

Patterns of psychiatric diagnoses in inpatient and outpatient psychiatric settings in Saudi Arabia

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Abstract

Objective: This study aimed to explore the current patterns of psychiatric diagnoses in inpatient and outpatient psychiatric settings in Saudi Arabia. **Methods:** Cross-sectional study was conducted on patients seeking psychiatric advice at six hospitals in the five main regions of Saudi Arabia. The data were primarily obtained by reviewing patient charts. **Results:** Total of 1,205 patients were recruited. The majority was unemployed (71.4%), had a low level of education (85.5%), and had low income (61.9%). The most common psychiatric diagnoses among inpatients were schizophrenia (55.8%), bipolar disorder (23.3%) and major depressive disorder (7.2%). The most common psychiatric diagnoses among outpatients were major depressive disorder (29.3%), schizophrenia (28.9%), generalized anxiety disorder (15.6%) and bipolar disorder (11.5%). Primary psychotic disorders and secondary psychiatric disorders were significantly more frequent among men whereas primary bipolar disorders and depressive disorders were significantly more frequent among women in both inpatient and outpatient settings. Psychotic and bipolar disorders were significantly more frequent among younger patients whereas depressive disorders were significantly more frequent among older patients; anxiety disorders were of similar frequency in all age groups. **Discussion:** The most common psychiatric diagnoses among inpatients were schizophrenia and bipolar disorder whereas the most common psychiatric diagnoses among outpatients were major depressive disorder and schizophrenia.

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Introduction

Mental and substance use disorders are the leading causes of disability-adjusted life years (DALYs), accounting for 7.4% of all DALYs worldwide¹. The burden of mental and substance-use disorders increased by 37.6% between 1990 and 2010; for most disorders, this increase was driven by population growth and aging¹. Approximately 14.3% of deaths worldwide each year and approximately 10 years of potential life lost are attributable to mental disorders². In the Global Burden of Disease Study 2013 (GBD 2013), major depressive disorder was the leading cause of Years Lived with Disability (YLDs) in every country³. Anxiety disorders, alcohol- and drug-use disorders, schizophrenia, bipolar disorder, and dysthymia also rank among the 20 conditions that contribute the largest global share of YLDs. The aggregate burden of YLDs resulting from mental and behavioral disorders (22.7%) continues to be higher than the burden resulting from any other disease category⁴.

The treatment gap for mental disorders is universally extremely large although the gap varies across regions^{5,6}. Of serious psychiatric cases, 35.5% to 50.3% in developed countries and 76.3% to 85.4% in less developed countries received no treatment in the 12 months prior to the interview⁷. Compared with the general population, people with serious mental illnesses (SMI) exhibit higher rates of undiagnosed and untreated medical illnesses and higher morbidity and mortality from physical illnesses, primarily because of modifiable lifestyle risk factors⁸. The poor psychiatric and medical health outcomes in people with SMI may primarily be attributed to disparities in access to, utilization of, and provision of health care⁹⁻¹².

However, consultations with mental health professionals throughout the world remain inadequate, partially because of the stigma that prevents people with psychiatric illnesses from taking the medical advice of professionals¹³. A WHO study observed that the prevalence of having any psychiatric disorder in the previous year varied widely, from 4.3% in Shanghai to 26.4% in the United States⁷. Even among similar European nations, the prevalence of some mental illnesses differs from one country to another¹⁴. One US study indicated that no more than 41% of mature Americans who had a mental illness received mental health services in 2012¹⁵. Not surprisingly, treatment conditions are even worse in developing countries, including the Arab countries; the literature indicates that the treatment of mental disorders in such countries is uncommon¹⁶. In Saudi Arabia (SA), the stigma of visiting professionals in mental health hospitals remains a deterrent. Instead of considering mental health professionals' opinions, people may visit non-experts in the field of mental health, e.g., faith healers, traditional healers and specialized non-psychiatrists physicians, to obtain help to overcome their psychiatric symptoms^{13,17}.

An obvious worldwide shift from inpatient management of psychiatric disorders to outpatient management has occurred⁶. The 'deinstitutionalization' of mental health services and the establishment of services in primary care facilities, community centers and general hospitals are a response to patient and family needs and are intended to minimize psychiatric stigma⁶. Conversely, inpatient services account for the majority of the cost of mental health services¹⁸. The decision-makers in the kingdom of Saudi Arabia have emphasized the improvement of the mental health care

system; consequently, mental health care has developed in recent decades¹⁹. Currently, the mental health services in SA are organized on a regional basis; each region has a mental health hospital that delivers basic outpatient, inpatient, and emergency services. Private mental health services paid for out of pocket or by insurance also contribute substantially to mental health care services²⁰. However, the majority of the patients with chronic mental illnesses continue to be hospitalized for long periods because of institutions' inability to refuse the patient's family's request to care for the patient, the presence of residual psychiatric symptoms, the necessity for rehabilitation, a lack of public facilities, the lack of halfway houses, and legal concerns related to early discharge, all of which render physicians reluctant to discharge patients from the inpatient unit¹³.

To the best of our knowledge, there have been no large-scale nationwide studies that describe the distribution of inpatient and outpatient psychiatric illnesses across all regions of Saudi Arabia (SA). Therefore, the present study sought to explore the current patterns of psychiatric diagnoses in patients in psychiatric settings throughout Saudi Arabia and to compare the patterns of psychiatric diagnoses between inpatient wards and outpatient clinics.

Methods

Study design

A cross-sectional observational study was conducted between July 2012 and June 2014. The study received all of the required ethical approvals from the institutional review board at the Faculty of Medicine at King Saud University in Riyadh as well as the appropriate administrative approvals from the respective hospitals.

