

Overview of bipolar research and future direction

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Abstract: Bipolar disorder is a mood disorder that negatively influences millions of lives in the world. This field deserves more attention, research, and investment, especially in developing countries like China. This article aims to explore the broader knowledge scope of bipolar disorder and is divided into 5 sections and 3 main parts. The first part introduced its various types, diagnostics procedures and methods, common symptoms, causes and risk factors, and social influences on different levels, etc. The second part introduced various treatment strategies, including commonly used ones and recently developed ones, emphasizing the research of viability and functionality of cognitive behavior therapy(CBT)'s application in treating the disorder in modern society. In the third part, the article introduced several bipolar treatment treatment phenomena in China and suggested several ways in terms of how they can be ameliorated from multiple perspectives, including treatment and diagnosis, hospital improvement, research area, and societal efforts.

1 Introduction

Bipolar disorder, formerly known as manic-depressive disorder, is a chronic and severe mental health condition characterized by significant mood fluctuations that swing between two polar opposite states: mania and depression. According to DSM-5, Individuals with this disorder can experience periods of elevated mood, increased energy, and decreased need for sleep, followed by episodes of deep sadness, lethargy, and hopelessness. Drugs and psychosocial treatment are often employed simultaneously and are indispensable for a complete recovery. The disorder affects millions of individuals worldwide, impacting their daily lives, relationships, and ability to function. It is ranked the sixth leading cause of disability in America and the most common reason for mental health disability worldwide [1]. China is one of the nations with the biggest bipolar disorder population in the world, with more than three million patients diagnosed in 2019 [2]. However, their rate of diagnosis and treatment intervention methods remain questionable. What can the nation do to improve the situation?

2 Concept overview

2.1 Types of bipolar disorder

According to DSM-5, there are 5 categories of the disorder and 3 major types, including Bipolar I disorder, Bipolar II disorder, and cyclothymic disorder. Substance/medication-induced bipolar and related disorders and other specified and related disorder are less commonly diagnosed. Bipolar I disorder is defined by

the presence of at least one manic episode, with or without a depressive episode. Bipolar II disorder is characterized by hypomania, a less severe form of mania, and at least one major depressive episode. Cyclothymia is a milder mood fluctuation between hypomania and mild depression. Other Specified and Unspecified Bipolar disorder and Related Disorders are conditions that don't meet the specific criteria for the aforementioned types but still represent a bipolar disorder spectrum.

2.2 Diagnostics

The diagnosis of bipolar disorder is based on a careful clinical evaluation by a qualified mental health professional. Diagnostic criteria from the Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5) are often used to guide the assessment.

More than often, the complete diagnostics are taken into three parts, including physical examination, psychological evaluation, and assessment tools. A detailed psychiatric history gathering is fundamental to the diagnostics. This process includes a careful examination by professionals, generally through thorough conversations asking patients about specific symptom patterns, including duration of the symptoms, severity of the symptoms, and symptoms' impacts on daily life functioning. General life situations such as sleep, diet, relationship, and career are also investigated to facilitate the diagnostics. These processes could help professionals to eliminate potential confounding physical complications that might cause the syndrome. It could also help professional to specify which forms of the disorder is mostly to the patient and eliminate other disorder possibilities such as schizophrenia, major

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depression disorder, or generalized anxiety disorders. A physical examination and lab tests such as EEG can help rule out other conditions that might be causing symptoms, such as thyroid issues or substance abuse. Standardized questionnaires, like the Mood Disorder Questionnaire (MDQ), General Behavior Inventory (GBI), and Young Mania Rating Scale (YMR), are usually employed by professionals to assist in diagnosis.

2.3 Symptoms

The symptoms of bipolar disorder are multifaceted and can range from emotional highs during manic or hypomanic episodes to emotional during depressive episodes. It is crucial to note that the severity and duration of these symptoms can differ significantly among individuals. Cognitive, behavioral, and emotional symptoms could all arise during bipolar episodes.

In Manic Episodes, the emotional symptoms could involve euphoria, meaning experiencing an intense feeling of happiness or well-being that may seem exaggerated or inappropriate given the situation. At the same time, patients may experience a great amount of irritability when they feel always on edge, easily annoyed and agitated. Some of their cognitive symptoms could involve having an inflated sense of self-importance and a belief that one is exceptionally talented, brilliant, or "destined for greatness." Also, there will be quick, unstoppable thoughts that make it hard to focus on any single topic and make impulsive decisions without considering the consequences. Patients may also fail to recognize that one's mood and functioning are severely impaired. Several behavioral symptoms could include excessive talking, decreased need for sleep, hyperactivity, such as indulging in goal-directed activities, and reckless behavior like excessive spending, dangerous driving, or irresistible sexual behavior.

