Review Article

Bipolar Disorders in Saudi Arabia: What Do We Know So Far?

Ahmad H. Almadani[1,2], Ahmad N. AlHadi[1,2,3], Buthainah D. Aldawood[4], Mariam M. AlEissa[5,6], Fahad D. Alosaimi[1,2]

[1]Department of Psychiatry, College of Medicine, King Saud University, [2]Department of Psychiatry, King Saud University Medical City, King Saud University, [3]SABIC Psychological Health Research and Applications Chair, College of Medicine, King Saud University, [4]Department of Clinical Psychology, College of Health and Rehabilitation Sciences, Princess Nourah Bint Abdulrahman University, [5]Department of Molecular Genetics, Public Health Authority, Public Health Laboratory, [6]Medical School, AlFaisal University, Riyadh, Saudi Arabia

Abstract

Bipolar disorders (BP) are prevalent neuropsychiatric illnesses affecting 1%–5% of the global population and about 3% of the Saudi population. They are associated with significant comorbidities and negative consequences. Despite being common mental health conditions in Saudi Arabia, stigma persists, with weak character, supernatural beliefs, and weak faith considered as causes. In addition, Saudi patients with BP have been reported to seek help from non-psychiatric healthcare professionals and faith healers. More data are required on BP from Saudi Arabia, including the genetic aspects and their treatment approaches. This narrative review paper explores the epidemiology and clinical manifestations, etiology and biological mechanisms, public knowledge and awareness of the illnesses, and treatment of BP in Saudi Arabia.

Keywords: Bipolar disorders, clinical manifestations, epidemiology, etiology, psychotropic medications, Saudi Arabia

Address for correspondence: Dr. Ahmad H. Almadani, Department of Psychiatry, College of Medicine, King Saud University, Riyadh, Saudi Arabia.
E-mail: ahalmadani@ksu.edu.sa

Submitted: 18-May-2024 **Revised:** 29-Sep-2024 **Accepted:** 18-Nov-2024 **Published:** 11-Jan-2025

INTRODUCTION

Bipolar disorders (BP) are episodic mental illnesses consisting of depressive, manic, or hypomanic episodes.[1] During depressive episodes, the person presents with, among other symptoms, feeling depressed and/or losing interest or pleasure.[1] These symptoms typically occur almost every day for 2 weeks or more.[1] Manic and hypomanic episodes are characterized by mood changes and an alternation in the level of activity or degree of energy.[1] In addition to these symptoms, other symptoms that can be experienced during manic or hypomanic episodes include being talkative and sleep changes.[1] While people with BP type I have episodes of depression, hypomania, and mania, people with BP type II have bouts of depression and hypomania with no manic episodes.[2] More data are required on BP in Arabic countries.[3] More specifically, such needed data include, but are not limited to, the genetic aspects of these illnesses and their treatment approaches.

This review article discusses the literature on BP in Saudi Arabia, focusing on the following subtopics: (1) epidemiology and clinical manifestations, (2) etiology and biological mechanisms, (3) patient and public knowledge

Access this article online	
Quick Response Code:	Website: https://journals.lww.com/sjmm
	DOI: 10.4103/sjmms.sjmms_306_24

How to cite this article: Almadani AH, AlHadi AN, Aldawood BD, AlEissa MM, Alosaimi FD. Bipolar disorders in Saudi Arabia: What do we know so far? Saudi J Med Med Sci 2025;13:1-6.

and awareness of BP, and (4) treatment. By focusing on Saudi Arabia, the study addresses a critical gap in knowledge about BP in this particular cultural and geographic context.

Searches were carried out in multiple databases, namely PubMed, PsycINFO, and Google Scholar, as well as the Arabic databases ArabPsyNet, Almandumah, and Al Manhal. The following keywords were used during both English and Arabic searches: bipolar disorders, mood disorders, psychiatric disorders, and Saudi Arabia. No restrictions were applied during the search process, including for language and year of publication. In addition to the papers selected for geographical purposes, international studies, including those from other Gulf Cooperation Council countries, were also included for comparisons and to address specific aspects of the topic.

