Original article

Epidemiological Profile of Common Mental Health Disorders in Outpatient Psychiatry Clinics of Two Military Hospitals in Riyadh

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Abstract

Background and aims:
Data about the mental health profile of military personnel and their families are needed to establish evidence-based intervention programs in military hospitals. This study aims to determine the epidemiological profile of common mental health disorders in the psychiatric clinics' attendees in military hospitals.

Methods:
A cross-sectional study in psychiatric outpatient clinics in two tertiary-care military hospitals in Riyadh, Saudi Arabia. Data were collected from the psychiatric outpatients and their electronic health records by trained physicians.

الملخص

الخلفية و الأهداف:
هناك حاجة إلى بيانات الصحة النفسية للأفراد العسكريين وأسرهم لإنشاء برامج علاجية مبنية على البراهين في المستشفيات العسكرية. تهدف هذه الدراسة إلى تحديد الملف الوبائي للاضطرابات النفسية الشائعة في عيادات الطب النفسي في المستشفيات العسكرية.

طريقة البحث:
دراسة مقطعية في العيادات الخارجية للطب النفسي في مستشفيين عسكريين بالرياض. تم جمع البيانات من مرضى العيادات الخارجية وملفاتهم الإلكترونية من قبل أطباء مختصين.

النتائج:
من بين ٩٣٤ مشاركًا، ٢٠٢ (٥,٦٤٪) كانوا من الذكور، ٩٥٢

Results:
Of the 439 participants, 202 (46.5%) were male, 259 (64.6%) were in the 26 to 50-year-old age group, and 270 (63.7%) were married. More than 50% were unemployed. The majority (73.3%) of the sample were either overweight (29.8%) or obese (43.5%). The most common mental disorder among psychiatric outpatients in military hospitals was depression (44.4%), followed by anxiety (35.1%), psychosis (25.7%) and bipolar disorder (7.1%). A regression analysis confirmed a significant association between depression, anxiety and psychosis and age, gender, educational level, marital status, and body mass index (BMI).

Conclusions:
The majority of patients attending psychiatric clinics in military hospitals have depression, followed by anxiety, psychosis, and bipolar disorder respectively. Around 75% of the participants had increased BMI which requires further studies to assess the reasons; moreover, weight reduction programs can be beneficial.

Key Words:
Psychiatry, outpatients, depression, anxiety, Saudi Arabia.

(٦,٤٦٪) كانوا في الفئة العمرية من ٦٢ إلى ٥٠ عامًا، و٠٧٢ (٧,٣٦٪) كانوا متزوجين. أكثر من ٥٠٪ من المرضى عاطلون عن العمل. كانت أغلبية العينة (٣,٣٧٪) لديهم إما زيادة في الوزن (٨,٩٢٪) أو سمنة (٥,٣٤٪). كان الاكتئاب (٤,٤٤٪) أكثر الاضطرابات النفسية شيوعًا بين مرضى عيادات الطب النفسي الخارجية في المستشفيات العسكرية، يليه القلق (١,٥٣٪) والذهان (٧,٥٢٪)، ثم الاضطراب الوجداني ثنائي القطب (١,٧٪). أكد تحليل الانحدار وجود ارتباط كبير بين الاكتئاب والقلق والذهان والعمر والجنس والمستوى التعليمي والحالة الاجتماعية ومؤشر كتلة الجسم (IMB).

الخلاصة:
يعد الاكتئاب أكثر الأمراض شيوعاً بين المرضى الذين يرتادون عيادات الطب النفسي الخارجية في المستشفيات العسكرية، يليه القلق، ثم الذهان، والاضطراب الوجداني ثنائي القطب. حوالي ٥٧٪ من المرضى كانوا يعانون من زيادة بمعدل كتلة الجسم، مما يتطلب المزيد من الأبحاث لتقييم الأسباب. بالإضافة إلى ذلك، يمكن أن تكون برامج تخفيض الوزن مفيدة لهؤلاء المرضى.

