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**Prevalence and clinical course of depression: an updated review**

**Running Title:** Prevalence and Clinical Course of Depression.

**Authors:**

Afnan Moed Marzooq Alsulaymi¹, Lama Walid Abdullah Alhabsi¹, Amal Mashhoor Shaher Al-Barakati Al-Shrif²

1. Medical Intern, Umm Al-Qura University, Faculty of Medicine, Makkah, Saudi Arabia.
2. Medical Student, King Saud University of Health Sciences KSAU-HS, Makkah, Saudi Arabia.

**Corresponding Author:**

Afnan Moed Marzooq Alsulaymi

Medical Intern, Umm Al-Qura University, Faculty of Medicine, Makkah, Saudi Arabia.

Email: afnan.alslemi@gmail.com
**Abstract**

Depression is a disturbance of emotions that results in deterioration of daily activities and abilities. It is one of the most diagnosed mental disorders among individuals. The cost of depression is considerable. So, the prevalence of depression is of great concern. The aim of this review is to highlight the prevalence and clinical course of depression. This review involved an online research process in searching for scientific articles related to the subject under interest using scientific websites and several keywords. The articles were selected based on inclusion criteria. There were 36 articles included to write the current review; the review was written under titles in the discussion part. The estimation of the exact prevalence of depression is hard as it varies based on different communities, the study design, population under study, and some environmental factors. The prevalence of depression can be increased by female gender, older age, and suffering from certain diseases.

**Keywords:** Depression, Prevalence, Clinical course.

**Introduction:**

Major depression is a common disorder that severely limits psychological functions and negatively affects the quality of life [1]. A major depressive disorder is one of the most common mental disorders globally and one of the most disabling diseases [2]. The major depression was marked by WHO as the third cause of the burden of disease globally and predicted that the disease would rank the first by 2030 [3]. According to the Global Burden of Disease study, depression is in the fourth rank as a cause of disability [4].

Major depression has a more significant impact on public health compared to physical conditions such as diabetes mellitus, rheumatoid arthritis, and coronary heart disease [2].

The prevalence of depression varies according to the region of the study and the methodology of the study [5]. In this review, we aimed to overview the prevalence of depression as well as its clinical course.

**Methods:**
The online research process through scientific websites was done to search for scientific articles to be included in this review. We searched for articles related to the current subject through scientific websites such as Google Scholar and Pubmed as well as Research Gate using several keywords, including "Depression, Prevalence, Students, Patients, Clinical course". We obtained 79 articles related to our subject; we selected specific points to discuss in this review as the depression include several points and wide range of studies. We selected articles discussing the prevalence of depression COVID-19 period as it is an important event nowadays, and they were 8 articles published in 2020. Articles discuss the prevalence of depression among the general population in normal situations, and they were 5 articles and published between 2017 to 2018, and 10 articles discussed the prevalence of depression among patients with different disease and they were published between 2015 to 2020. We selected articles discussing the depression prevalence among students as students are more prone to develop depression, and they were 9 articles published between 2014 to 2020. There were 4 articles included discussing the clinical course of depression, and they were published between 2004 to 2018. The included articles in this review were selected as they were the most recent articles even the number of included articles were few.

**The prevalence of depression:**

*Prevalence during the COVID-19 period:*

A new coronavirus was discovered at the end of 2019, and it is believed to be started from Wuhan, China. The outbreak of the COVID-19 had a significant impact on the daily life of individuals and on the study of mental disorders. During the period of COVID-19, there were negative life emotions dominate the communities, low self-esteem, heavy academic pressure due to obligated quarantine; all these factors resulted in a high risk of depressive symptoms such as boredom, anger, sense of fear, uncertainty, loneness associated with quarantine, and insufficient outdoor activities [6].

