

The pathogen, clinical overview and influence of depression

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Abstract. Depression is a mental health disorder that affects a significant portion of the global population. At the same time, the influence of depression on a person's physical and mental health is well established and studying the impact of depression on the outcome of a pathogen can lead to improved healthcare outcomes for individuals suffering from both. So, this article focuses on the pathogen, clinical overview and influence which mainly gathers information from different aspects to give a summary of areas of depression based on the data and results from recent studies. The research results indicate that depression is a complex disease that encompasses different causes, including genetic and biological factors. The recurrence of depression is a common phenomenon, and people with a history of depression should be more cautious, although drugs targeting recurrence have emerged. When early warning signals are detected, patients need to take action to prevent them.

Keywords: depression, situation, relapse, medical treatment, types.

1. Introduction

The characteristic of depression is persistent feelings of sadness, hopelessness, and a lack of interest in previously enjoyed activities. It is estimated that the number of individuals experiencing depression has increased globally, highlighting the need for continued efforts to address this pressing issue. Electroconvulsive therapy (ECT) and mixed therapy are coming up since there has been a growing recognition of the importance of mental health and the impact of depression. Also, there has been a growing emphasis on preventative strategies and early intervention, with a focus on improving access to care associated with mental health issues. Based on the development of technology in mental health aspect, researchers have found new and more effective ways of treatment and giving out more problems in different areas of psychology. This article gives an overview of depression, including new findings and definitions related to it. The article classifies and organizes the information from journals and gathers it together. So, this article is mainly focused on giving some basic information about depression. The research results of this article are beneficial for those who do not have much knowledge of depression to understand more about the current situation of depression and related treatment and recurrence, so as to better pay attention to their own health.

2. Causes

Depression could be caused by several factors. The most common reasons are social failure, family effects, pregnancy, and so on.

Everyone in daily life needs to face different people and make different social contacts. Some people may feel failed during social contact. In the report of Liu et al., the main symptom of depression is losing happiness and pleasure in daily life. Figure 1A shows the social defeat group (n = 9) and the control group (n = 8) had distinct variations in the main components analysis score plot produced from GC-MS spectra, it clearly shows the differences between the social defeat group and control groups ($R^2X=0.409$, $Q^2= 0.066$). The OPLS-DA model, shown in Figure 1B, demonstrates good prediction between the social defeat group and the control group. 25 metabolites were significantly differentiable between the two groups based on the OPLS-DA ($R^2X = 0.370$, $R^2Y = 0.793$, $Q^2 = 0.151$). Figure 1C reveals the permutation plot demonstrated the validity of the first OPLS-DA model. Based on the outcome of the experiment (as shown in Figure 1), when male Sprague Dawley (SD) faces social failure, the molecular differences in samples from the two groups. SD's brain changed, and 25 different metabolites were significantly less than in the control group [1]. Socially defeated rats have lower scores on the sucrose preference test, which means they have more reactions and are more likely to have depression. Mainly, the disruption of lipid metabolism, amino acid metabolism, and energy metabolism in the prefrontal cortex of socially defeated rats causes depression-like behaviour.

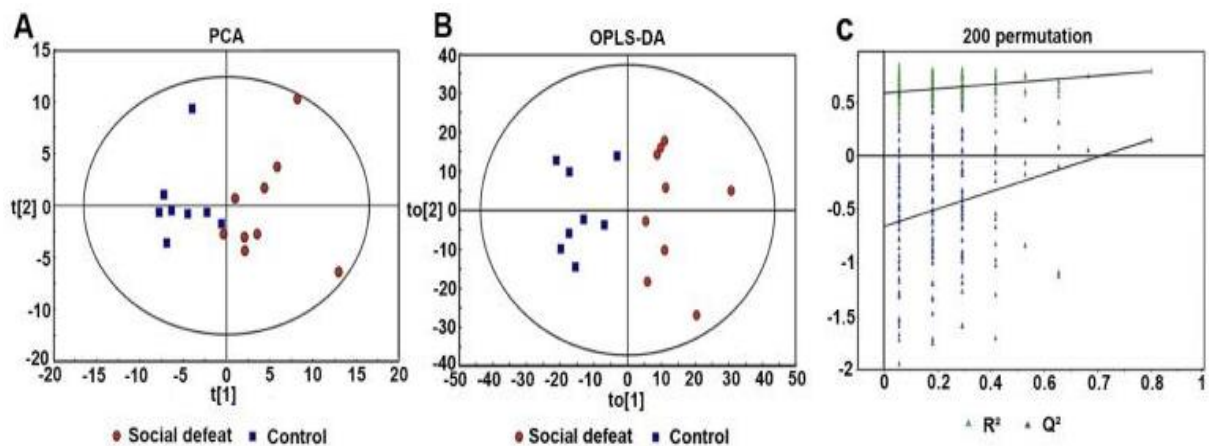


Figure 1. Metabolomics analysis of the prefrontal cortex [1].