Study setting

The current study was conducted among patients seeking psychiatric help at major hospitals in Saudi Arabia. Patients were recruited from a number of hospitals located in central, eastern, western, northern, and southern Saudi Arabia. The hospitals included King Khalid University Hospital in Riyadh and Zulfi General Hospital (central region), Jeddah Mental Health Hospital (western region), Al Amal Complex for Mental Health – Dammam (eastern region), Aljouf Mental Health Hospital (northern region), and Abha Mental Health Hospital (southern region). King Khalid University Hospital is a university-affiliated governmental hospital whereas the other hospitals are government-funded service hospitals under the authority of the Ministry of Health. All of the included hospitals provide free psychiatric inpatient and outpatient healthcare services.

Study population and sampling

Consecutive adult patients (18 years and above) seeking psychiatric help in the included hospitals during the study period were invited to join the study. Those patients who signed the informed consent regardless of their psychiatric diagnosis, duration of disease, or recent use of psychotropic medications were included. Patients whose records and interviews indicated an absence of psychiatric disease were excluded.

Data collection

A mini-interview form was developed that included socio-demographic characteristics, medical history, current psychiatric diagnosis, and recent use of psychotropic medications. Data were obtained primarily by reviewing the patients' charts. The diagnosis of psychiatric disorders in this study was based on routine clinical interviews. The psychiatric consultants in charge in each study site made psychiatric diagnoses of their patients using the DSM-IV-TR criteria. The psychiatric diagnoses were confirmed by the treating teams, primarily following longitudinal evaluation and

follow up in the psychiatric setting. Unclear or missing information was verified by interviewing the patient and/or his or her family. Trained psychiatric residents and staff were responsible for the chart review and for conducting interviews with the patients and/or their families.

Classification of psychiatric diagnoses

For the purpose of analyzing the data, the psychiatric diagnoses of the studied patients were classified into 7 categories. *Primary psychotic disorders* included schizophrenia, schizoaffective disorder, delusional disorder and brief psychotic disorder. *Primary bipolar disorders* included bipolar disorders, type I and type II. *Primary depressive disorders* included major depressive disorder and dysthymic disorder. *Primary anxiety disorders* included generalized anxiety disorder, obsessive-compulsive disorder, social anxiety disorder, specific phobia, panic disorder, post-traumatic stress disorder, and acute stress disorder. *Personality disorders* included mixed personality disorder, paranoid personality disorder, antisocial personality disorder, and borderline personality disorder. *Secondary psychiatric disorders* included psychotic disorders due to another medical condition, depressive disorder due to another medical condition, dementia, substance-use disorder, and substance-induced depressive disorder. *Other disorders* included somatic symptom disorder, mental retardation, conversion disorder, attention deficit hyperactivity disorder, dissociative disorder, primary insomnia, adjustment disorder, enuresis disorder, trichotillomania, and anorexia nervosa.

Statistical analysis

Data are presented as frequencies and percentages for categorical data and as the mean and standard deviation (SD) for continuous data. Individual psychiatric diagnoses and psychotropic medications were categorized into standardized groups. Statistically significant differences between inpatients' and outpatients' sociodemographic, clinical, and therapeutic characteristics were tested using either Chi-square tests or Fisher's exact tests (as appropriate) for categorical data and Student's *t*-tests for continuous data. All P-values were two-tailed. A P-value < 0.05 was considered statistically significant. SPSS software (release 20.0, SPSS Inc., Chicago, U.S.) was used for statistical analysis.

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Results

A total of 1,205 patients (443 inpatients and 762 outpatients) were included in the current analysis, and their demographic characteristics are presented in Table 1. The average age was 38.1 years, 54.4% were unmarried but majority had children. Two thirds of patients had pre-university education, and an additional 21.4% of the patients were illiterate. The majority (71.5%) of the patients was unemployed and 62% of them had a family income of 6,000 SR (1600 US\$) or less per month. Compared with outpatients, inpatients were more likely to be male, unmarried, have fewer children (1-3), be unemployed, have a lower (< 3,000 SR = 800 US\$) family income, and be living in rural communities. There were no statistically significant differences with regard to age or educational level.

The clinical characteristics of the included patients are presented in Table 2. The average body mass index (BMI) was 28.7 kg/m², and 45.2% of the patients were either currently or previously smokers. The average age at onset of psychiatric diagnosis was 28.3 years and the average duration of psychiatric diagnoses was 9.7 years. Compared with outpatients, inpatients were more likely to have a lower BMI, be smokers, have a single psychiatric diagnosis, present a longer disease duration, younger age of onset of psychiatric disorder, and have diabetes, epilepsy, or a substance abuse disorder.

Table 1. Demographic characteristics according to patient psychiatric settings in Saudi Arabia (N = 1205)

	Inpatient (N = 443)	Outpatient (N = 762)	Total (N = 1,205)	p-value
Age				
Mean ± SD	37.4 ± 12.0	38.4 ± 13.6	38.1 ± 13.0	0.185
< 40	271 (61.3%)	442 (58.3%)	713 (59.4%)	
40-60	154 (34.8%)	272 (35.9%)	426 (35.5%)	
> 60	17 (3.8%)	44 (5.8%)	61 (5.1%)	0.270
Gender				
Male	252 (56.9%)	379 (49.7%)	631 (52.4%)	0.017
Female	191 (43.1%)	383 (50.3%)	574 (47.6%)	
Marital status				
Married	116 (28.0%)	410 (55.5%)	526 (45.6%)	< 0.001
Single	235 (56.8%)	272 (36.8%)	507 (44.0%)	
Divorced	61 (14.7%)	47 (6.4%)	108 (9.4%)	
Widowed	2 (0.5%)	10 (1.4%)	12 (1.0%)	
Number of children				
Mean ± SD	3.2 ± 2.9	3.6 ± 3.3	3.5 ± 3.2	0.089
None	36 (20.5%)	116 (24.9%)	152 (23.7%)	0.002
1-3 children	78 (44.3%)	138 (29.6%)	216 (33.6%)	
> 3 children	62 (35.2%)	212 (45.5%)	274 (42.7%)	
Educational level				
Illiterate	88 (20.9%)	163 (21.6%)	251 (21.4%)	0.534
Secondary or less	284 (67.5%)	487 (64.7%)	771 (65.7%)	
University/other	49 (11.6%)	103 (13.7%)	152 (12.9%)	
Work type				
Private	35 (8.1%)	62 (8.3%)	97 (8.2%)	0.001
Governmental	49 (11.4%)	149 (19.9%)	198 (16.8%)	
Own business	13 (3.0%)	28 (3.7%)	41 (3.5%)	
Jobless	334 (77.5%)	510 (68.1%)	844 (71.5%)	
Monthly family income*				
≤ 3000	150 (36.1%)	195 (26.2%)	345 (29.7%)	< 0.001
3001-6000	126 (30.3%)	247 (33.2%)	373 (32.2%)	
6001-9000	93 (22.4%)	149 (20.0%)	242 (20.9%)	
> 9000	47 (11.3%)	153 (20.6%)	200 (17.2%)	
Residence				
City	351 (80.0%)	614 (80.7%)	965 (80.4%)	< 0.001
Village	88 (20.0%)	120 (15.8%)	208 (17.3%)	
Desert	0 (0.0%)	27 (3.5%)	27 (2.3%)	