EPIDEMIOLOGY AND CLINICAL CHARACTERISTICS OF BIPOLAR DISORDERS

Most of the published literature on BP in Saudi Arabia explored epidemiology and clinical characteristics. According to the Saudi National Mental Health Survey, BP I and II are two of the most common mental health conditions in Saudi Arabia, with a prevalence of 3.2% in the population and an approximate 2:1 male-to-female ratio.[4] In one study, the authors investigated various mental disorders assessed by the Saudi National Mental Health Survey and found that among the 3% of the participants with BP I and II, the level of severity was "serious" in 82.6%.[5] Another study investigating the types of psychiatric illnesses in six hospitals in Saudi Arabia found that BP I and II were diagnosed in 23.3% of inpatients and 11.5% of outpatients.[6]

A retrospective study that included 340 adult patients diagnosed with mood disorders in psychiatric clinics at King Fahd Hospital of the University, Al-Khobar, between 1982 and 2011 found that two-thirds (67.6%) of the study participants were married, over half (58.8%) were unemployed, and 11.2% were diagnosed with BP. Furthermore, BP were more common among males and the youngest age group (18–30 years).[7] In a prospective study that included 1336 patients from the Eastern Province of Saudi Arabia between 1988 and 1998 and studied the pattern and frequency of psychiatric admissions, 15.2% were diagnosed with BP.[8] Similar findings have been reported in studies from the UAE that included adult patients admitted to psychiatric units.[9,10] One of these studies found that three-quarters of the patients were aged 18–34 years, more than half were male, and the most common diagnosis was mood disorders (approximately one-third).[9] The other study found that the most frequent reasons for admission included BP and psychotic disorders.[10]

ETIOLOGY AND PATHOPHYSIOLOGY OF BIPOLAR DISORDERS

International large-scale human genetic studies have established the sophisticated and polygenic nature of BP and its crossing with other disorders;[11] however, data from Saudi Arabia have not been extensively reported.

A study conducted in the Makkah region of Saudi Arabia assessed relationship between toxoplasma-induced oxidative stress and the evolution of the condition. Patients with BP and healthy controls were assessed for anti-toxoplasma immunoglobulin-g (igg) and two proteins (3-nitrotyrosine) and DNA (8-hydroxy-2' deoxyguanosine [8-ohdg]) oxidative stress markers. Toxoplasma and anti-toxoplasma igg levels were found to be higher among patients with BP than among controls. Nitrotyrosine, especially 8-OHG, were significantly higher in toxo-positive BP patients than in toxo-negative BP patients and controls.[12]

In terms of characteristics, a multi-center cross-sectional study that included 992 adult participants with various mental illnesses found that among patients with BP, 41% had metabolic syndrome, 51% large waist circumference, 45% pre-diabetes or diabetes mellitus, and 35% pre-hypertension or hypertension.[13] Of note, most research from Saudi Arabia on the etiology and pathophysiology of BP are retrospective, observational, descriptive studies conducted in single centers, with no genetic or functional biological studies, and thus highlights the need for such studies.

PATIENT AND PUBLIC KNOWLEDGE AND AWARENESS OF BIPOLAR DISORDERS

A cross-sectional study that included 93 Saudi patients with mood disorders to investigate the impact of stigma found that half of the participants admitted attempting to conceal their mental illness from others to prevent situations where they would feel stigmatized.[14] In addition, almost all scale items from the "Inventory of Stigmatizing Experiences" were agreed upon by one-third of the participants. Moreover, the statement "avoiding situations that might be stigmatizing" was agreed upon by most participants and was the most endorsed item. Furthermore, 48% of BP patients agreed that "the average person would be afraid of someone with a serious mental illness." Notably, the participants scored significantly lower on the "Inventory of Stigmatizing Experiences" than Canadians in another similar study,[14,15] likely due to cultural differences.