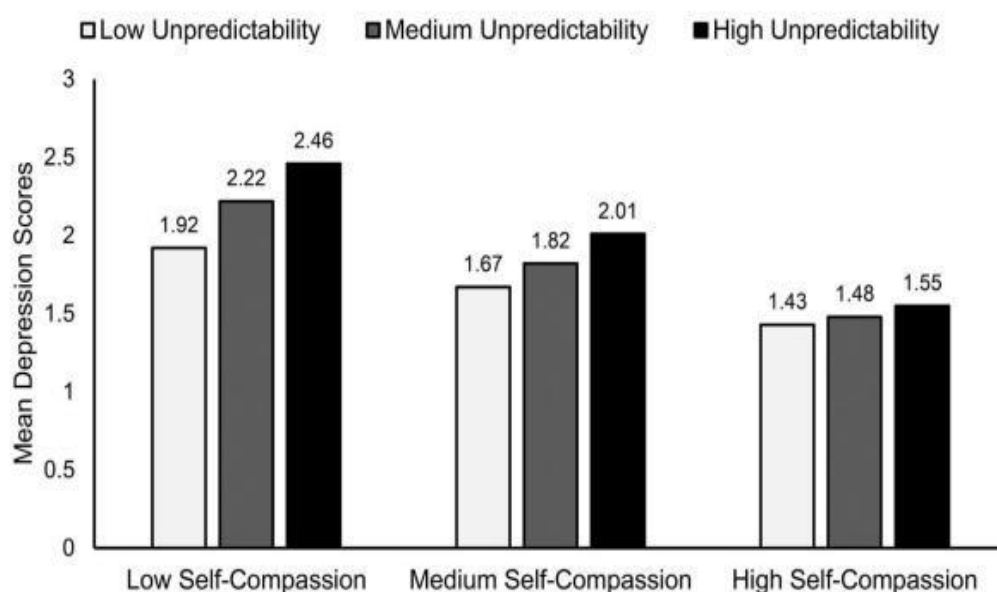


Figure 2. Degree of self-compassion between family unpredictability and recent depression [2].

During adolescence, teenagers need to face strange world environments and explore knowledge, the family environment becomes much more critical. According to Hood, Thomson Ross, & Wills, family unpredictability includes unsteady meals, money or income, parental control and parental nurturance, and all of them are related to depressive and anxiety symptoms in kids [2]. Another factor is self-compassion. Between self-pity, depression, and family unpredictability, high unpredictability is associated with high depression scores. High self-compassion is associated with low depression scores. This means that when faced with varying degrees of family unpredictability, self-compassion can also affect a person's depression score (as shown in Figure 2). So, less support from family leads to more unpredictable and frequent depression symptoms. On the other hand, training self-compassion among college or university students can decrease the probability of depression.

3. Types

In daily life, the most common form of depression is caused by failure. But depression is not a word with a specific disease; there are also a large number of depression types. Except for the depression caused by daily failure, there are two other types of depression that are also very common: depression in pregnancy and Seasonal Affective Disorder (SAD).

Depression in pregnancy has two types, antenatal depression and postnatal depression. In a study in Turkey, 71 (27.5%) of 258 people had prenatal depression [3]. The experiment used the Multidimensional Scale of Perceived Social Support (MSPSS) to evaluate the social support of pregnant women; The Edinburgh Postpartum Depression Scale (EPDS) is used to measure the collected data. According to EPDS, the score is irrelevant with gestational age. It shows a positive correlation with age and is related to the rate of pregnancy and the rate of living children.