الكلمات المفتاحية:
الطب النفسي؛ العيادات الخارجية؛ الاكتئاب؛ القلق؛ المملكة العربية السعودية.

Introduction:

The life of military personnel is different from the one of civilians in many aspects given their exceptional nature of work [1]. These include living in isolated environment, endurance of life-threatening conditions, losing friends in battlefields, and being separated from their families for long periods of time [1]. Although these stressors can have a major impact on mental health, it is still questionable whether military personnel are a high-risk group for mental disorders compared to other populations [2].

A study in the United Kingdom aimed to assess the prevalence of common mental health disorders in military personnel compared to the general population with a sample size of approximately 14090 military personnel and 15623 civilians found that military soldiers have double the chance of having symptoms of mental disorders [3]. In contrast, a study on the United States military personnel with a large sample size (77,047) found that the prevalence of mental disorders in those personnel is similar to the general population as 18.3% of the participants met the criteria for a mental disorder [4]. However, some military subgroups including single, females, younger, less educated, shorter service were found to have higher chances for some mental disorders in that study [4]. Similarly, a German study that compared the prevalence of mental disorders between 1023 civilians, 1439 deployed soldiers, and 779 non-deployed soldiers found that the prevalence of a 12-month mental illness did not differ in deployed soldiers compared to civilians, and, surprisingly, it was lower in non-deployed soldiers [2]. Nevertheless, deployed soldiers with high warfare exposure had elevated rates of agoraphobia and post-traumatic stress disorder [2].

Due to recurrent relocations, prolonged separations, the potential injury or death of the family member, and the burden of managing civilian life as a single parent, military work also has a stressful impact on soldiers' families [5-7]. A study on 642,397 children found that there is an increase of 19% in behavioural disorders, 18% in stress disorders, and 11% in outpatient psychiatric visits when a military parent is deployed [5]. A study on the effects of deployments on the utilization of mental-health outpatient services among US army personnel' partners found that wives of deployed personnel had more diagnoses of depressive disorders (27.4 more cases per 1000 spouses), anxiety (15.7 more cases per 1000 spouses), and sleep disorders (11.6 more cases per 1000 spouses) [6]. Even before being deployed, military soldiers and their families might endure anxiety while waiting for expected deployment [7].

Despite growing in psychiatric literature, there is scarce data addressing the mental health of Saudi Arabia or other Middle Eastern countries' military personnel or their families. This could be attributed to security reasons and/or the negative stigma associated with psychiatric disorders in the Middle East [8]; this stigma could be more exaggerated in sensitive groups such as army forces [9]. However, data about the mental health profile of military personnel and their families are needed to establish evidence-based intervention programs to

ensure good mental health among our soldiers. Thus, the aim of this study is to determine the profile of mental disorders and the characteristics of patients attending psychiatric clinics in two military hospitals that provide care for military personnel and their families in Riyadh, Saudi Arabia.

Materials and Methods:

Study design and settings:

This is a cross-sectional study of psychiatric patients attending adult psychiatry clinics at two tertiary-care military hospitals: King Abdulaziz Medical City (KAMC) and Security Forces Hospital (SFH) in Riyadh, Saudi Arabia. The two hospitals provide health care for military soldiers and their families. There are 20 adult psychiatry clinics per week in King Abdulaziz Medical City (KAMC), providing mental health services for approximately 100 patients per week. The adult psychiatry clinics in this hospital provide care for patients above 14 years-old, complying with the hospital regulations which transfer the care for those who are above 14 from pediatric to adult clinics. For Security Forces Hospital (SFH), psychiatrists provide care for approximately 80 patients per week by running 15 adult clinics. The age of transference from pediatric to adult care at Security Forces Hospital (SFH) is also 14. Both adult psychiatry clinics in the two hospitals see male and female patients.

Study Participants and sample size

This study included patients attending the adult psychiatric outpatient clinics from the 1st of January until the 1st of December 2018. Using Raosoft with margin of error 5%, confidence level 95%, and an estimated population size of 20000, the minimum recommended sample size for this study was 377.