* Income is shown in Saudi Riyal. (1 U.S. dollar = 3.75 Saudi Riyals).

The prevalence of individual psychiatric diagnoses is depicted in Table 3. The most common psychiatric diagnoses among inpatients were schizophrenia (55.8%), bipolar disorder (23.3%) and major depressive disorder (7.2%) while the most common psychiatric diagnoses among outpatients were major depressive disorder (29.3%), schizophrenia (28.9%), generalized anxiety disorder (15.6%) and bipolar disorder (11.5%). Compared with outpatients, inpatients were more likely to have schizophrenia, bipolar disorder, schizoaffective disorder, and delusional disorder but were less likely to have major depressive disorder, generalized anxiety disorder, substance-induced psychotic disorder, obsessive compulsive disorder, dementia, panic disorder, social anxiety disorder, adjustment disorder, and somatic symptom disorder. Similarly, as shown in Figure 1, inpatients were more likely than outpatients to have primary psychotic disorders and primary bipolar disorders ($p < 0.001$ for each) but less likely to have primary depressive disorders ($p < 0.001$), primary anxiety disorders ($p < 0.001$), secondary disorders ($p = 0.009$), multiple disorders ($p = 0.003$), and other disorders ($p = 0.004$).

Some diagnoses were associated with age and/or gender in both inpatients and outpatients. For example, primary bipolar disorders were significantly more frequent among younger patients in both groups. However, primary psychotic disorders were significantly more frequent among younger patients whereas primary depressive disorders were significantly more frequent among older patients in outpatient but not inpatient settings. With regard to gender, primary

Table 2. Clinical characteristics according to patient psychiatric settings in Saudi Arabia (N = 1,205)

	Inpatient (N = 443)	Outpatient (N = 762)	Total (N = 1,205)	p-value
Body mass index (BMI)				
Mean ± SD	27.8 ± 7.7	29.3 ± 7.6	28.7 ± 7.7	0.001
Underweight	34 (8.2%)	34 (4.5%)	68 (5.8%)	
Normal	122 (29.5%)	193 (25.6%)	315 (27.0%)	
Overweight	128 (30.9%)	214 (28.4%)	342 (29.3%)	
Obese	130 (31.4%)	313 (41.5%)	443 (37.9%)	0.001
Smoking status				
Current	175 (40.4%)	227 (29.9%)	402 (33.7%)	
Past	62 (14.3%)	75 (9.9%)	137 (11.5%)	
Never	196 (45.3%)	458 (60.3%)	654 (54.8%)	< 0.001
Number of psychiatric diagnoses				
1	419 (94.6%)	672 (88.2%)	1,091 (90.5%)	
2	23 (5.2%)	89 (11.7%)	112 (9.3%)	
3	1 (0.2%)	1 (0.1%)	2 (0.2%)	< 0.001
Age at onset of psychiatric diagnosis				
Mean ± SD	25.4 ± 9.0	29.9 ± 13.1	28.3 ± 11.9	< 0.001
< 25	226 (52.6%)	268 (35.7%)	494 (41.9%)	
25-50	197 (45.8%)	435 (58.0%)	632 (53.6%)	
> 50	7 (1.6%)	47 (6.3%)	54 (4.6%)	< 0.001
Duration of psychiatric diagnoses (years)				
Mean ± SD	11.7 ± 10.2	8.6 ± 8.7	9.7 ± 9.4	< 0.001
≤ 1	60 (14.0%)	125 (16.7%)	185 (15.7%)	
2-5	85 (19.8%)	246 (32.9%)	331 (28.1%)	
6-10	93 (21.6%)	176 (23.5%)	269 (22.8%)	
> 10	192 (44.7%)	201 (26.9%)	393 (33.4%)	< 0.001
Medical history				
Diabetes mellitus	53 (12.0%)	59 (7.7%)	112 (9.3%)	0.015
Hypertension	37 (8.4%)	57 (7.5%)	94 (7.8%)	0.586
Asthma	3 (0.7%)	5 (0.7%)	8 (0.7%)	1.000
Hyperthyroidism	12 (2.7%)	13 (1.7%)	25 (2.1%)	0.239
Epilepsy	10 (2.3%)	4 (0.5%)	14 (1.2%)	0.007

psychotic disorders and secondary psychiatric disorders were significantly more frequent among men in both groups although primary bipolar disorders and primary depressive disorders were significantly more frequent among women in both groups.

More than 90% of the patients were currently using psychotropic medications, and medications were used more frequently among inpatients than outpatients. This was true for antipsychotics, mood stabilizers, and anti-anxiety medications; antidepressants were used more frequently in outpatients than in inpatients. Both groups had a similar history of using psychotropic medications. Previous psychiatric hospitalizations were significantly more common among inpatients than outpatients (4.3 ± 5.0 vs. 2.8 ± 2.7 , $p < 0.001$).