Another type of depression that is not well known is called Seasonal Affective Disorder (SAD). This is usually seen in winter, and remission occurs in spring or summer. The common symptom of SAD is the opposite of classical depression. Classical depression shows loss of weight, sleep, and appetite, but SAD is shown to increase appetite, weight gain, and sleep. Most SAD patients crave carbohydrates, and it is mostly shown in the afternoon and evening. Most studies have found SAD to be prevalent in women and children, but it is less common in adults. One reason for SAD in winter is the lack of light. SAD is popular in higher northern latitudes [4].

4. Therapeutic methods

There are different types of medicine to treat depression. The most popular type is selective serotonin reuptake inhibitors (SSRIs). Some popular medicines such as Prozac and Zoloft, are both SSRIs. SSRIs are helping to increase the level of 5-HT in the brain, and they have fewer side effects, but those side effects will improve over time, so it usually considers to be safer medicine. Tricyclic antidepressants are used to cure patients with Moderate to severe depression, they raise the level of 5-HT and norepinephrine in patients' brains, and it also consider to be a safe medicine and the side effects always improve after 10 days (about 1 and a half weeks), but the side effects are serious than SSRIs. Vortioxetine is used to cure adult patients with recurrent major depressive episodes, but it was only given when patients give no response to two types of medicine before and it has more side effects than the other two such as naupathia, emesis and abnormal dreams [5]. SNRIs (Selective Norepinephrine Reuptake Inhibitors) treat depression by stopping 5-HT and norepinephrine from back to the cell and releasing it to make sure the level of norepinephrine and 5-HT is at a normal level. There are still some slight side effects, but some medicine of SNRIs such as Fetzima and Savella [6]. Some medicine that is not really recommended for treating depression is Monoamine Oxidase Inhibitors (MAOIs), which stop the resolution of 5-HT, norepinephrine, and dopamine to ensure that the level of these chemicals is balanced, but it will lead to blood pressure problems if eaten with other medicine or some typical food, and there are still many side effects for it such as muscle cramps, headaches, weight gain, and so on [7].

CBT (Cognitive Behaviour Therapy), also called talking therapy, is also known for curing depression. It is a kind of therapy that helps deal with the thoughts and behaviour of people. But the way of taking CBT and its frequency will also affect efficiency. CBT-based therapies have better results than other

psychological and pharmacological therapies, but joint therapies have shown better effects than single therapies. For psychotherapies, the main difference is how the changes achieve instead of the extent of the changes [8]. In metaregression analysis by Cuijpers Huibers, Ebert, Koole, and Andersson show that over ten sessions of CBT, the effect size increased by 0.1, but the effect size and the number of treatments per week had a strong relationship: two instead of one session per week would increase with 0.45 of effect size [9]. The reason is that relationships between patients and counsellors may develop more rapidly when they have more contact and the continued survival of neurons 'born' within the last five days is important for learning to occur. From a clinical point of view, in common, the early stages of therapy should have more intense therapy, especially for patients with severe depression and suicide. In additional metaregression analyses, the total contact time was not found to a high extent related to effect size.

Electroconvulsive therapy (ECT) is a way to cure serious psychiatry including depression, bipolar disorder, mania and so on. ECT has been used for 75 years, but it remains argued out of the psychiatry area due to a misunderstanding of the usage and informed consent process. ECT is considered a secondary treatment when medical treatment fails, or patients show highly suicidal or other clinical symptoms highly suicidal or other clinical symptoms. ECT works by increasing dopamine, serotonergic, and adrenergic neurotransmission. Before doing ECT, the doctor will mention the precautions and get a complete general medical history during the consultation: the illnesses, especially cardiovascular, pulmonary, and central nervous systems must. During the ECT, doctors will check the heart rate, blood pressure and oxygen saturation to ensure everything is going correctly [10]. Comparing ECT with different medical treatments such as MAOI (Monoamine Oxidase Inhibitors) and antidepressants, ECT shows a significant advantage over medical treatment. Even with less relevancy, ECT shows a greater chance of treatment response and less extent than medical treatment [11]. Those demonstrate that ECT is an effective way to cure depression, but it is not clear if it is the primary treatment choice.

Overall, medical treatment is the most common treatment. It has different types of medicine for different degrees of depression. If the single medical treatment did not show very well on the patient, then combine treatment, medical and CBT combine together to expand the effect size to maximize the effectiveness of both two treatments. ECT will only be used when medical treatment and CBT both have less performance, ECT is only used for severe depression.