Data collection method:

The study was approved by the Institutional Review Board and Ethical Committee of the King Abdullah International Medical Research Center (KAIMRC). All participants signed an informed consent and were informed in advance of the objectives of the study. Data were collected from the 1st of January until the 1st of December 2018. Psychiatric patients attending the adult outpatient clinics at the two military hospitals (KAMC and SFH) in the study period and who were willing to participate were included after making sure that they fulfilled the inclusion criteria. The study included new and follow-up patients aged 18 years and above. Aggressive or severely mentally ill patients, who were unable to give consent were excluded as well as patients with unclear/ uncertain diagnosis. For a sampling method, the data were collected 5 days a week (from Sunday to Thursday).

Data were obtained from every other patient attending the psychiatry clinics in these days after his/her permission, with a response rate of approximately 85%. Data was obtained only once for patients with multiple visits during the study period; we obtained the data only during the first visit. Demographic information was collected from the patients and their electronic health records by trained physicians.

The diagnosis of participants was based on Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV). Patients were divided into 6 categories according to their diagnosis: depression, anxiety, psychosis, bipolar, other disorders, and two or more disorders. Disorders included under the depression category were major depressive disorder, dysthymia, and depression due to medical illness. Moreover, disorders under the anxiety category include generalized anxiety disorder (GAD), obsessive compulsive disorder (OCD), post-traumatic stress disorder (PTSD), and phobias (including social phobia, agoraphobia, and other types of phobia). Also, the diagnosis of psychosis includes schizophrenia, brief psychotic episode, schizophreniform, schizoaffective disorder, substances induced psychosis, and psychotic disorder not otherwise specified (NOS), while the diagnosis of bipolar disorder includes bipolar I disorder, bipolar II disorder, bipolar disorder not otherwise specified, cyclothymia, substance induced mania, and manic episode. Other disorders include dementia, Alzheimer, conduct disorder, attention deficit hyperactivity disorder (ADHD), autism, intellectual disability, substance abuse, substance dependence, and personality disorders.

Data management and analysis:

Data were analysed using Statistical Package for the Social Sciences (SPSS) version 21. Categorical variables were described using frequency and percentages. For evaluating the association between the study variables and four psychiatric disorders (depression, anxiety, psychosis, and bipolar), a Pearson's Chi-square test was used and odds ratios (specific disorder vs. other disorders) were calculated. For observing the independent association of the prevalence of the diagnostic categories with the study variables, multivariate binary logistic regression was used. To test the goodness of fit of the models, the Hosmer and Lemeshow test was used. A P-value of less than .05 and 95% confidence intervals were considered statistically significant.

Results:

Demographics:

Of the 439 participants, 202 (46.5%) were male, 259 (64.6%) were in the 26 to

50-year-old age group and 270 (63.7%) were married. The educational status of the participants was evenly distributed and more than 50% were unemployed. Almost 75% of the participants were either overweight (29.8%) or obese (43.5%) (Table1).

Table 1: Distribution of Socio-demographic characteristics of the study participants (n=439)

Characteristics	No. (%)
Age groups (in years) (n=401)	
≤ 25	65(16.2)
26-50	259(64.6)
> 50	77(19.2)
Gender (n=434)	
Male	202(46.5)
Female	232(53.5)
Marital status (n=424)	
Single	109(25.7)
Divorced	24(5.7)
Married	270(63.7)
Widowed	21(5.0)
Education (n=423)	
Illiterate	71(16.8)
Secondary	161(38.1)
Primary	89(21.0)
University & higher	102(24.1)
Occupation (n=425)	
Employee	66(15.5)
Student	34(8.0)
Unemployed	221(52.0)
Military	104(24.5)
Body Mass Index (n=426)	
Underweight	20(4.7)
Normal	88(20.7)
Overweight	127(29.8)
Obese	191(43.5)

The prevalence of psychiatric disorders (depression, anxiety, psychosis and bipolar disorder) among the psychiatric outpatient clinics' attendees in the two military hospitals is available in Table 2.