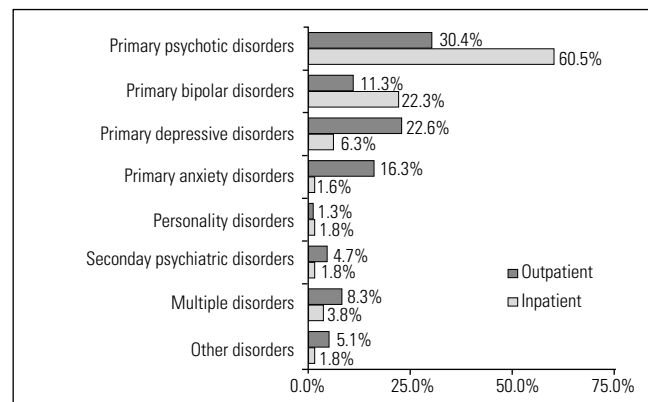


Figure 1. The prevalence of psychiatric diagnostic groups according to patient psychiatric settings in Saudi Arabia (N = 1,205).

Table 3. The prevalence of individual psychiatric diagnoses according to patient psychiatric settings in Saudi Arabia (N = 1,205)

	Inpatient (N = 443)	Outpatient (N = 762)	Total (N = 1,205)	p-value
Schizophrenia	247 (55.8%)	220 (28.9%)	467 (38.8%)	< 0.001
Major depressive disorder	32 (7.2%)	223 (29.3%)	255 (21.2%)	< 0.001
Bipolar disorder	103 (23.3%)	88 (11.5%)	191 (15.9%)	< 0.001
Generalized anxiety disorder	4 (0.9%)	119 (15.6%)	123 (10.2%)	< 0.001
Substance-induced psychotic disorder	9 (2.0%)	32 (4.2%)	41 (3.4%)	0.045
Mental retardation	12 (2.7%)	20 (2.6%)	32 (2.7%)	0.930
Obsessive compulsive disorder	5 (1.1%)	25 (3.3%)	30 (2.5%)	0.021
Schizoaffective disorder	15 (3.4%)	9 (1.2%)	24 (2.0%)	0.008
Dementia	2 (0.5%)	15 (2.0%)	17 (1.4%)	0.031
Mixed personality disorder	6 (1.4%)	9 (1.2%)	15 (1.2%)	0.794
Panic disorder	0 (0.0%)	15 (2.0%)	15 (1.2%)	0.003
Social anxiety disorder	0 (0.0%)	14 (1.8%)	14 (1.2%)	0.004
Adjustment disorder	0 (0.0%)	11 (1.4%)	11 (0.9%)	0.009
Somatic symptom disorder	0 (0.0%)	10 (1.3%)	10 (0.8%)	0.017
Delusional disorder	7 (1.6%)	3 (0.4%)	10 (0.8%)	0.044
Psychotic disorder due to another medical condition	5 (1.1%)	5 (0.7%)	10 (0.8%)	0.512
Brief psychotic disorder	5 (1.1%)	4 (0.5%)	9 (0.7%)	0.302
Substance use disorder	5 (1.1%)	4 (0.5%)	9 (0.7%)	0.302
Dysthymic disorder	3 (0.7%)	4 (0.5%)	7 (0.6%)	1.000
Specific phobia	0 (0.0%)	4 (0.5%)	4 (0.3%)	0.303
Conversion disorder	0 (0.0%)	4 (0.5%)	4 (0.3%)	0.303
Attention deficit hyperactivity disorder	1 (0.2%)	3 (0.4%)	4 (0.3%)	1.000
Borderline personality disorder	2 (0.5%)	2 (0.3%)	4 (0.3%)	0.628
Primary insomnia	0 (0.0%)	2 (0.3%)	2 (0.2%)	0.535
Trichotillomania	0 (0.0%)	2 (0.3%)	2 (0.2%)	0.535
Post-traumatic stress disorder	1 (0.2%)	1 (0.1%)	2 (0.2%)	1.000
Depression due to another medical condition	0 (0.0%)	2 (0.3%)	2 (0.2%)	0.535
Acute stress disorder	1 (0.2%)	1 (0.1%)	2 (0.2%)	1.000
Paranoid personality disorder	1 (0.2%)	0 (0.0%)	1 (0.1%)	0.368
Dissociative disorder	0 (0.0%)	1 (0.1%)	1 (0.1%)	1.000
Antisocial personality disorder	1 (0.2%)	0 (0.0%)	1 (0.1%)	0.368
Enuresis disorder	0 (0.0%)	1 (0.1%)	1 (0.1%)	1.000
Anorexia nervosa	1 (0.2%)	0 (0.0%)	1 (0.1%)	0.368

Discussion

Our study suggests that more than half of the psychiatric patients receiving treatment in psychiatric settings in Saudi Arabia are unmarried although approximately three-quarters of the patients had at least one child. Furthermore, the majority of these psychiatric patients were unemployed (71.4%), perhaps because of having limited education (85.5%), which may also account for their low income (61.9%). These figures are much higher than the rates reported among the general population of Saudi Arabia, in which the current rate of illiteracy, unemployment and poverty are 7%, 11.7% and 12.7%, respectively²¹. The literature indicates that people

Table 4. The prevalence of psychiatric diagnostic groups according to age, gender, and patient psychiatric settings in Saudi Arabia (N = 1,205)