5. Discussion

Depression causes lots of social influences including social defeat and thwarted belonging. A defeated sense of belonging and burdensome are causes and results of depression, and social anxiety also leads to thwarted belonging. A low level of income is also associated with a prominent level of burdensome, and a defeated sense of belonging and thwarted belonging and burdensome leads to suicide to a large tend [12]. So, depression affects suicidal ideas and is directly associated with suicidal idea. If patients excessively need reassurance, it will cause some meaningful people to keep their distance from patients and let them feel a more defeated sense of belonging. Depressed patients, on the other hand, may feel more burdened by achievement-oriented challenges brought on by exhaustion, experiential avoidance, trouble concentrating, and strained relationships with others.

Some people also believe that in addition to daily behavior and actions, some experiments and environmental changes can affect the impact of unpleasant experiences on brain activity, which may affect the susceptibility to depression. This makes people feel more sensitive to things that happen in daily life, including interpersonal ones. Some neuroscience disorders may decrease activity or levels, and stressful events may affect susceptibility to affective diseases that exist both within and between different neurochemical systems [13]. The research, also clarifies that those changes should not be causal, but secondary than initial daily stressors.

Relapse problem is one of the focus points after cure depression. Evidence suggests that as the illness becomes more frequently recurrent, the risk of depressive recurrence, treatment resistance, and chronic rise. Every year, 5% to 10% of patients who are still taking antidepressants relapse, which has resulted in some surmising tachyphylaxis.

In one study, which gave patients medicine therapy, cognitive therapy and combination therapy, the data showed that the percentage of relapse in patients who accept cognitive therapy or combined with medical therapy is half less than in patients who continue on medicine [14]. Also, providing cognitive therapy during acute treatment can help prevent depression relapse.

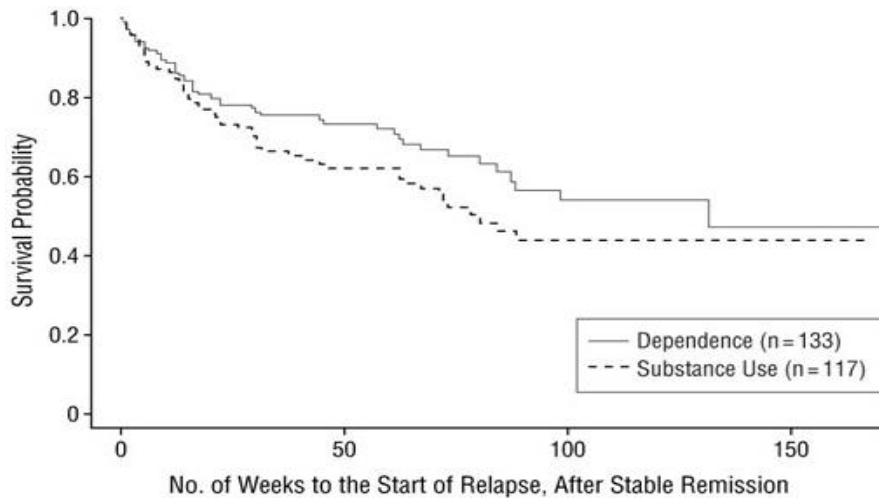


Figure 3. Kaplan-Meier estimates of cumulative probabilities [15].

One of the experiences shows that in 12 months relapse risk periods, 37.1% of patients report relapsing depression symptoms [16]. There are two risk factors for it. One is subthreshold depressive symptoms continuing 7 months after starting antidepressant treatment, and another one is that they used to have more than 2 times major depressive disorder seizure history or persistent mood issues for two years. Another study shows that relapse of depression is also associated with using alcohol, cocaine, and heroin (Figure 3) [15]. For the relapse part, the current study gives out the data and the rate of relapse for different types of treatment and how some external reasons such as alcohol, cocaine and heroin affect relapse of depression and MDD abstinence. For relapse, most of the research did not mention the current relapse rate for different degrees of depression.

6. Conclusion

Depression is a complex disease that has different causes, including genetics and biological factors. Medications for relapse have also been coming up. Relapse of depression is a common occurrence, and individuals with a history of depression should be more careful about it. When identifying early warning signs, patients need to take action to prevent them. The article did not fully address the impact of social and cultural factors on depression. Also, the medical capacity of each community and country does not count in the article. To improve it in the future, the depression area can focus more on the different types of things to measure, and different ways and effectiveness of these methods also need to be considered.

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