In another cross-sectional study conducted in Riyadh to examine public awareness of and attitudes toward BP among Arabic-speaking individuals aged ≥17 years, it was found that about half of the respondents were familiar with BP and considered the illness to be common in Saudi Arabia. Regarding beliefs about what causes BP, about half believed that some neurophysiological/neurochemical imbalances cause BP and thought that BP could be managed using psychiatric medications. In addition, participants believed that most common causes of BP were supernatural causes (55%), weak faith (48%), and weakness of character (40%).[16] Another study from Riyadh reported that among those who visited faith healers, social/financial stress, evil eye, and magic were the self-reported reasons for their mental illness.[17] The belief in supernatural reasons could be ascribed to several factors, such as a lack of knowledge about psychiatric illnesses and various defense mechanisms such as guilt and stigma.[18]

In terms of treatment, one study from Riyadh that included the general adult population found that 55% of the respondents considered recreational activities to be a useful treatment option for BP.[16] In addition, head bandaging, wherein a bandage is placed over the head, has also been reported as a widely considered treatment option.[16,19] Another study from Riyadh reported that among those who visited faith healers, the Holy Quran and blessed water were the most commonly used remedies, but nearly 5% had also been beaten, choked, or electrically shocked as treatment interventions.[17]

The current levels of patient and public knowledge and awareness of BP in Saudi Arabia suggest the need for broader education, such as through quality information on the internet. The website of King Abdullah Bin Abdulaziz Arabic Health Encyclopedia website has been developed to provide credible and trustworthy online health information in Arabic,[20] and developing similar websites would help disseminate quality knowledge to increase awareness of BP. In addition, given the trust in faith healers among those seeking traditional/alternative treatment in Saudi Arabia, it may be beneficial to train the faith healers to identify people with mental health problems and refer them to clinical services.[16,21]

On the other hand, Alosaimi *et al.* found that only 12.7% of the participants believed that electroconvulsive therapy (ECT) could treat BP,[16] even though ECT is known to be an efficacious and safe treatment modality for BP that is associated with serious symptoms, does not respond to medications, or occurs during pregnancy.[22] Therefore, brief educational interventions can be used to improve knowledge of and attitudes toward ECT.[23]

Regarding social perspectives of BP in Saudi Arabia, negative attitudes have been reported toward relationships with family, friends, and marriage.[14,16] In terms of public attitude toward BP in Saudi Arabia,[16] most of the population (86%) believed that those with BP could work effectively, 47% believed that they must rely on themselves to recover, and 32% considered it shameful to declare that a family member has BP. Regarding relationships, 22% were reluctant to endure a friendship with a person with BP, and 39.3% were hesitant to marry a person with BP.[16] Fears of genetic transmission and the incurability of BP could explain, at least in part, the negative attitude toward marrying someone with BP.[16,24] Other explanations for the stigma held by the Saudi population include tradition and culture, deficits in public awareness, and fear of psychiatric patients becoming aggressive or violent.[24] Moreover, the stigma surrounding marrying someone with BP may lead some patients to avoid marriage altogether or discontinue their medications before getting married, increasing their risk of relapse.[6] Moreover, the greater the perceived stigma among caregivers, the greater their level of feeling burdened and depressed.[25] Therefore, it is essential to provide support for patients with BP and their caregivers.

Regarding the role of cultural values in the Saudi Arabian population concerning BP, a study investigated the relationship between the perception of control and mood in a sample of 614 individuals, with the majority of participants aged 18–35 years. In this study, the participants completed measures of perceived control, individualism and collectivism, and symptoms of depression (Beck Depression Inventory) and BP (The Mood Disorder Questionnaire). Participants showed high levels of control, which predicted lower levels of depression and BP symptoms.[26]

TREATMENT OF BIPOLAR DISORDERS

The Saudi National Mental Health Survey found that the lifetime treatment among people diagnosed with BP I and II was 32.5%, of which 66.3% were seeking treatment from mental health specialists, 20.3% from the general medical sector (family physicians and other physicians), 45.3% through social services such as social workers and counselors, and 34.8% through complementary and alternative medicine such as utilizing internet or self-help groups, or other healers.[27] In another study of the same project (the Saudi National Mental Health Survey), the authors found that treatment dropout among participants was associated with high income, a history of mental health treatment, fewer health caregivers, and a smaller number of visits, with having BP not being a significant factor.[28]