	Age groups			p-value
	< 40	40-60	> 60	
Inpatient				
Primary psychotic disorders	155 (57.2%)	99 (64.3%)	13 (76.5%)	0.137
Primary bipolar disorders	68 (25.1%)	31 (20.1%)	0 (0.0%)	0.039
Primary depressive disorders	13 (4.8%)	14 (9.1%)	1 (5.9%)	0.217
Primary anxiety disorders	5 (1.8%)	2 (1.3%)	0 (0.0%)	---
Personality disorders	7 (2.6%)	0 (0.0%)	1 (5.9%)	---
Secondary disorders	7 (2.6%)	1 (0.6%)	0 (0.0%)	0.331
Multiple disorders	10 (3.7%)	5 (3.2%)	2 (11.8%)	---
Other disorders	6 (2.2%)	2 (1.3%)	0 (0.0%)	0.793
Outpatient				
Primary psychotic disorders	154 (34.8%)	72 (26.5%)	6 (13.6%)	0.003
Primary bipolar disorders	59 (13.3%)	26 (9.6%)	1 (2.3%)	0.044
Primary depressive disorders	71 (16.1%)	85 (31.3%)	14 (31.8%)	< 0.001
Primary anxiety disorders	73 (16.5%)	43 (15.8%)	6 (13.6%)	0.873
Personality disorders	9 (2.0%)	1 (0.4%)	0 (0.0%)	---
Secondary disorders	22 (5.0%)	11 (4.0%)	3 (6.8%)	0.682
Multiple disorders	27 (6.1%)	23 (8.5%)	13 (29.5%)	< 0.001
Other disorders	27 (6.1%)	11 (4.0%)	1 (2.3%)	0.323

Table 5. The prevalence of psychiatric diagnostic groups according to gender and patient psychiatric settings in Saudi Arabia (N = 1,205)

	Male (n = 252)	Female (n = 191)	p-value
Inpatient			
Primary psychotic disorders	181 (71.8%)	87 (45.5%)	< 0.001
Primary bipolar disorders	39 (15.5%)	60 (31.4%)	< 0.001
Primary depressive disorders	6 (2.4%)	22 (11.5%)	< 0.001
Primary anxiety disorders	3 (1.2%)	4 (2.1%)	0.704
Personality disorders	0 (0.0%)	8 (4.2%)	0.001
Secondary disorders	8 (3.2%)	0 (0.0%)	0.024
Multiple disorders	11 (4.4%)	6 (3.1%)	0.507
Other disorders	4 (1.6%)	4 (2.1%)	0.731
Outpatient			
Primary psychotic disorders	153 (40.4%)	79 (20.6%)	< 0.001
Primary bipolar disorders	31 (8.2%)	55 (14.4%)	0.007
Primary depressive disorders	56 (14.8%)	116 (30.3%)	< 0.001
Primary anxiety disorders	56 (14.8%)	68 (17.8%)	0.265
Personality disorders	8 (2.1%)	2 (0.5%)	0.063
Secondary disorders	28 (7.4%)	8 (2.1%)	0.001
Multiple disorders	31 (8.2%)	32 (8.4%)	0.930
Other disorders	16 (4.2%)	23 (6.0%)	0.264

with serious mental illnesses with a larger overall network and greater network satisfaction have better rates of recovery^{22,23}. The U.S. National Comorbidity study observed that most psychiatric disorders decline with age and with higher socioeconomic status²⁴. Although the association between poverty and common mental disorders is universal, it is not known whether poverty increases the prevalence of mental illness, whether poverty is a risk factor

for a negative outcome among mentally ill people, and/or whether poverty produces disability¹ and increased health care costs²⁵. Because a large percentage of Saudi Arabian psychiatric patients may have a lower socioeconomic status, ladderized healthcare policies should be implemented to address this issue, including the training of primary care workers to recognize and effectively treat common mental disorders and provide attentive follow-up treatment after discharge from psychiatric services^{25,26}.

In our study, we observed that the majority of patients had a single diagnosis, and fewer than 10% of patients had two or three diagnoses. As shown in Table 3, in both inpatient and outpatient settings, schizophrenia appears to be the most common diagnosis (38.8%), followed by major depressive disorder (21.2%). In addition, we observed that the most common psychiatric diagnoses among inpatients were schizophrenia (55.8%) and bipolar disorder (23.3%) whereas in outpatients, the most common psychiatric diagnoses were major depressive disorder (29.3%) and schizophrenia (28.9%). Another interesting finding is the low rate of anxiety disorders in our inpatient and outpatient sample, 1.6% and 16.3%, respectively.

The community prevalence of mental disorders in the Saudi Arabian population is unknown. However, worldwide, anxiety and depressive disorders are the two most common classes of mental disorders in the community, as high as 18% for anxiety disorders and 9% for mood disorders^{27,28}. The prevalence of all psychotic disorders is approximately 3% (0.87% for schizophrenia and 0.24% for bipolar I disorder)²⁹. Using the WHO Assessment Instrument for Mental Health Systems (MHS), data on the Saudi MHS were collected in 2009–2010 from several sources without meeting patients directly or reviewing their charts²⁰. Among patients treated in mental health facilities, 40% were treated in mental hospitals, 50% in outpatient facilities (including clinics within general medical hospitals) and 10% in other facilities²⁰. Within the Saudi MHS, the majority of patients treated in outpatient settings had neurotic (36%) or mood disorders (35%) whereas patients admitted to inpatient mental hospitals were more likely to suffer from schizophrenia (50%), substance use disorders (20%), and mood disorders (20%)²⁰. Another prospective local study examining psychiatric admissions to a general hospital in the eastern region of SA from 1988–1998 observed that 19.5% of the patients had schizophrenia, 15.2% had bipolar disorders, 9.9% had depressive disorders and 8.6% had acute and transient psychotic disorders³⁰. These findings reflect that not all people in the community suffering from psychiatric symptoms present at psychiatric hospitals/clinics, particularly within mental health hospitals. Moreover, people with psychiatric illnesses, particularly illnesses with mild to moderate severity, may seek advice from non-mental-health professionals, most likely because of stigma and cultural beliefs^{31,32}. A study among the visitors to a number of faith healing (FH) settings in Riyadh, Saudi Arabia observed that a high proportion of the FH visitors had diagnosable mental illnesses that were not treated medically¹⁷. Depressive disorders were the most prevalent (34.9%), followed by anxiety disorders (18.7%), psychotic disorders (6.9%) and bipolar disorders (5%)¹⁷. In addition, there is a concern that psychiatric patients are punished rather than treated for bad behaviors resulting from their illnesses. In 2006, the US Bureau of Justice Statistics reported that 64% of jail inmates had had a recent mental health problem³³. Even among developed countries like the US, despite an increase in the rate of psychiatric treatment over a decade from 1990–2003, most patients with a mental disorder did not receive treatment, regardless of the severity of the disorder³⁴.