People in depressive episodes could manifest emotional symptoms such as a persistent state of sadness, a state when they feel low in mood, or a sense of despair, and hopelessness about the future for an extended period. They also present a state of anhedonia, in which people lose interest in activities that were previously enjoyable. Cognitive symptoms could involve a pessimistic outlook on life and indecision in making simple decisions. They could also have feelings of worthlessness or excessive amount of guilt and self-blame, thinking they are underserving of love or success. Some severe cases could involve suicidal thoughts or making suicide plans or attempts. Behavioral symptoms could be feeling tired or slowed down most of the time. And big shift in sleep patterns such as experiencing insomnia or sleeping excessively often appears. They could also have significant weight loss or gain due to changes in eating habits. They also tend to neglect personal or professional responsibilities due to lack of motivation.

In rare cases, people experience mixed episodes, in which individuals experience mixed episodes, during which symptoms of mania/hypomania and depression occur simultaneously. For example, a person may feel

incredibly energized but simultaneously feel intense despair, leading to a particularly high risk of dangerous behavior or suicide. Some with cyclothymic disorder involve milder symptoms that fluctuate over an extended period (about two years for adults and one year for children and adolescents) but do not meet the full criteria for hypomanic or depressive episodes.

2.4 Causes and risk factors

The causes of bipolar disorder are complex and multi-dimensional, as they involve a combination of genetic, environmental, psychosocial, behavioral, and biological factors. Each individual may have a unique combination of causes and needs to be carefully analyzed to reach a definitive conclusion.

Genetics-wise, having family members with bipolar disorder significantly increases the risk. Studies on twins show that if one twin has the disorder, the other twin has a higher probability of developing it as well [3]. Studies have also suggested that certain genes may be involved in the onset and progression of bipolar disorder [4].

Environment-wise, factors like stress, trauma, and substance abuse can trigger bipolar disorder or exacerbate its symptoms. Significant life events, such as financial or job loss, relationship issues, or work-related stress, can all trigger episodes in susceptible individuals. Alcohol, drug abuse, and certain medications can predicate the onset of symptoms or worsen an existing condition. Physical or emotional trauma, especially in childhood, can also be a significant contributing factor [5].

Biologically, an imbalance in neurotransmitters like serotonin, dopamine, and amphetamine may contribute to mood swings and other symptoms. Stress hormones like cortisol have also been tested to be involved in bipolar disorder. Abnormalities in the endocrine system, including thyroid dysfunction and dysregulation of the hypothalamic-pituitary-adrenal (HPA) axis, have been associated with bipolar disorder. Imaging studies have shown that individuals with bipolar disorder may have differences in brain structure, including areas responsible for regulating mood and impulse control.

Besides, dysfunctional thought patterns and coping strategies may contribute to the onset or exacerbation of mood episodes and factors like social isolation, discrimination or lack of social support can also play a role. Common lifestyle patterns like lack of sleep, exercise, diet imbalances, and self-care ignorance can also exacerbate the symptoms.

2.5 Social impact

The negative impact of bipolar disorder has been significant on individuals, families, and society.

Individual-wise, an individual's relationships with family and friends might be strained due to the unpredictable mood swings associated with the disorder. Individuals might isolate themselves, especially during depressive phases, leading to loneliness and reduced social support. Besides, young individuals might find it

challenging to concentrate on their studies, leading to decreased academic performance. Therefore, there might be a higher rate of dropout due to the inability to cope with the educational demands. Career-wise, fluctuating moods can lead to a lack of consistency in work, causing job instability or disruption. Episodes of depression can significantly reduce an individual's productivity. There might be a financial strain associated with medical expenses and the potential for the individual with bipolar disorder to have difficulty sustaining employment.

Family-wise, the patient's family members might experience great stress and anxiety due to the unpredictable nature of the disorder. They often bear a significant caregiver burden, with considerable time and resources devoted to supporting the individual with bipolar disorder. Families might often find themselves in a situation where they have to manage crises, including severe depressive episodes or manic behaviors that can sometimes be dangerous. Also, it might be challenging to communicate with the individual during episodes, with conversations often being polarized and difficult, which leads to increased conflicts in the family due to misunderstanding.

Society-wise, the healthcare system may experience a higher burden due to the chronic nature of the disorder and the frequent hospitalizations it might necessitate. Individuals with bipolar disorder may experience periods of reduced work productivity, absenteeism, or job loss due to mood episodes. This can result in lost economic productivity at both individual and societal levels. Individuals with bipolar disorder have a higher risk of co-occurring substance abuse issues. This can lead to further societal problems, including increased healthcare costs, criminal involvement, and family disruption.