In a randomized clinical study that assessed the outcome of 6-month group psychoeducation in patients with BP I patients aged 20–40 from northern Saudi Arabia, it was found that intervention group had fewer hospitalizations and was more compliant with the medication than the control group.[29]

In terms of polypharmacy, a study from the psychiatric clinics of two tertiary hospitals of Saudi Arabia found that it was highest among patients with BP followed by psychosis.[30] In 2013, the Department of Psychiatry at King Khalid University Hospital adopted clinical practice guidelines (CPG) for the management of patients with BP.[31] In this process, three sources of CPGs were assessed and accepted, namely the Canadian Network for Mood and Anxiety Treatments (CANMAT), the International Society for BPs (ISBD), and the collaborative update of CANMAT guidelines for the management of patients with BP (updated 2009). In this adapted guideline, which was adopted at King Khalid University Hospital, for acute mania, the first-line monotherapy was lithium, valproate, or several atypical antipsychotics. In addition, the first-line combination treatment included antipsychotics with mood stabilizers. Paliperidone monotherapy and asenapine (alone or in combination with lithium or divalproex) can be used as second-line treatment. For the management of bipolar depression, lithium, lamotrigine, and quetiapine monotherapy, olanzapine plus selective serotonin reuptake inhibitor (SSRI), and lithium or divalproex plus SSRI/bupropion are the first-line treatment options. Lithium, lamotrigine, valproate, and olanzapine are the first-line treatment options for the maintenance treatment of BP. In addition, protocols have been developed by the Ministry of Health (MOH) of Saudi Arabia for acute and maintenance therapies for various episodes of BP.[32]

In terms of lithium clearance in Saudi patients with BP who received oral lithium, a retrospective study found that creatinine clearance was the most significant covariate for lithium clearance.[33] In terms of practice, a multi-center, cross-sectional study from Saudi Arabia found that the so-called "mood stabilizer medications," especially sodium valproate, are most frequently used along with antipsychotic medications for the treatment of BP (77.2%). Such a combination provides better outcomes in manic episodes compared to antipsychotics alone because it could reduce the dose of the antipsychotic medications, and hence the associated side effects. However, lithium salt was used less frequently to treat BP compared with other medications, namely sodium valproate and carbamazepine, despite lithium remaining the gold standard for treating BP.[34] A national study from Finland found similar findings, suggesting that more recent agents may sometimes be overused compared with lithium.[35]

In a study from Saudi Arabia,[34] lithium was worryingly underused compared with sodium valproate among women of fertile age and expectant women. Comparable practices have also been reported from the UK[36] and the USA,[37] which contrast guidelines that encourage the use of lithium in these groups given its efficacy and its reproductive safety data.[38] It is also worth mentioning that when used in the first trimester of pregnancy, sodium valproate has been associated with significant congenital abnormalities and long-term adverse consequences, such as developmental delay and an elevated risk of developing autism spectrum disorder.[39,40]

STATUS OF RESEARCH ON BIPOLAR DISORDER IN SAUDI ARABIA

BP research in Saudi Arabia has been relatively limited compared to worldwide research interest, despite the prevalence rate for BP being consistent with global rates (1%–3%).[41] Qureshi *et al.* emphasized on the importance of early detection and intervention of BP in Saudi Arabia to improve patients' outcomes and highlighted a lack of specialized mental health services,[41] a notable problem also in other developing countries. Globally, research on BP has been focused on genetics, neuroimaging, and early therapies. For example, polygenic risk scores and large-scale research in Europe and North America have greatly aided in understanding the disorder's heritability and complicated genetics.[42] Global treatment guidelines prioritize mood stabilizers such as lithium and psychotherapy; however, in Saudi Arabia, medication-based treatment remains the major option,[43] with psychotherapy not being integrated into clinical practice.[44] The cultural stigma associated with mental disorders in Saudi Arabia creates additional barriers to research and care, as opposed to more open views about mental health in Western nations, where awareness has substantially improved.[45]

CONCLUSIONS

This narrative review discusses various aspects of bipolar disorder (BP) in Saudi Arabia. Most of the literature concerning BP in Saudi Arabia were aimed at determining the epidemiology and clinical characteristics. Few studies were conducted regarding etiology and pathophysiology, and no study focused only on specific population groups (e.g., women and children); therefore, there is need for such studies. In terms of public knowledge and awareness, studies reported that while prior knowledge of BP was found, the associated stigma remains prevalent.