The rate of substance-use disorder in our study was quite low (1.1%). Compared with our findings, an Indian study conducted in a tertiary care center showed that alcohol-use disorders account for 29% of substance-use disorders³⁵. In Norway, approximately one-third of the admissions in an acute psychiatric ward had a substance-use disorder^{36,37}. This discrepancy may be explained by the fact that patients with substance-use disorders in SA are, according to national policy, admitted to separate addiction facilities.

Notably, the prevalence of personality disorders in our study is low. Figure 1 indicated a prevalence of 1.3 in the outpatient setting

and 1.8 in the inpatient setting. One explanation for this discrepancy is that the diagnosis of psychiatric disorders in this study depended on routine clinical interviews instead of semi-structured diagnostic interviews, rendering it more difficult to identify diagnostic comorbidities such as personality disorders³⁸. Compared with our finding, one study conducted among psychiatric outpatients who were interviewed with the Structured Interview for DSM-IV showed that 31.4% of the patients had personality disorders. However, that number increased to 45.5% when patients with personality disorders not otherwise specified were included³⁹. Another community study using the International Personality Disorder Examination (IPDE) screening questions in 13 countries concluded that the prevalence estimates were 6.1% for any personality disorder and 3.6% for Cluster A, 1.5% for Cluster B and 2.7% for Cluster C⁴⁰.

With regard to gender, our study indicated that primary psychotic disorders and secondary psychiatric disorders are significantly more frequent among men while primary bipolar disorders and depressive disorders were significantly more frequent among women in both settings. Comparable findings were reported in the U.S. National Comorbidity study, which observed that women had elevated rates of affective disorders and anxiety disorders whereas men had elevated rates of substance-use disorders and antisocial personality disorder²⁷. Also, similar findings were reported in European studies^{28,41} and a local primary care study⁴². Although the evidence of gender differences in the risk of schizophrenia is inconclusive, a meta-analysis observed that men have a higher incidence and morbidity risk than women⁴³.

We also noticed in this study that certain mental illnesses were linked to specific ages in both inpatient and outpatient settings. Overall, among patients treated in psychiatric settings, psychotic and bipolar disorders were significantly more frequent among younger patients whereas depressive disorders were significantly more frequent among older patients; anxiety disorders were equal in all age groups. Local primary care studies linked depression and anxiety to younger ages^{44,45}. A European study among general practice attendees showed that the peak age for major depression is young adulthood and the peak age for anxiety-spectrum disorders is midlife although the prevalence rates vary significantly among European nations⁴⁴. Worldwide, half of all lifetime mental disorders in most studies begin by the mid-teens, and three-quarters begin by the mid-20s; severe disorders are typically preceded by less severe episodes that are rarely brought to clinical attention⁴⁶. Although the median of age of onset is earlier for phobias and non-affective psychosis than for other anxiety and mood disorders, the later onsets are primarily secondary psychiatric conditions⁴⁶. However, an early age of onset has been identified as being associated with a longer duration of untreated mental illness and poorer clinical and functional outcomes⁴⁷.

Notably, only 5.1% of the study participants were over the age of 60 although such age group compose nearly 9% of the Saudi population aged 18 years and older²¹. Current available data covers only depression among older adults in the KSA, which ranges from 18%⁴⁸ to 39%⁴⁹. The low number of geriatric patients utilizing mental health care services may be attributable to their preference for general practitioners or other non-psychiatric doctors for their multiple and unexplained physical complaints^{13,50}; in addition, many developing countries have observed a lack of specialized mental health services for older people⁵¹. Another reason why patients do not utilize the mental health professions is the cultural attribution of psychological suffering to the evil eye and magic, which causes patients to visit faith healers for help¹⁷. One study, whose findings were consistent with ours, showed that the aged rarely received care from mental health specialists⁵². The prevalence of multi-morbidity increased substantially with age, and the presence of a mental health disorder increased with the number of physical morbidities⁵³. As a prototype of psychiatric illnesses in the elderly, depression remains underdetected and underdiagnosed although depression is a serious medical condition that not only affects mood but can lead to functional and cognitive decline⁵⁴.

The current study provides significant insights into the current patterns of psychiatric diagnoses among psychiatric patients treated in psychiatric settings throughout Saudi Arabia; however, the study has some limitations. One of these limitations is the cross-sectional design, which renders determining causality difficult. Moreover, because of the use of convenience sampling, our results should be generalized cautiously to all psychiatric patients in Saudi Arabia. Another potential limitation is that the diagnosis of psychiatric disorders in this study was based on routine clinical interviews and confirmed by the treating teams, primarily following longitudinal evaluation and follow up in the psychiatric setting. Although, the routine clinical interview conducted by clinicians continues to serve as the gold standard for psychiatric diagnosis in a clinical setting, however, the diagnostic comorbidity will be more likely to be identified accurately using a semi-structured diagnostic interview such as the Structured Clinical Interview for DSM-IV (SCID). Furthermore, in our study, the psychiatric diagnoses were confirmed by the treating team, primarily following longitudinal evaluation and follow up in the psychiatric setting.