A study from the US conducted on the adult population included 1441 individuals; the study compared the prevalence of depression before and after the COVID-19 period, and the prevalence of depression before and after COVID-19 was as follows; mild depression was prevalent among 16.2% Vs. 24.6%, moderate depression was prevalent
among 5.7% Vs. 14.8%, moderately severe depression was prevalent among 2.1% Vs. 7.9% and severe depression were prevalent among 0.7% Vs. 5.1%. These findings reflected that the prevalence of depression increased significantly during the COVID-19 period [7].

A study from China conducted through an online survey and included 4805 female adolescents with an age range of 11 to 18 years showed that the prevalence of depression was 39.5% with a CES-D score of more than 15. The onset of depression was associated with older age, distant learning, concern about COVID-19, the duration of sleep, and physical exercise [6]. Another study was conducted on Chinese adolescents during the outbreak of COVID-19. The study included 8079 Chinese adolescents of the age range of 12-18 years old using an online survey. The prevalence of depressive symptoms was among 73.7% of participants. Female gender was a risk factor for depressive symptoms, where there were 45.5% of females suffering depressive symptoms compared to 41.7% of males suffering depressive symptoms. The prevalence of depression in this study [8] was higher than the prevalence reported in the previous study, which was conducted in China, too [6]. A study conducted on 123768 workers in China reported a high prevalence of depression symptoms, where 22.8% were suffering from depression symptoms [9].

A population-based study from Hong Kong included 500 participants reported a prevalence of depression among 19% of participants, and 25.4% of all respondents reported that their mental health had deteriorated since the pandemic [10]. A meta-analysis from Spain included 12 community-based studies reported a prevalence rate ranging from 7.45% to 48.3%, and the pooled prevalence of depression was25%, with significant heterogeneity between the studies [11]. A study from Bangladesh conducted on 476 university students during the COVID-19 period and was done through a web-based survey demonstrated that 15% of the students had moderately severe depression; higher depression was more prevalent among older students [12]. In a systematic review and meta-analysis of stress, anxiety, and depression general population, it was found that the prevalence of depression in 14 studies with a sample size of 44.531 was 33.7%, whereas the stress prevalence was 22.6% in five studies with a sample size of 9074, and the prevalence of anxiety was 31.9% in 17 studies with a sample size of 63.439 [13]. The previous studies and systematic review showed the negative impact of COVID-19 on the mental health of individuals, as it resulted in a higher prevalence of depression.
The prevalence of depression was increased in the presence of risk factors such as older age and female gender.

**Prevalence among General population:**

Regarding the prevalence of depression among the general population before the COVID-19 pandemic, one study from district Peshawar included 410 adult individuals. The study reported a high prevalence of depression of 85.85% [14]. A study from Iran included 10000 residents reported a prevalence of depression of 29%, with a higher prevalence of all depression degrees observed among females and older individuals [15].

Much lower prevalence was reported from Korea, where the prevalence of depression among the general population (4949 subjects) was 2.7% only. The factors reported to be associated with depression were different from factors reported from other countries, where stress and health status were the associated factors with depression [16]. A study from India reported a weighted prevalence of lifetime and current depressive disorder of 5.25% and 2.68%, respectively. The factors associated with depression prevalence included age range of 40-59 years, female gender, and education [17].

A study conducted on the rural community from India reported that the prevalence of depression was associated with female gender, being illiterate, married individuals, low family income, being housewife, and age range of 41-60 years old [18].

The prevalence of depression among the general population varies depending on several factors, such as the population under study and the modernization of the country of the study. However, some factors seem to be unchangeable such as the female gender and older age, which were significant factors of depression development in the general population and during the COVID-19 period.