In addition, beliefs regarding the causes of BP included weakness of character, supernatural beliefs, and weak faith. While a significant number of people sought treatment from mental health specialists, others sought treatment from other sources, including other medical healthcare workers and complementary and alternative medicine providers. In terms of treatment, the knowledge around the usefulness of ECT in managing BP was found to be poor. All these findings highlight the need for multi-pronged approaches at improving the patient and public knowledge of BP and at reducing stigma. Another future direction is to further examine the pattern of prescribing multiple psychotropic medications simultaneously to psychiatric patients in Saudi Arabia, exploring the perceived explanation for this practice among Saudi psychiatrists and finding means to overcome it. Treatment-wise, for these illnesses, treatment options other than the pharmacological interventions, such as the neurostimulation treatment modalities, need to be explored and advocated for in Saudi Arabia.

Peer review

This article was peer-reviewed by two independent and anonymous reviewers.

Data availability statement

Data sharing is not applicable for this article, as no new data were created or analyzed.

Author contributions

All authors have contributed significantly to conceptualization, methodology, writing–original draft, preparation, review and editing. All authors have read and agreed to the published version of the manuscript.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders: DSM-5. American Psychiatric Association; 2013.
2. World Health Organization. Mental Disorders. Available from: https://www.who.int/news-room/fact-sheets/detail/mental-disorders. [Last accessed on 2022 Aug 29].
3. Kronfol Z, Zakaria Khalil M, Kumar P, Suhre K, Karam E, McInnis M. Bipolar disorders in the Arab world: A critical review. Ann N Y Acad Sci 2015;1345:59-66.
4. Saudi National Mental Health Survey. Saudi National Mental Health Survey Technical Report; 2019. Available from: https://www.healthandstress.org.sa. [Last accessed on 2022 Jul 21].
5. Altwaijri YA, Al-Habeeb A, Al-Subaie AS, Bilal L, Al-Desouki M, Shahab MK, *et al*. Twelve-month prevalence and severity of mental disorders in the Saudi National Mental Health Survey. Int J Methods Psychiatr Res 2020;29:e1831.
6. Alosaimi FD, Alzain N, Asiri S, Fallata EO, Alzain NM, Alassiry MZ, *et al*. Patterns of psychiatric diagnoses in inpatient and outpatient psychiatric settings in Saudi Arabia. Arch Clin Psychiatry (São Paulo) 2017;44:77-83.
7. Abumadini MS. Sociodemographic characteristics of adult Saudi patients with mood disorder subtypes. Saudi J Med Med Sci 2019;7:169-74.
8. AbuMadini MS, Rahim SI. Psychiatric admission in a general hospital. Patients profile and patterns of service utilization over a decade. Saudi Med J 2002;23:44-50.