In conclusion, this study delineated the patterns and correlational factors of psychiatric diagnoses among inpatient and outpatient psychiatric settings in Saudi Arabia. Further studies in this area are required to ascertain the community prevalence of mental illnesses in Saudi Arabia. Additionally, we must study various programs to improve accessibility to mental health services and expand treatment resources in primary, secondary and tertiary care services in Saudi Arabia.

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Conflicts of interest

None.

References

- Whiteford HA, Degenhardt L, Rehm J, Baxter AJ, Ferrari AJ, Erskine HE, et al. Global burden of disease attributable to mental and substance use disorders: findings from the Global Burden of Disease Study 2010. *Lancet*. 2013;382(9904):1575-86.
- Walker ER, McGee RE, Druss BG. Mortality in Mental Disorders and Global Disease Burden Implications: A Systematic Review and Meta-analysis. *JAMA Psychiatry*. 2015;72(4):334-41.
- Vos T, Barber RM, Bell B, Bertozzi-Villa A, Biryukov S, Bolliger I, et al. Global, regional, and national incidence, prevalence, and years lived with disability for 301 acute and chronic diseases and injuries in 188 countries, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013. *Lancet*. 2015;386(9995):743-800.
- Becker AE, Kleinman A. Mental Health and the Global Agenda. *N Engl J Med*. 2013;369(1):66-73.
- Kohn R, Saxena S, Levav I, Saraceno B. The treatment gap in mental health care. *Bull World Health Organ*. 2004;82(11):858-66.
- Torres-González F. The gap in treatment of serious mental disorder in the community: a public health problem. *Ment Health Fam Med*. 2009;6(2):71-4.
- Demyttenaere K, Bruffaerts R, Posada-Villa J, Gasquet I, Kovess V, Lepine JP, et al. Prevalence, severity, and unmet need for treatment of mental disorders in the World Health Organization World Mental Health Surveys. *JAMA*. 2004;291(21):2581-90.
- De Hert M, Correll CU, Bobes J, Cetkovich-Bakmas M, Cohen D, Asai I, et al. Physical illness in patients with severe mental disorders. I. Prevalence, impact of medications and disparities in health care. *World Psychiatry*. 2011;10(1):52-77.
- Lawrence D, Kisely S. Inequalities in healthcare provision for people with severe mental illness. *J Psychopharmacol*. 2010;24(4 Suppl):61-8.
- De Hert M, Schreurs V, Vancampfort D, Van Winkel R. Metabolic syndrome in people with schizophrenia: a review. *World Psychiatry*. 2009;8(1):15-22.
- Bradford DW, Kim MM, Braxton LE, Marx CE, Butterfield M, Elbogen EB. Access to medical care among persons with psychotic and major affective disorders. *Psychiatr Serv*. 2008;59(8):847-52.
- De Hert M, Cohen D, Bobes J, Cetkovich-Bakmas M, Leucht S, Ndeti DM, et al. Physical illness in patients with severe mental disorders. II. Barriers to care, monitoring and treatment guidelines, plus recommendations at the system and individual level. *World Psychiatry*. 2011;10(2):138-51.
- Koenig HG, Zaben F Al, Sehlo MG, Khalifa DA, Shaheen M, Ahwal A, et al. Mental Health Care in Saudi Arabia: Past, Present and Future. *Open J Psychiatry*. 2014;4(2):113-30.
- King M, Nazareth I, Levy G, Walker C, Morris R, Weich S, et al. Prevalence of common mental disorders in general practice attendees across Europe. *Br J Psychiatry*. 2008;192(5):362-7.
- Administration SA and MHS. Results from the 2013 National Survey on Drug Use and Health: Summary of National Findings. NSDUH Ser H-48, HHS Publ No 14-4863 Rockville, MD Subst Abuse Ment Heal Serv Adm. 2014;1-143.
- Nasser SC, Salamoun MM. Treatment of mental disorders and pathways to care in Arab countries. *Int J Psychiatry Clin Pract*. 2011;15(1):12-8.
- Alosaimi FD, Alshehri Y, Alfraih I, Alghamdi A, Aldahash S, Alkhuzayem H, et al. The prevalence of psychiatric disorders among visitors to faith healers in Saudi Arabia. *Pakistan J Med Sci*. 2014;30(5):1077-82.
- Burns T, Knapp M, Catty J, Healey A, Henderson J, Watt H, et al. Home treatment for mental health problems: a systematic review. *Health Technol Assess*. 2001;5(15):1-139.
- Alkhamis A. Health care system in Saudi Arabia: An overview. *East Mediterr Heal J*. 2012;18(10):1078-9.
- Qureshi NA, AlHabeeb, Koenig H. Mental health system in Saudi Arabia: an overview. *Neuropsychiatr Dis Treat*. 2013;9:1121-35.
- General Authority for statistic, Kingdom of Saudi Arabia [Internet]. Available from: <http://www.stats.gov.sa/en>.
- Corrigan PW, Phelan SM. Social Support and Recovery in People with Serious Mental Illnesses. *Community Ment Health J*. 2004;40(6):513-23.
- Grav S, Hellzèn O, Romild U, Stordal E. Association between social support and depression in the general population: the HUNT study, a cross-sectional survey. *J Clin Nurs*. 2012;21(1-2):111-20.
- Kessler RC. Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States. Results from the National Comorbidity Survey. *Arch Gen Psychiatry*. 1994;51(1):8-19.
- Patel V, Kleinman A. Poverty and common mental disorders in developing countries. *Bull World Health Organ*. 2003;81(8):609-15.
- Patel V, Chisholm D, Parikh R, Charlson FJ, Degenhardt L, Dua T, et al. Addressing the burden of mental, neurological, and substance use disorders: key messages from Disease Control Priorities, 3rd edition. *Lancet*. 2015 Oct.
- Kessler RC, Chiu WT, Demler O, Merikangas KR, Walters EE. Prevalence, severity, and comorbidity of 12-month DSM-IV disorders in the National Comorbidity Survey Replication. *Arch Gen Psychiatry*. 2005;62(6):617-27.
- Kringlen E, Torgersen S, Cramer V. A Norwegian Psychiatric Epidemiological Study. *Am J Psychiatry*. American Psychiatric Publishing; 2001;158(7):1091-8.
- Perälä J, Suvisaari J, Saarni SI, Kuopasalmi K, Isometsä E, Pirkola S, et al. Lifetime prevalence of psychotic and bipolar I disorders in a general population. *Arch Gen Psychiatry*. 2007;64(1):19-28.
- AbuMadini MS, Rahim SI. Psychiatric admission in a general hospital. Patients profile and patterns of service utilization over a decade. *Saudi Med J*. 2002;23(1):44-50.
- Koenig HG, Al Zaben F, Sehlo MG, Khalifa DA, Al Ahwal MS. Current state of psychiatry in Saudi Arabia. *Int J Psychiatry Med*. 2013;46(3):223-42.
- Clement S, Schauman O, Graham T, Maggioni F, Evans-Lacko S, Bezborodovs N, et al. What is the impact of mental health-related stigma on help-seeking? A systematic review of quantitative and qualitative studies. *Psychol Med*. 2015;45(1):11-27.
- Glaze LE, James DJ. Mental Health Problems of Prison and Jail Inmates. 2006.