**Prevalence among patients of different diseases:**

The prevalence of depression can increase with the presence of some diseases such as chronic diseases. Diabetes mellitus (DM) is the most common metabolic and chronic diseases. DM can cause psychological, physical, and behavioral changes. A study from Makkah, Saudi Arabia, was conducted on 382 diabetic patients with type I and type II
diabetes. The prevalence of depression among diabetic patients was 20.68%, with 12.83%, 7.07%, and 0.79% suffering moderate, moderately severe, and severe depression, respectively. Factors associated with depression prevalence included duration of hypertension, high education, and the number of co-morbidities [19]. Another Saudi study from the Al-Qassim region was conducted on type II diabetes patients. The study included 300 patients; of them, there were 34.8% having depression. The depression was found to be more prevalent among patients who received low or moderate social support, and it was less common among patients with diabetes from more than ten years [20]. The association between the lower prevalence of depression and the longer duration of diabetes can be explained by the habituation of the patients with the disease.

A study from Jeddah, Saudi Arabia, conducted on type II diabetic patients showed that there was a high prevalence of depression 48%, with 52% having mild, and 48% having moderate, severe depression. The prevalence of depression among the patients was associated with female gender, older age, and no usage of insulin [21]. A study reviewed the electronic database of studies conducted in the Levant, and Gulf countries included 11 studies. The study reported that nine of the eleven articles revealed high rates of co-morbidity of depression and diabetes with a higher prevalence of depression among women compared to men [22].

A study from Tanzania performed on the diabetics of outpatient clinics found a high prevalence of diabetes among diabetic patients of the clinics. The prevalence of depression was 87%, with 56.7%, 22.1%, and 8.2% having minimal, mild, and moderate depression [23]. A study from Ethiopia reported that the prevalence of depression among diabetic patients in a general hospital was 21.3%, with type II diabetes, poor social support, and being physically disabled being the independent predictors of depression [24].

Hypertension, as one of the leading causes of disability and mortality, was studied for the prevalence of depression. The prevalence of depression among patients with hypertension in India was found to be high, and it was 40% [25]. A study from Iraq investigated the prevalence of depression among patients with ischemic heart disease. Of 271 patients, depression was found to be prevalent among 45.1%, with 14.9%, 20%, 7.06%, and 3.14% having mild, moderate, severe, and very severe depression. The
depression was significantly associated with older age (51-60 years), married individuals, being housewife, illiterate, and the contrary of the previous studies, the male gender was associated with the prevalence of depression [26].

A study from Croatia was performed on primary health care patients reported a prevalence of depression of 25.5%, with 19.38%, 4.64%, and 0.91% showed mild, moderate, and severe depression, respectively. The prevalence of depression was significantly affected by employment status, marital status, and the level of education [27]. The prevalence of depression among infertile individuals was found to be 30.5%, and it was associated with female gender, long duration of infertility, self-caused of infertility, and previously failed treatment [28]. The prevalence of depression was affected by the presence of other diseases. Also, female gender and older age are associated with the prevalence of depression in patients of other diseases. The most common disease investigated for depression prevalence was diabetes, as diabetes is the most common chronic and metabolic disease. However, the prevalence of depression among patients with the same disease in different regions varies.

Prevalence among students:

Students may experience stress as a result of their studies. A study conducted on secondary school female students in Riyadh city reported a prevalence of depression of 30%. The prevalence of depression was associated with income less than 12000 Saudi riyal/month, didn't have a good relationship with family members and peers, living alone or with a single parent, being emotionally abused, and students exposed to physical violence at least for one time [29].

Regarding medical students, several studies focused on medical students, as medical education is stressful. A study conducted on medical students in Saudi Arabia among 1171 medical students reported low rates of the depressive syndrome and depressive disorders. However, females experienced more depressive symptoms compared to male students [30]. Another study conducted on 190 medical students in Saudi Arabia from Bisha University showed that 26.8% of students had depressive symptoms, and 45.1% of them have moderate to severe symptoms [31].
In an Egyptian study performed on 442 medical students, the prevalence of depression was 60.8%, this prevalence of depression was significantly associated with increasing age, low socioeconomic, and being from other governorates [32]. Also, a high prevalence of depression was reported from a study from Brazil conducted on 761 medical students. The prevalence of depression among students was 34.6%, which was associated with female gender, anxiety, stress, and intrinsic religiosity [33]. A systematic review on depression among medical students included 15 articles reported that prevalence due to psychological distress among medical student and resident professionals around parts of the world is substantial [34].