9. Williams JJ. Sociodemographic and Clinical Characteristics of Adults Admitted to the Psychiatric Service of a Tertiary Hospital in the Emirate of Abu Dhabi, United Arab Emirates [Dissertation]. Lisbon, Portugal: Universidade Nova de Lisboa; 2017. Available from: https://run.unl.pt/handle/10362/21845. [Last accessed on 2022 Sep 02].
10. Abdel Aziz K, Aly El-Gabry D, Al-Sabousi M, Al-Hassani G, Ragheb MM, Elhassan Elamin M, *et al*. Pattern of psychiatric in-patient admissions in Al Ain, United Arab Emirates. BJPsych Int 2021;18:46-50.
11. Haggarty SJ, Karmacharya R, Perlis RH. Advances toward precision medicine for bipolar disorder: Mechanisms and molecules. Mol Psychiatry 2021;26:168-85.
12. Afifi MA, Jiman-Fatani AA, Al-Rabia MW, Al-Hussainy NH, El Saadany S, Mayah W. More than an association: Latent toxoplasmosis might provoke a local oxidative stress that triggers the development of bipolar disorder. J Microsc Ultrastruct 2018;6:139-44.
13. Alosaimi FD, Abalhassan M, Alhaddad B, Alzain N, Fallata E, Alhabbad A, *et al*. Prevalence of metabolic syndrome and its components among patients with various psychiatric diagnoses and treatments: A cross-sectional study. Gen Hosp Psychiatry 2017;45:62-9.
14. AlAteeq D, AlDaoud A, AlHadi A, AlKhalaf H, Milev R. The experience and impact of stigma in Saudi people with a mood disorder. Ann Gen Psychiatry 2018;17:51.
15. Lazowski L, Koller M, Stuart H, Milev R. Stigma and discrimination in people suffering with a mood disorder: A cross-sectional study. Depress Res Treat 2012;2012:724848.
16. Alosaimi FD, AlAteeq DA, Bin Hussain SI, Alhenaki RS, Bin Salamah AA, AlModihesh NA. Public awareness, beliefs, and attitudes toward bipolar disorder in Saudi Arabia. Neuropsychiatr Dis Treat 2019;15:2809-18.
17. 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. Pak J Med Sci 2014;30:1077-82.
18. Alsughayir MA. Public view of the "evil eye" and its role in psychiatry: A study in Saudi society. Arab J Psychiatry 1996;7:152-60. Available from: https://www.safetylit.org/citations/index.php?fuseaction=citations.viewdetails and citationIds[]=citjournalarticle_82972_20. [Last accessed on 2022 Oct 28].
19. Dols MW. The treatment of the insane. J Muslim Ment Health 2006;1:185-203.
20. Altuwaijri MM. Empowering patients and health professionals in the Arab world: The King Abdullah bin Abdulaziz Arabic health encyclopedia on the web. Yearb Med Inform 2011;6:125-30.
21. Musyimi CW, Mutiso VN, Nandoya ES, Ndetei DM. Forming a joint dialogue among faith healers, traditional healers and formal health workers in mental health in a Kenyan setting: Towards common grounds. J Ethnobiol Ethnomed 2016;12:4.
22. Goodwin GM, Haddad PM, Ferrier IN, Aronson JK, Barnes T, Cipriani A, *et al*. Evidence-based guidelines for treating bipolar disorder: Revised third edition recommendations from the British Association for Psychopharmacology. J Psychopharmacol 2016;30:495-553.
23. Hoffman GA, McLellan J, Hoogendoorn V, Beck AW. Electroconvulsive therapy: The impact of a brief educational intervention on public knowledge and attitudes. JECT 2017;38:129-36.
24. Koura M, Al-Dabal B, Al-Sowielem L. Qualitative research: Stigma