3 Treatment methods

3.1 Common treatment methods

There are various treatment methods for coping with bipolar disorder. Common approaches include medication, psychotherapy, lifestyle changes, electroconvulsive therapy, and building support systems.

Common medications include mood stabilizers, antidepressants, and antipsychotics. Common mood stabilizers are the cornerstone for treating bipolar disorder. Lithium is the most commonly prescribed, especially for acute mania and for maintenance to prevent future episodes. Other medications like valproic acid, lamotrigine, and carbamazepine are also used. Anti-psychotics are often used to control symptoms of mania. Common choices include Olanzapine, Quetiapine, Risperidone, and Lurasidone. Antidepressants are cautiously prescribed since they can sometimes trigger manic episodes or exacerbate the syndrome. They are usually prescribed alongside a mood stabilizer or anti-psychotic. Common options include SSRIs like fluoxetine and sertraline.

Different psychotherapy sessions could be deployed to mitigate the syndrome. Cognitive behavioral therapy (CBT) is widely used to help patients understand the

thoughts and behaviors that influence their mood and teaches coping strategies for managing stress and symptoms. The key components include identifying distorted thought patterns, cognitive restructuring, behavior activation, and coping skill building. Family-focused therapy involves family members in treatment and educates them about the disorder to create a supportive environment. Interpersonal and social rhythm theory (IPSRT) focuses on stabilizing daily routines and sleep schedules to manage symptoms of bipolar disorder II, which lasts for several months. It also works to solve interpersonal issues that may exacerbate the condition. Group therapy could also be applied to provide peer support and an opportunity for sharing coping strategies. Psychoeducation involves teaching patients and their families about the disorder to improve treatment adherence and outcomes, which can be done in a group setting over a few months [6].

For severe cases, electroconvulsive therapy (ECT) is used to stabilize the symptoms. ECT involves passing electrical currents through the brain to affect neurotransmitter levels. An alternative solution also includes Transcranial Magnetic Stimulation (TMS), a non-invasive procedure that uses magnetic fields to stimulate the brain, sometimes used when other treatments have failed.

Additionally, lifestyle changes could be applied through regular physical activity, particularly aerobic exercise, which can help manage symptoms of depression and stress. Proper nutrition can also potentially mitigate symptoms and improve overall well-being. Poor sleep habits could trigger manic or depressive episodes; hence, healthy sleep hygiene is crucial in managing the symptoms. Alcohol, drug abuse, and high-stress situations can exacerbate symptoms of bipolar disorder and should also be avoided strictly. Besides, ongoing treatment is typically necessary to manage symptoms effectively. Regular follow-up visits can help adjust treatment as needed, and support groups, either in-person or online, can provide additional help and emotional support.

3.2 Cognitive behavioral therapy

Recently, CBT has grown in popularity in dealing with various mental disorders. The research on CBT's effectiveness in dealing with bipolar disorder has been growing generously recently. Though the primary treatment method for the illness is still medication, the application of CBT alongside medical treatment has been shown to have a promising effect on the curing process. Medication is prevalent and effective, but patients are prone to inefficient medicine intake based on prescription; for example, they forget to take, are unwilling to take, do not take long enough, and take less than needed medicine, which leads to ineffective treatment or inconsistent curing. CBT intervention could be helpful in maintaining a healthy treatment schedule and effectiveness due to its empirical nature and applicability to the general crowd. The CBT for bipolar disorder is based on the idea that your feelings, thoughts,

and behaviors are all connected and that unhelpful thinking patterns (which often occur during mood episodes) can affect your behavior, and CBT could help you identify and change these unhelpful thought patterns. In a 2017 trial research of CBT for bipolar disorder, researchers compared 6 sessions of CBT with treatment as usual. At 6 months, CBT was associated with fewer hospitalizations, lower rates of stopping lithium against medical advice, and fewer manic episodes due to inconsistent lithium use [7].

A systematic meta-analysis research from 2017 Electronic literature searches were performed using authoritative psychology sites such as PubMed and PsycINFO. A total of 1384 patients over 18 years old, diagnosed with type I or II BD, were found in 19 randomized controlled trials. Comparison groups were included to receive usual interventions, and the CBT group received CBT plus the intervention given to the control groups. The availability of at least one relevant outcome, such as changes in the relapse rate, mania severity, and psychosocial functioning, was taken into the search criteria. And different officially adopted self-report assessment scales were applied to test the influences. The results show that CBT groups show improved depressive symptoms, reduced mania severity, decreased relapse rate, and improved psychosocial functioning, especially when treatment is over 90 minutes per session [8].