A study from Vietnam among students of Tra Vinh university reported a prevalence of 52.3% among students, with a major depression prevalent among 20.7% and mild to moderate depression was prevalent among 42.2% students [35]. A similar rate of depression prevalence of the previous study [35] was reported by a study from Pakistan. The study from Pakistan was conducted on undergraduate students in Karachi; the prevalence of depression was 53.43% [36]. A recent systematic review and meta-analysis included 113 studies and investigated the prevalence of depression among Chinese universities showed that the overall prevalence of university students was high, and it was 28.4% [37].

The prevalence of depression among students is high, and the variation of the depression degrees may be affected by the field of study.

The clinical course of Depression:

The depression onset is gradual; however, sometimes, it can be sudden. Also, the course of depression varies throughout life. Most patients with depression experience episodic illness and feel well between acute and depressive episodes. This disorder is unpredictable, so the number and duration of the episodes, as well as the pattern of depression, are variable [1].

A major depressive disorder is characterized by recurrence, so the recovery term is used for patients who are no longer showing symptoms and restore their usual functions following the episode of the major depression [1]. Episodes of depression last for three to six months with treatment, and most patients recover within one year. Long-term
stable recovery is more likely among patients seen by general physicians in community settings compared to patients in hospital settings. A longer-term of two to six years, the proportion of people who recover is much less, dropping to approximately 60% at two years, 40% at four years, and 30% at six years, with comorbid anxiety having a key role in limiting recovery [1]. The risk of recurrence increases with every episode; almost 80% of patients experience a further episode in their lifetime, and the outcome becomes less favorable with older age of onset [1].

Almost one-third and one-half of lifetime cases experience recurrent episodes in a given year [38]. Up to 27% of depression patients don't recover and develop a chronic depressive illness, based on the setting within the patient was managed, and the characteristic of the patient [1]. In one study [39], it was found that of 79 patients in primary care diagnosed with major depression, 49% suffered from residual symptoms or recurrence, and 25% suffered persistent depression after 18 months. One study by Stegenga et al. [40] reported that the chronic course of depression was associated with a higher level of depression and somatic symptoms combined with greater mental dysfunction at baseline.

Adolescent and childhood major depression is an extended disorder, and it is associated with poor psychological outcomes. The duration of depressive episode in children ranges from eight to 13 months, with a rate of recovery of 90%, whereas relapse/recurrence rate is 30% to 70%, based on the study conducted in clinical or community samples, and the length of follow-up [41]. The duration of depressive episode in adolescents is less than that of children where it ranges from three to nine months, with a lower rate of recovery compared to children and it was estimated to be ranged from 50% to 90%, and a rate of relapse/recurrence of 20% to 54% based on the previous factors stated in children studies [41]. However, one study [42] reported that major depression was manifested similarly in adolescents and children, where both groups had similar depressive symptoms, the severity of episode index, rate of recurrence, and recovery. The factors associated with the worse longitudinal course were increased guilt, female gender, parental psychology, and prior episodes of depression [42].

**Conclusion:**
The prevalence of depression varies among different countries and communities; it varies even in the same counties with the variation of the population under the study. The prevalence of depression can be increased by unchangeable factors such as the female gender and older age and can be increased by the suffering of certain diseases such as diabetes. The prevalence of depression was also increased globally by the presence of COVID-19. The estimation of the exact prevalence of depression is hard as it varies based on different communities, the study design, population under study, and some environmental factors. The recurrence of depression is common; however, its recurrence can be reduced.

**Conflict of Interests:**

The authors declare that there is no conflict of interest regarding the publication of this article.

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