Table 2: The Prevalence of Psychosis, Depression, Bipolar disorder and anxiety disorder among psychiatric outpatient clinics' attendees (n=439)

Psychiatric disorders	No. (%)	95% confidence interval
Depression	195 (44.4)	39.7 - 49.2
Anxiety disorder	154 (35.1)	30.6 - 39.8
Psychosis	113 (25.7)	21.7- 30.1
Bipolar disorder	31 (7.1)	4.9 - 9.9
Other disorders	19 (4.3)	2.6-6.64
Two or more disorders	69 (15.7)	12.42-19.45

Associated factors with the common psychiatric disorders:

Psychosis:

The bivariate analysis shows a statistically significant association between psychosis and gender, age group, marital status, educational level, and occupation. Compared to the other groups, the odds of suffering from psychosis were higher among males (OR: 2.54), ≤ 25-year-old age group (OR: 11.47), single (OR: 28.44), secondary education (OR: 4.43), and students (OR: 3.92). BMI level was not significantly associated with having psychosis.
(Table 3 and Table 4).

Depression:

Depression was significantly associated with gender, age group, marital status, educational level, and BMI. Odds of suffering from depression were higher among females (OR: 1.97), > 50-year-old age group (OR: 3.97), widowed (OR: 5.19), illiterate (OR: 2.30), underweight and obese people (OR: 2.90 and 2.10) than the other groups. In contrast, occupation was not significantly associated with depression
(Table 3 and Table 4).

Anxiety disorder:

Anxiety disorders did not show an association with gender or occupation but was significantly associated with age (26-50 years-old, OR: 2.86), marital status (married, OR: 3.62), and education (University and higher, OR: 2.20). Also, people with normal and overweight BMI had slightly higher odds of having anxiety than the other groups (OR: 5.67 and 5.47)
(Table 3 and Table 4).

Bipolar disorder:

Bipolar disorder was not statistically and significantly associated with any of the study variables.

Other disorders and two or more disorders:

Due to the low prevalence of "other disorders" and "two or more disorders", there was no evidence of a significant association with the study variables.

Table 3: The Associated factors of Psychosis, Depression, Bipolar disorder and Anxiety disorder

Associated factors	Psychosis		Depression		Bipolar disorder		Anxiety disorder	
	Yes	p-value	Yes	p-value	Yes	P-value	Yes	p-value
Gender								
Male	70(34.7)	<.0001	72(35.6)	.001	13(6.4)	.593	67(33.2)	.450
Female	40(17.2)		121(52.2)		18(7.8)		85(36.6)	
Age in years								
≤25	32(49.2)	<.0001	17(26.2)	.001	3(4.6)	.429	13(20.0)	.002
26-50	66(25.5)		114(44.0)		14(5.4)		108(41.7)	
>50	6(7.8)		45(58.4)		7(9.1)		22(28.6)	
Marital status								
Single	64(58.7)	<.0001	26(23.9)	<.0001	6(5.5)	.622	19(17.4)	<.0001
Divorced	6(25.0)		14(58.3)		3(12.5)		6(25.0)	
Married	35(13.0)		138(51.1)		21(7.8)		117(43.3)	
Widowed	1(4.8)		13(61.9)		1(4.8)		5(23.8)	
Education								
Illiterate	9(12.7)	<.0001	41(57.7)	.024	5(7.0)	.880	21(29.6)	.018
Secondary	63(39.1)		60(37.3)		10(6.2)		49(30.4)	
Primary	23(25.8)		43(48.3)		6(6.7)		30(33.7)	
University & higher	15(14.7)		42(41.2)		9(8.8)		49(48.0)	
Occupation								
Employee	9(13.6)	.042	32(48.5)	.134	8(12.1)	.339	27(40.9)	.083
Student	13(38.2)		11(32.4)		1(2.9)		9(26.5)	
Unemployed	61(27.6)		106(48.0)		15(6.8)		67(30.3)	
Military	28(26.9)		39(37.5)		7(6.7)		44(42.3)	