associated with psychiatric diseases. World Fam Med J Inc Middle East J Fam Med 2012;10:44-7.
25. Gonzalez JM, Perlick DA, Miklowitz DJ, Kaczynski R, Hernandez M, Rosenheck RA, *et al*. Factors associated with stigma among caregivers of patients with bipolar disorder in the STEP-BD study. Psychiatr Serv 2007;58:41-8.
26. Senan S, Msetfi RM, El Keshky M, Halbrook Y. The relationship between perception of control and mood: The intervening effect of cultural values in a Saudi Arabian sample. PLoS One 2019;14:e0220509.
27. Al-Subaie AS, Altwaijri YA, Al-Habeeb A, Bilal L, Almeharish A, Sampson NA, *et al*. Lifetime treatment of DSM-IV mental disorders in the Saudi National Mental Health Survey. Int J Methods Psychiatr Res 2020;29:e1837.
28. Alangari AS, Knox SS, Innes KE, Kristjansson A.L., Wene S., Bilalf L, *et al*. Drop out from mental health treatment in the Saudi National Mental Health Survey. Int J Soc Psychiatry 2021;51:61-76.
29. Al Taher AA, Elsayed M, Abd El Moez K. Psychoeducation for bipolar disorder. Arab J Psychiatry 2016;44:1-8.
30. Alharbi FF, Alharbi SF, Salih SB, Al-Surimi K. Correlates of psychotropic polypharmacy in outpatient psychiatric clinics of two military tertiary hospitals in Saudi Arabia. J Family Community Med 2019;26:213-20.
31. Abahussain E, Fatani S, Altuwarigi M, Al-Ansary L, Amer Y. P282 management Of patients with bipolar disorder: An adapted clinical practice guideline>from King Saud University, King Khalid University hospital, clinical practice guidelines committee, faculty of medicine, department of psychiatry. BMJ Qual Saf 2013;22 Suppl 1:A79.
32. Ministry of Health. MOH Protocols for the Management of Patients with Schizophrenia and Bipolar Affective Disorder; 2024. Available from: https://www.moh.gov.sa/Ministry/MediaCenter/Publications/Documents/SCHIZOPHRENIA-BIPOLAR-Affective-Disorder.pdf. [Last accessed on 2024 Sep 15].
33. Alqahtani S, Aljuma'ah N, Aydan NB, Alsultan A, Alsarhani E, Asiri Y. Estimation of lithium clearance in patients with bipolar disorder. Int Clin Psychopharmacol 2020;35:157-62.
34. Alosaimi FD, Alhabbad A, Abalhassan MF, Fallata EO, Alzain NM, Alassiry MZ, *et al*. Patterns of psychotropic medication use in inpatient and outpatient psychiatric settings in Saudi Arabia. Neuropsychiatr Dis Treat 2016;12:897-907.
35. Poranen J, Koistinaho A, Tanskanen A, Tiihonen J, Taipale H, Lähteenvuo M. Twenty-year medication use trends in first-episode bipolar disorder. Acta Psychiatr Scand 2022;146:583-93.
36. McCrea RL, Nazareth I, Evans SJ, Osborn DP, Pinfold V, Cowen PJ, *et al*. Lithium prescribing during pregnancy: A UK primary care database study. PLoS One 2015;10:e0121024.
37. Wisner KL, Leckman-Westin E, Finnerty M, Essock SM. Valproate prescription prevalence among women of childbearing age. Psychiatr Serv 2011;62:218-20.
38. Fornaro M, Maritan E, Ferranti R, Zaninotto L, Miola A, Anastasia A, *et al*. Lithium exposure during pregnancy and the postpartum period: A systematic review and meta-analysis of safety and efficacy outcomes. Am J Psychiatry 2020;177:76-92.
39. Macfarlane A, Greenhalgh T. Sodium valproate in pregnancy: What are the risks and should we use a shared decision-making approach? BMC Pregnancy Childbirth 2018;18:200.
40. Anmella G, Pacchiarotti I, Cubała WJ, Dudek D, Maina G, Thomas P, *et al*. Expert advice on the management of valproate in women with bipolar disorder at childbearing age. Eur Neuropsychopharmacol 2019;29:1199-212.
41. Qureshi NA, Al-Habeeb AA, Koenig HG. Prevalence of bipolar disorder in the Kingdom of Saudi Arabia: Insights from psychiatric services. Saudi Med J 2020;41:713-20.
42. Stahl EA, Breen G, Forstner AJ, McQuillin A, Ripke S, Trubetskoy V, *et al*. Genome-wide association study identifies 30 loci associated with bipolar disorder. Nat Genet 2019;51:793-803.
43. Geddes JR, Miklowitz DJ. Treatment of bipolar disorder. Lancet 2013;381:1672-82.
44. Qureshi NA, Al-Habeeb AA, Koenig HG, Magzoub ME. The future of mental health services in Saudi Arabia: Lessons from history. Middle East J Psychiatry Alzheimers 2013;4:17-23.
45. Koenig HG, Al Zaben F, Sehlo MG, Khalifa D.A., Al Ahwal M.S., Qureshi N.A., *et al*. Mental health care in Saudi Arabia: Past, present, and future. Middle East J Posit Psychol 2014;1:29-43.