In a 2021 review study, CBT has been shown to be helpful in medication adherence and dealing with episodic occurrence of emotional abnormalities. Symptom-wise, it can ease the symptoms of diseases, including depression, dysphoria, and elevated mood episodes, and it helps patients learn early signs and prevent episodes. It has also shown the potential to treat comorbid conditions. It mentioned that comprehensive psychoeducation applied in CBT was much more effective than lectures and self-learning. A complete process of CBT includes assessment, psychoeducation, and methods for mood episodes or preventing recurrences. Holistically, the patient's cognitive, behavioral, social, and habitual patterns would get reshaped in a much healthier direction [9].

3.3 Innovative approaches of treatment

Recently, meditation has been increasingly recognized as a complementary approach for managing various physical and psychological conditions, including stress, anxiety, and depressive symptoms. While meditation alone is not a substitute for a comprehensive treatment plan, it may offer some benefits as a complementary practice. Some potential benefits include stress reduction, attention improvement, enhanced self-awareness, emotional regulation, and sleep quality. However, recent studies suggest that certain intense or prolonged meditation practices could potentially trigger panic episodes in people with bipolar disorder. The reason for this is not entirely clear, but warrants caution. Also, there is great individual variability in terms of receiving treatment, so it is crucial to consult healthcare providers

for tailored advice. While preliminary studies on the effectiveness of meditation in bipolar disorder show promise, the body of research is still relatively small. Current evidence is mostly anecdotal or derived from studies with small sample sizes, limiting the conclusions that can be drawn.

Medication-wise, lithium remains a mainstay of treatment for the diseases. Although different types of drugs were sometimes prescribed to better meet certain individual needs, lithium compound drugs, such as Eskalith and Lithobid, have been the main prescription drugs for patients. It regulates sodium transport in nerve and muscle cells, which modulates mania symptoms effectively. However, its pervasive and strong side effects also thwart people from using it safely. Lithium has toxic effects on the thyroid gland and the kidney. Many patients report nausea, diarrhea, muscle weakness or tremors, and mental dazing or confusion after taking the drug, and many report weight gain in the long term [10]. Many of these effects severely interfere with patients' lives, and lots of patients choose to stop the lithium treatment voluntarily. Due to these negative aspects, much attention has been drawn towards safer alternatives such as magnesium and valproate. New popular drugs like the CAPLYTA were invented to combine effective chemicals like croscarmellose sodium and magnesium stearate, and minimize risks. Lithium Orotate as a supplement has also been getting popular among consumer recently for mediating manic symptoms of bipolar disorder, many subjective reviews report seeing similar positive results of lithium carbonate with much fewer side effects. However, formal clinical research and trials on lithium orotate are limited to eliminate potential risks and true effectiveness. Therefore, further research are highly encouraged to testify its benefit.

Recently, internet-based CBT (iCBT) has been gaining popularity among patients. In a research for a single-subject bipolar disorder at a Swedish psychiatric outpatient clinic, 4 patients diagnosed with bipolar disorder type 2 were treated by iCBT along with ongoing pharmacological treatment with a psychiatrist. With self-reported data, 75% of patients reported they perceived reduced symptoms in regard to depression and perseverative thinking. Another research shows that when combined with pharmacological treatment, psychoeducational, and CBT help to improve adherence to the medicine and help decrease the number of manic relapses in BD [11].

3.4 The ideal treatment methods

Bipolar disorder is a complex and lifelong condition that requires a multifaceted treatment approach. Medication is indispensable, but psychotherapy is increasingly recognized as a central pillar of bipolar disorder treatment, providing patients with indispensable skills to manage the illness and recover social functioning. In order to achieve effective recovery, individual differences need to be carefully assessed, and individuals need to work with clinicians to come up with the best

treatment strategies, which is a long-term process that involves constant planning and readjustment. Medicine usage varies from person to person and needs individual experimentation to find the best type and dosage. Each psychosocial method has its benefits and can be applied in different stages and aspects of the illnesses.

The emphasis on the continuous research of the concrete effect of psychosocial intervention is always important since there is inefficient quantitative and qualitative research on the combination treatment in real-life cases, and there are limited professional resources available to deliver comprehensive psychosocial approaches [12].

4 Suggestions

Over 170 years of development since its first discovery, research, medications, products, cases, and social ideology on bipolar disorder have evolved drastically. They help to expand people's understanding of such inconspicuous but debilitating illnesses and to make it more manageable. However, there are still huge spaces for improvement in terms of diagnosis, treatment, and research, especially in developing countries like China.