Table 4: The Independent factors associated with Psychosis, Depression, and Anxiety disorder

Associated factors	Psychosis		Depression		Anxiety disorder	
	Unadjusted OR (95%CI)	Adjusted OR (95%CI) of significant factors	Unadjusted OR (95%CI)	Adjusted OR (95%CI) of significant factors	Unadjusted OR (95%CI)	Adjusted OR (95%CI) of significant factors
Gender						
Male	2.54(1.63,3.98)	3.77(1.83,7.78)	1.0	1.0	1.0	1.0
Female	1.0	1.0	1.97(1.34,2.90)	1.76(1.11,2.79)	1.16(0.78,1.73)	2.70(1.38,5.26)
Age in years						
≤ 25	11.47(4.37,30.11)	--	1.0	--	1.0	--
26-50	4.05(1.68,9.74)		2.22(1.21,4.07)		2.86(1.48,5.51)	
>50	1.0		3.97(1.94,8.12)		1.60(0.73,3.50)	
Marital status						
Single	28.44(3.68,219.68)	--	1.0	1.0	1.0	1.0
Divorced	6.67(0.73,60.81)		4.45(1.77,11.25)	5.95(2.1,16.85)	1.58(0.55,4.50)	0.97(0.29,3.30)
Married	2.98(0.39,22.89)		3.34(2.02,5.51)	4.0(2.16,7.47)	3.62(2.09,6.28)	2.75(1.27,5.93)
Widowed	1.0		5.19(1.94,13.89)	6.1(1.92,19.54)	1.48(0.48,4.53)	1.13(0.27,4.77)
Education						
Illiterate	1.0	1.0	2.30(1.30,4.06)	--	1.0	--
Secondary	4.43(2.06,9.54)	3.82(1.19,12,22)	1.0		1.04(0.57,1.92)	
Primary	2.40(1.03,5.59)	2.28(0.68,7.61)	1.57(0.93,2.66)		1.21(0.62,2.37)	
University & higher	1.19(0.49,2.88)	1.31(0.36,4.82)	1.18(0.71,1.96)		2.20(1.16,4.18)	
Occupation						
Employee	1.0	1.0	1.97(0.83,4.68)	--	1.92(0.78,4.76)	--
Student	3.92(1.46,10.51)	1.74(0.45,6.66)	1.0		1.0	
Unemployed	2.41(1.13,5.17)	3.98(1.31,12.10)	1.93(0.90,4.14)		1.21(0.53,2.73)	
Military	2.33(1.02,5.33)	1.64(0.52,5.12)	0.64(0.34,1.19)		2.04(0.87,4.79)	
BMI						
Underweight	1.26(0.43,3.67)	--	2.90(1.1,7.86)	5.3(1.60,17.66)	1.0	1.0
Normal	1.86(1.05,3.26)		1.0	1.0	5.67(1.24,25.98)	6.56(1.30,33.10)
Overweight	1.27(0.75,2.16)		1.25(071,2.21)	1.56(0.78,3.10)	5.47(1.21,24.61)	3.95(0.80,19.63)
Obese	1.0		2.10(1.23,3.51)	1.96(1.03,3.76)	4.86(1.09,21.60)	3.60(0.74,17.61)

Discussion:

In this study, we found that the most frequent diagnosis among the subjects in psychiatric outpatient clinics in military hospitals was depression (44.4%), followed by anxiety (35.1%), psychosis (25.7%), and bipolar disorder (7.1%) (table 3). This is similar to the prevalence of mental disorders found in a study published in 2013 on patients attending military outpatient psychiatric clinic in the US in which the most common mental disorder was post-traumatic stress disorder (23.6%), followed by