34. Kessler RC, Demler O, Frank RG, Olfson M, Pincus HA, Walters EE, et al. Prevalence and treatment of mental disorders, 1990 to 2003. *N Engl J Med*. 2005;352(24):2515-23.
35. Shah P. Trend of psychiatric disorders among out-patients and in-patients of a tertiary care center of India. *Int J Res Med Sci*. 2014;2(2):439-44.
36. Fløvig JC, Vaaler AE, Morken G. Substance use at admission to an acute psychiatric department. *Nord J Psychiatry*. 2009;63(2):113-9.
37. Opsal A, Kristensen Ø, Ruud T, Larsen TK, Gråwe RW, Clausen T. Substance abuse inpatients admitted voluntarily and involuntarily to acute psychiatric wards: a national cross-sectional study. *Norsk Epidemiologi*. 2011;21(1):85-91.
38. Zimmerman M. Does the adequacy of clinicians' diagnostic practice in routine clinical settings matter? *J Clin Psychiatry*. 2015;76(7):e888-90.
39. Zimmerman M, Rothschild L, Chelminski I. The prevalence of DSM-IV personality disorders in psychiatric outpatients. *Am J Psychiatry*. 2005;162(10):1911-8.
40. Huang Y, Kotov R, de Girolamo G, Preti A, Angermeyer M, Benjet C, et al. DSM-IV personality disorders in the WHO World Mental Health Surveys. *Br J Psychiatry*. 2009;195(1):46-53.
41. Alonso J, Angermeyer MC, Bernert S, Bruffaerts R, Brugha TS, Bryson H, et al. Prevalence of mental disorders in Europe: results from the European Study of the Epidemiology of Mental Disorders (ESEMeD) project. *Acta Psychiatr Scand*. 2004;109(s420):21-7.
42. Al-Qadhi W, Ur Rahman S, Ferwana MS, Abdulmajeed IA. Adult depression screening in Saudi primary care: prevalence, instrument and cost. *BMC Psychiatry*. 2014;14(1):190.
43. Aleman A, Kahn RS, Selten JP. Sex differences in the risk of schizophrenia: evidence from meta-analysis. *Arch Gen Psychiatry*. 2003;60(6):565-71.
44. Aldabal B, Koura M, Alsowielem L. Magnitude of depression problem among primary care consumers in Saudi Arabia. *Int J Med Sci Public Health*. 2014;4(2):1.
45. Al-Khathami AD, Ogbeide DO. Prevalence of mental illness among Saudi adult primary-care patients in Central Saudi Arabia. *Saudi Med J*. 2002;23(6):721-4.
46. Kessler RC, Amminger GP, Aguilar-Gaxiola S, Alonso J, Lee S, Ustün TB. Age of onset of mental disorders: a review of recent literature. *Curr Opin Psychiatry*. 2007;20(4):359-64.
47. McGorry PD, Purcell R, Goldstone S, Amminger GP. Age of onset and timing of treatment for mental and substance use disorders: implications for preventive intervention strategies and models of care. *Curr Opin Psychiatry*. 2011;24(4):301-6.
48. Abolfotouh MA, Daffallah AA, Khan MY, Khattab MS, Abdulmoneim I. Psychosocial assessment of geriatric subjects in Abha City, Saudi Arabia. *East Mediterr Health J*. 2001;7(3):481-91.
49. Al-Shammari SA, Al-Subaie A. Prevalence and correlates of depression among Saudi elderly. *Int J Geriatr Psychiatry*. 1999;14(9):739-47.
50. Löwe B, Spitzer RL, Williams JBW, Mussell M, Schellberg D, Kroenke K. Depression, anxiety and somatization in primary care: syndrome overlap and functional impairment. *Gen Hosp Psychiatry*. 2008;30(3):191-9.
51. Snowdon J. Psychogeriatric services in the community and in long-term care facilities: needs and developments. *Curr Opin Psychiatry*. 2007;20(6):533-8.
52. Shapiro S, Skinner EA, Kessler LG, Von Korff M, German PS, Tischler GL, et al. Utilization of health and mental health services. Three Epidemiologic Catchment Area sites. *Arch Gen Psychiatry*. 1984;41(10):971-8.
53. Barnett K, Mercer SW, Norbury M, Watt G, Wyke S, Guthrie B. Epidemiology of multimorbidity and implications for health care, research, and medical education: a cross-sectional study. *Lancet*. 2012;380(9836):37-43.
54. Steffens DC. A multiplicity of approaches to characterize geriatric depression and its outcomes. *Curr Opin Psychiatry*. 2009;22(6):522-6.