed with a MDD. In our study, suicidal ideation, self-harming behaviors, and suicide attempts were related to an unspecified adjustment disorder rather than to a depressive disorder. One explanation of the discrepancy in these studies may relate to the selection process. In our study,

more than one-third of the soldiers were self-referred; whereas, in Apter's study [9], soldiers were referred specifically by military personnel to the IDF mental health services. Soldiers with adjustment disorders may be more likely to refer themselves for mental health assessment than those diagnosed with MDD.

We found a relatively high frequency of ADHD diagnosis (10.5%, n=13). ADHD was reported elsewhere as having a negative impact on the functioning of young adults in a military setting [23].

We found that 2 of the 27 soldiers were diagnosed with AUD, a well-documented condition [13,15], which is seen more commonly in combat soldiers compared to non-combat soldiers.

We found a high frequency of adjustment disorders (83.1%, n=103), with its onset particularly in the early stage of military service (first year). There was a consistent trend toward clinical improvement following military service with little evidence of significant psychopathology.

Of the follow-up sample, 40.7% (n=11) were discharged from the army on psychiatric grounds following their presentation to the ED. In and additional 40.7% (n=11) of the sample their army role was changed following their presentation to ED. It appears that resolution of the soldier's crisis either through discharge from the army or through changing his/her army role may have contributed to the clinical improvement following military service.

It would be useful in future replicative research to discuss with the soldier at follow-up the factors that significantly contributed to a resolution of the crisis associated with military service: change of army role, psychological treatment, army discharge, or other factors. To the best of our knowledge, there is no literature comparing psychopathology among soldiers referred to a psychiatric hospital ED and a general hospital ED but it appears likely that in the short term there is greater psychopathology in the former group.

These findings suggest that Israeli soldiers who present to a general hospital ED because of emotional difficulties are in crisis related to their military service and therefore require a crisis model of intervention [24]. As part of gathering information about the soldier's level of coping skills, the immediate commander is contacted in the presence of the soldier with his/her consent obtain a description of the level of daily functioning, including signs of suicidal intent. The psychiatric assessment of the soldier in the ED should also address the level of suicidal intent.

Psychiatric intervention with soldiers in the ED should seek to contain and defuse the crisis by validating the patient's distress and preparing the soldier for ongoing mental health management within the army framework.

The majority of the soldiers in our study could be conceptualized developmentally as prolonged adolescents and their symptomatology was often of a demonstrative nature in response to the crisis associated with their military service.

Most of the soldiers in the study had non-combat profiles. Perhaps the non-combat soldiers were initially excluded from combat options due to underlying mental health issues. Furthermore, soldiers with combat roles tend to have higher levels of motivation in their military service compared to non-combat personnel [25] and therefore may be less likely to have underlying mental health issues such as adjustment disorders.

LIMITATIONS

The limitations of this study include the small number of subjects in the original sample, the incomplete follow-up, and the fact that all subjects were recruited from the same institution. Another limitation was the use of different screening measures in the initial assessment in the ED and in the telephone interview of the follow-up group.

CONCLUSIONS

In our study the primary reason for soldiers' presentation to ED was self-harming behavior/suicidal ideation, which was significantly correlated with a diagnosis of unspecified adjustment disorder and also correlated with personality disorder. There was no evidence of substantial psychopathology at follow-up.

Psychiatric intervention of soldiers who present to a general hospital ED because of emotional difficulties may provide the opportunity for crisis intervention and validation of the soldier's distress.

Future research should replicate these findings and examine the relationship between self-referral of soldiers for a psychiatric assessment and an underlying adjustment disorder. Standardized screening instruments, such as CCSM Level 1 & 2, may improve early detection of psychiatric disorders including self-harming behaviors in young soldiers who present to an ED of a general hospital.

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Capsule

Rituximab may cause increased hepatitis C virus viremia in rheumatoid arthritis patients through declining exosomal MicroRNA-155

Several studies have shown that rituximab may enhance hepatitis C virus (HCV) activity. MicroRNAs (miRNAs) have been implicated in modulating the host immune response in HCV infection; miRNAs can be packaged into the exosomes and then shuttled by the exosomes to aid biologic functions. However, the role of exosomal miRNAs (exo-miRNAs) in rituximab-related HCV activity enhancement remains unclear. **Liao** et al. examined the association between rituximab and increased HCV activity by using an in vitro cell-based assay. Purified exosomes were confirmed using immunoblotting and flow cytometry and quantified using enzyme-linked immunosorbent assay. Exosomal miRNA-155 (exo-miR-155) levels were measured using quantitative reverse transcription–polymerase chain reaction. In vitro data showed that B cell–derived miR-155 could inhibit HCV replication in hepatocytes through exosome transmission. Rituximab could both induce B cell depletion and affect intracellular miR-155 production as well as exo-miR-155 transmission and then enhance HCV activity in hepatocytes ($P < 0.005$). Serum exosome levels were increased in rheumatoid arthritis (RA) patients with HCV infection compared with the levels in RA patients without HCV infection ($P < 0.01$). The exo-miR-155 levels were significantly increased in RA patients with HCV infection compared with those without infection ($P < 0.01$). A significantly greater decrement of exo-miR-155 expression was observed after rituximab therapy compared with those observed before therapy ($P < 0.01$), and hepatitis C viral loads increased simultaneously ($P < 0.05$). Circulating exo-miR-155 levels were negatively correlated with hepatitis C viral loads and subsequently associated with rituximab-related HCV activity enhancement in RA patients. Exo-miR-155 may become a potential diagnostic biomarker or therapeutic target.

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Eitan Israeli

"It is not in the stars to hold our destiny, but in ourselves"

William Shakespeare, (1564–1616), English poet, playwright, and actor

"If all men knew what others say of them, there would not be four friends in the world"

Blaise Pascal, (1623–1662), philosopher and mathematician