major depressive disorder (19.1%), generalized anxiety disorder (9%), panic disorder (4.5%), depressive disorder not otherwise specified (3.4 %), alcohol dependence (3.4%), and then bipolar II disorder (2.2%) [10]. Mood disorders were the most common in military outpatient clinics in both studies. In contrast, schizophrenia (30.5%) followed by alcohol dependence (18.21%), major depressive disorder (10.75%), generalized anxiety disorder (6.88%), panic disorder (6.13%) were the most common mental health disorders in those attending outpatient clinics in a military hospital in Thailand [11]. A major difference between our study and these two studies conducted in the USA [10] and Thailand [11] is that they included only military personnel whereas our study included military personnel and their dependents. Also, these studies showed higher prevalence of alcohol dependence compared to our study (Thailand (18.21%) [11], USA (3.4%) [10]), which could be attributed to legal, religious, and social reasons. Alcohol is known to be illegal in Saudi Arabia, forbidden in Islam, and also socially unacceptable in the Saudi society. The prevalence of mental disorders in this study is contradictory to a recent study by Alosaimi et al [12] that looked into the pattern of psychiatric disorders in six different civilian hospitals; authors in that study reported that the most frequent psychiatric diagnoses in outpatients following in public tertiary hospitals were depression (29.3%), psychosis (28.9%), anxiety (15.6%) and bipolar (11.5%) [12]. The Percentage of mood disorders and anxiety are much higher in this study (86.6%) compared to (56.4%) in Alosaimi's et al[12]. Another public-hospital based study that assessed the prevalence of depressive disorders among psychiatric outpatients in eastern Saudi Arabia found that the prevalence of depression was 19.3% [13], which is lower than the percentage that was found in the present study in military hospitals (44.4%), and more similar to the percentage that was found by Alosaimi et al in other public hospitals (29.3) [12].

When comparing the prevalence of mental disorders in male subjects in military hospitals to male subjects in public hospitals, men in military hospitals had a higher prevalence of depression and anxiety compared to men in public hospitals. The most common mental disorder in male outpatients in public hospitals was psychosis (40.4%), followed by depression and anxiety which had the same percentage (14.8%) [12]. However, the most common disorder among men in military hospitals was depression (35.6%), followed by psychosis (34.7%), and anxiety (33.2%) (table 3). The higher levels of depression and anxiety in male outpatients in military hospitals

could be attributed to them being military personnel or members of military families, which makes them face special stressors such as deployment and the potential injury or death of oneself or a family member. Another possible explanation to the high mood disorders in military hospitals is malingering, which could have been done by some soldiers to avoid deployment or other military duty or even to get an early retirement from military service. According to previous studies, malingering is more common among young men that are single and with a low military rank [14]. However, we did not find any previous study that addressed this issue in Saudi Arabia.

In this study, when mental disorders were investigated only in people who work as military soldiers (n=104, 24.5%) (table 1), it was found that the most common mental disorders in military soldiers were anxiety (42.3%) and depression (37.5%)

(table 3). This is similar to a previous study in the US in which the most common mental disorder was post-traumatic stress disorder (23.6%), major depressive disorder (19.1%), generalized anxiety disorder (9%), and panic disorder [10]. However, this finding cannot be generalized to all military personnel and the true prevalence of mental disorder among military personnel might be higher as only outpatients were investigated. Military personal is a sensitive group and some of them might prefer to be followed outside their own institution for different reasons which were addressed previously in the literature such as stigma, fear of being perceived weak or incompetent by colleagues, and fear of being medically downgraded [9].

Regarding similarities between military and civilian hospitals, depression was found to be the most common disorder among female outpatients in both types of hospitals

(military: 52.2%, public: 30.3%[12]). This similarity could be due to the fact that all military personnel in Saudi Arabia are men, so women in both studies had similar demographics although women in military hospital usually are spouses or first-degree related to military personnel. Also, unemployment was common (military: 52.0%, public: (68.1% [12] and 70% [13]) among the outpatients in both types of hospitals. Although this prevalence of unemployment appears high when considering that 80.8% of the participants in this study are in the age group 18-50 years-old (≤ 25 (16.2%), 26-50 (64.6%)) (table 1), it become more understandable when realizing that only 24.1% of the study participants have a university degree or higher and 53% are females which could affect their opportunity of employment (table 1).