Diagnostic-wise, misdiagnosis and over-diagnosis of bipolar disorder seem to be prevalent in modern society. A study conducted in 2018 shows that over 40% of patients with bipolar disorder are misdiagnosed, usually confused with major depression disorder [13]. Usually, the short interview format of diagnosis lacks a thorough assessment of the situation. An efficient doctor can take 70 patients per day within 7 hours of work time. It's also hard to pinpoint specific types of diagnostic criteria in such a short timeframe without complete procedures of assessment, not to mention matching the best treatment. Individual illness timeframe and frequencies are too special that few criterion types on the DSM-5 might be limited in suggesting the best diagnosis and treatment methods. Besides, when assessment emphasis is put too much on self-reporting, patients' subjective recall and explanation might be unreliable, as they have the tendency to report self-diagnostic syndrome or inaccurate feelings, which could lead to misdiagnosis.

Treatment-wise, the major methods of treatment in a public hospital in China are drug-prescription-based. In China, the individual trial period for finding the right medicine is also time-consuming and health-damaging. It usually takes about 2 months of adjustment to find the most suitable drugs that work for individual types. The drug adherence rate of Chinese people also tends to be low [14]. Though medication does solve a large portion of the problem but always leaves a portion unsolved, so psychosocial treatment is much needed to be valued by clinicians in China and integrated into treatment planning to facilitate the recovery process [15]. Due to the unpredictability nature of the disorder, long-term professional support is always needed to ensure fully functional recovery, which places more emphasis on the demand for professional caretakers.

Besides, hospitals lack rigorous follow-up measures. They usually only offer periodic checkups depending on patient's voluntary arrangement, which are not beneficial for the recovery process. Hospitalization is expensive and time-consuming, and people are fear of getting stigmatized for living in a hospital due to mental illnesses. A better mechanism could be created to monitor drug usage, recovery process, cognitive enhancement, and behavior modifications. Technology utilities such as mobile phone applications could be used to bridge clinician and patients' relationships, by which patients could also take online interview sessions or chatbots to check up on their syndrome.

Research-wise, there seems to be a deficiency of longitudinal studies to understand the long-term outcomes of individuals with bipolar disorder and to identify factors that promote and against recovery and well-being. Utilizing big data from retrospective studies to analyze large datasets from electronic health records, genetic databases, and neuroimaging studies to identify patterns and correlations could potentially create a better understanding of the etiology. It's also important to diversify the sample diversity of the patients by including patients from different cultural, gender, age, and socioeconomic backgrounds, which improves the external validity of such research. More global research collaborations could enhance the scope of research, potentially finding better solutions for the problem. New age devices like wearable technology and biofeedback monitors could also applied to monitor the different aspects of BSD, which would provide more lively and effective emotional patterns of the syndrome. And comprehensive qualitative research will always be needed to gain real insight into the etiology of bipolar disorder.

Society-wise, educational programs need to be developed to improve awareness and understanding of bipolar disorder in the general public, as well as among healthcare providers. Early CBT education also has the potential to prevent various mental illnesses, facilitate early detection, and potentially avoid over-diagnosis. Schools can help develop strategies for early intervention in young populations to prevent the full onset of bipolar disorder. Schools and workplaces could also learn to foster an inclusive learning environment that caters to the needs of those with bipolar disorder. Media can work on interventions to reduce the stigma associated with bipolar disorder, promoting better understanding and acceptance of such phenomena in the general public. The social demand in China for professional psychologists, psychiatrists, and mental health workers is drastically increasing, especially when people made an ideological shift about mental health and its value in life after the pandemic; they are willing to invest more in this field, which urges the society to come up with more infrastructural establishment. Laws and policies could be in place to protect individuals with bipolar disorder from discrimination in various spheres, including education, employment, and housing. University could develop more short-term professional training programs to back up the demand for psychosocial therapy shortage.

5. Conclusion

In conclusion, bipolar disorder is a complex mental health condition with various types, symptoms, and causes. Every single symptom can be disabling and negatively influence patients' daily functioning. The disorder has a tremendous impact on individual well-being and could reduce the efficiency of overall societal functioning. Its diagnosis needs a comprehensive and complete set of procedures that includes physical examination, individual interviews, and psychological assessment. Its treatment methods are complicated and demand efforts from every aspect of society, especially the hospital and education system. Future research into the topic can focus on specific longitudinal cases and mass data collection of individual recovery data to figure out more commonalities of the syndrome. And more general overview of the periodic update on the field's treatment and etiological discovery is also needed for scholars to understand its development and progress better.

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