Another similarity between the psychiatric

outpatients in military and public hospitals was the high rates of overweight and obesity (military:73.3%, public: 69.9% [12]). Strikingly, three-quarters of subjects in this study fit into overweight and obesity categories which is much higher prevalent than other local studies on Saudi population (table 1) [15]. Although previous evidence found that obesity is linked to an increase in anxiety and mood disorders [16], the use of medications in management of mood and anxiety disorders might contribute to this finding, and a directional causality cannot be indicated. This finding could also be due to the lack of physical activity among psychiatric patients, which could be supported by a previous study that was conducted on 796 psychiatric outpatients and 389 psychiatric inpatients in five different regions across Saudi Arabia and found that approximately 87% of these patients were physically inactive with higher levels of physical activity among men compared to women (15.9% versus 9.6%, $p<0.001$) [17].

There was a remarkable age-specific mental illness prevalence among psychiatric outpatients in this study, among younger age group (≤25), psychosis was most prevalent. Anxiety disorders were highly prevalent in middle age group (26-50), while in older age group (>50) depression was the commonest (table 3,4). The results share similar conclusions with the ones of other previous studies [14, 18-20]. The wide variation of the age specific mental illness prevalence imposes a great challenge on mental health services and healthcare system in Saudi Arabia where there is a lack in specialized clinic for specific population like adolescence and geriatric.

The findings also showed that there is a significant association between higher education and anxiety; it is assumed that higher education could introduce stress by itself which might be a confounding factor. Although there is inconclusive data about true association of education with anxiety, some of the studies linked low education to anxiety which contradicts the finding of this study [21].

This study showed that widowed status was the highest risk factor among all other marital status for depression (table 3). Widowhood is an overwhelming state that needs support in many aspects like the spiritual, social, and medical ones. While this finding is not surprising, emphasis is still put on the importance of addressing widowhood as a significant risk for depression in primary care and psychiatric settings.

Psychosis in this study was associated with unemployment, younger age, and being single. This finding is alarming as these are crucial stages in life and social sup-

port is needed the most, especially, in the presence of mental illness, although family support in Saudi Arabia anticipated to have a positive effect [22].

Limitations

The current research study can be summarized as follows: No available data on mental disorders in Saudi or Middle Eastern military personnel was found. Consequently, there are no other findings to compare with the ones of the present study. Not all the participants in this study were military personnel; thus, further studies are needed to establish a more precise profile of mental disorders among military soldiers, and the outpatient followers, even if they were all military, it does not provide an accurate representation of military personnel mental health due to some barriers to mental health treatment in military population. Thus, exploring private clinics is essential as private mental health services are growing in Saudi Arabia, and a significant percentage of patients might prefer private clinics over public ones for several reasons like fear of stigmatization and fast service.

Conclusions

the majority of patients attending psychiatric clinics have depression, then anxiety, psychosis, and bipolar disorder respectively. More data is needed to develop effective measures for military personnel and their families to ensure good mental health for them. The high rates of obesity and overweight warrant further studies to identify the possible reasons. Also, weight reduction and physical exercise programs, if added to the treatment plan, could be beneficial. A national wide survey is needed including private and governmental sectors as empowering primary mental health is a national priority along with establishing specialized clinics for special population.

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References:

[1] Prabhu HRA. Military psychiatry in India. Indian J Psychiatry. 2010; S314–S316.

[2] Trautmann S, Goodwin L, Höfler M, Jacobi F, Strehle J, Zimmermann P, et al. Prevalence and severity of mental disorders in military personnel: a standardised comparison with civilians. Epidemiol Psychiatr Sci. 2017;26(2):199-208.

[3] Goodwin L, Wessely S, Hotopf M, Jones M, Greenberg N, Rona RJ, et al. Are common mental disorders more prevalent in the UK serving military compared to the general working population? Psychol Med. 2015;45(9):1881-91.

[4] Riddle JR, Smith TC, Smith B, Corbeil TE, Engel CC, Wells TS, et al. Millennium Cohort: the 2001-2003 baseline prevalence of mental disorders in the U.S. military. J Clin Epidemiol. 2007;60(2):192-201.

[5] Gorman GH, Eide M, Hisle-Gorman E. Wartime military deployment and increased pediatric mental and behavioral health complaints. Pediatrics. 2010;126(6):1058-66.

[6] Mansfield AJ, Kaufman JS, Marshall SW, Gaynes BN, Morrissey JP, Engel CC. Deployment and the use of mental health services among U.S. Army wives. N Engl J Med. 2010;362(2):101-9.

[7] Verdeli H, Baily C, Vousoura E, Belser A, Singla D, Manos G. The Case for Treating Depression in Military Spouses. J Fam Psychol. 2011; 25(4): 488–496.

[8] Zolezzi M, Alamri M, Shaar S, Rainkie D. Stigma associated with mental illness and its treatment in the Arab culture: A systematic review. Int J Soc Psychiatry. 2018;64(6):597-609.

[9] Gardiner F, Gardiner EC. Similarities between military and medical service: stigma of seeking mental health assistance. J R Army Med Corps. 2018; 2018-000975.

[10] Bryan, C, Morrow C, Etienne N, Ray-Sannerud B. Guilt, shame, and suicidal ideation in a military outpatient clinical sample. Depression and Anxiety. 2012; 30(1), 55–60.

[11] Rukskul I, Leelahanaj T, Hirunviwatgul N, Pholboonyaruk A. The prevalence of common mental disorders among outpatient Thai army personnel. J Med Assoc Thai. 2009 Feb;92 Suppl 1:S60-6.

[12] Alosaimi F, Alzain N, Asiri S, Fallata E, Alzain N, Abalhassan M , et al. Patterns of psychiatric diagnoses in inpatient and outpatient psychiatric settings in Saudi Arabia. Arch Clin Psychiatr. 2017;44(3):77-83.

[13] Abumadini M. Depressive disorders in psychiatric outpatient clinic attendees in eastern Saudi Arabia. J Family Community Med. 2003; 10(2): 43–47.

[14] Lande RG, Williams LB. Prevalence and characteristics of military malingering. Mil Med. 2013 Jan;178(1):50-4.

[15] Al-Nozha MM, Al-Mazrou YY, Al-Maatouq MA, Arafah MR, Khalil MZ, Khan NB, Al-Marzouki K, Abdullah MA, Al-Khadra AH, Al-Harthi SS, Al-Shahid MS: Obesity in Saudi Arabia. Saudi Med J 2005; 26: 824–829.

[16] Simon GE, Von Korff M, Saunders K, Miglioretti DL, Crane PK, van Belle G, et al. Association between obesity and psychiatric disorders in the US adult population. Archives of General Psychiatry. 2006;63:824–830.

[17] Alosaimi F, Abalhassan M, Alhabbad A, Fallata E, Haddad B, AlQattan N, et al. Prevalence and determinants of physical activity in a mixed sample of psychiatric patients in Saudi Arabia. Saudi Med J. 2018; 39(4): 401–411.

[18] Bandelow B, Michaelis S. Epidemiology of anxiety disorders in the 21st century. Dialogues in Clinical Neuroscience. 2015;17(3).

[19] Luppa M, Sikorski C, Luck T, Ehreke L, Konnopka A, Wiese B et al. Age- and gender-specific prevalence of depression in latest-life – Systematic review and meta-analysis. Journal of Affective Disorders. 2012;136(3):212-221.

[20] Al-Shammari SA, Al-Subaie A. Prevalence and correlates of depression among Saudi elderly. Int J Geriatr Psychiatry. 1999;14(9):739-47.

[21] Blanco C, Rubio J, Wall M, Wang S, Jiu C, Kendler K. Risk factors for anxiety disorders: common and specific effects in a national sample. Depression and Anxiety. 2014;31(9):756-764.

[22] Hickey J, Pryjmachuk S, Waterman H. Mental illness research in the Gulf Cooperation Council: a scoping review. Health Research Policy and Systems. 2016;14(1).