Adolescent Depression and Suicide Consequences: Risk Factors, Protective Mechanisms, and Intervention Strategies

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Abstract. As a disease, adolescent depression has negative consequences and is a major problem in public health. Adolescence is an urgent phase, an age when timely and evidence-based measures may change future courses of action. The underlying symptoms of depression may persist into adulthood and may take many forms, such as anxiety, suicidal outcome, mood disorders, poor health, poor performance in education, joblessness, and substance and drug abuse. The recent evidence of scholarly research is reviewed in this paper that demonstrate the major aspects of adolescent depression and attempt to commit suicide, and its effects on society, family, and individually on society and gender equality. Other theories of heterogeneity in depression outcomes also exist, and some of these were identified in this paper. The life course framework and the stress diathesis model, and the primary evidence-based interventions of aims, such as school mental health programs, student counselling and computer interventions, are also discussed. The article explores complex consequences of adolescent depression, mental illness, suicidality, and psychosocial functioning. It also examines the potential and constraints of prevention and treatment actions. The results suggest that coping with depression and suicidal symptoms should be addressed through early detection and prevention measures in adolescents.

1 Introduction

Adolescent depression is typically defined as the presence of persistent sadness, loss of interest, or irritability lasting at least two weeks, accompanied by cognitive, emotional, and somatic changes that impair daily functioning. The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), outlines criteria for major depressive disorder, which include changes in sleep, appetite, energy, concentration, and self-worth [1]. Although the diagnostic criteria for adolescents mirror those for adults, research highlights developmental differences in symptom presentation. For instance, irritability often replaces sadness as a core mood disturbance among younger populations, and somatic complaints are more commonly reported.

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Suicidal behavior in adolescents ranges from suicidal ideation to attempts and, in the most severe cases, completed suicide. Suicidality in this developmental period is strongly linked to psychiatric disorders, particularly depression and substance use, but it also reflects environmental stressors such as family conflict, bullying, and social isolation. Conceptually, scholars emphasize that adolescent suicidal behavior is not only a clinical outcome but also a developmental phenomenon influenced by cognitive immaturity, heightened emotional reactivity, and peer dynamics [2]. Importantly, adolescence itself is widely recognized as a sensitive period for mental health. This paper reviews and examines recent evidence and its relation to outcomes linked to suicidality and depressed adolescent states and analyzes intervention strategies that are capable of significantly modifying life-course paths in adolescents.

2 Depression and impacts

The presence of depressive illness in adolescents is a susceptibility factor of an array of adult-onset chronic medical conditions, including obesity, diabetes and cardiovascular disease. Research shows that exposure to stress may impact the "Hypothalamic-Pituitary-Adrenal (HPA)", leading to an increase in "cortisol", leading to depression [3]. Depression is also mediated in long-term physical illness via associated health behaviours such as unhealthy eating habits, inactivity, sleeping disorders and smoking. Identifying these biopsychosocial connections indicates a problem of the adolescent's prevalent mental health as a public health-related issue, especially since the physical and mental ailments can be prevented with earlier intervention.

Depression in adolescents is depicted as the initial stage of a recurrent mood disorder comprising episodes of depression in adolescents with potential negative outcomes of anxiety and depression disorders sustaining even in adulthood, along with its link to suicidal behaviours. Additionally, DSM descriptions of adolescent depression often represent the initial stage of a recurrent mood disorder encompassing longitudinal synthesis that point to depressive episodes occurring during adolescence as risk factors with potent consequences of depression and anxiety disorders in adulthood, and as adolescent events that positively relate to suicide or other serious depression or anxiety disorders in the future. Depression is also a cause of functional issues, and it impacts life-course. Even when individual-level socio-economic factors are controlled, depressive symptoms are perceived to be related to school context, ultimately resulting in limited educational progress in the future [4]. This proposes that depression is not simply associated with the challenge of education but also has an impact on life course educational paths. These studies highlight the sensitivity of adolescent stage as well as show the need for potential targets of interventions aimed at the prevention of inherent long-term impacts of suicide and depression.

2.1 Impact on education

One of the main areas that is affected by depression in adolescence is education. Feelings of less motivation, tiredness, and a lack of concentration impact performance in schools or college. Meta-analytic research shows that a high number of adolescents who exhibited signs of depression were not able to continue their educational aims [5]. It was found that adolescent depressive state is related to less success in education, including reduced post-secondary admission and degree completion. These same setbacks in education, in turn, result in the eventual socioeconomic losses (unstable work life, reduced lifetime income), accounting for an increasing cost of depression in adolescence to society.

Within the social context of the classroom, adolescents with depression are often unable to communicate, build good relations, and cooperate with educators and other students.

Further, many of these dynamics were further compounded and made visible through the start of the Covid-19 pandemic; remote schooling leading to an enhanced screen-time and lack of routine associated with an increase in depressive symptoms in a majority of young people [6]. Remote learning resulted in a widening gap between marginalized students and a rising lack of academic involvement, which has only worsened the symptoms of students who are experiencing depression due to the influx of stress.

Considering these facts of research, it is possible to observe that mental-health services should be combined with academic support, as school counselling in connection with academic training can bring a significant impact to recover both the academic performance and the health of adolescents.

2.2 Impact on social life

Depression in adolescence also involves the disruption of young people's psychological development in a period when the family unit is a central part. Lack of interest, irritability and withdrawal from social engagements indicate disengagement with peers in extracurricular activities. Studies have indicated that depressed teens have more severe levels of social isolation, peer rejection and then gradually loneliness [7]. With mutually strengthening cycles, these social distortions can make symptoms of depression much worse.

Notably, societal paths developed during the stage of adolescence are also linked with negative impacts on relations of adulthood, as teenagers with sustained signs of depression are facing large risks of poor relationship quality, instability in relations, unstable relations in adulthood, and a small circle of social networks. These social impacts on adolescent depression depict that both the world and individuals are redefining life-paths in line with adolescent depression.

2.3 Impact on behavior

Behavioral issues are another cause for concern. Depressed adolescents often show behaviors that put them at risk, such as unproductive sexual practices, delinquency, and use of substances. Such adolescents' behaviors mostly depict attempts to escape or cope with symptoms of depression. These behaviors are also sometimes the result of impulse control and lack of decision-making of the sufferer as a result of the depressive disorder.

Changes in behavior to relieve depressive distress incorporate an internalizing (self-harm, self-injury) to externalizing (unplanned sexual activities, drug use) activities. The most common form of self-injury is "Non-Suicidal Self-Injury (NSSI)", which is prominent in the adolescent population with "Major Depressive Disorder (MDD)" and is usually functioning as an ineffective emotion-regulation mechanism [8]. The risk factor of NSSI by itself can lead to subsequent suicide attempts. Therefore, interventions that are focused explicitly on depression tackling behavior and training skills of emotional management are relevant in this regard.

2.4 Suicidality: consequences, stigma, and prevalence

Depression rates are considered the main cause of suicidal behavior during adolescence. Suicide is one of the most common causes of death among youth around the world, and suicide attempts, and ideation of suicide have been found to be relatively prevalent among people who have depressive disorders in their teenage years. Adolescents who attempt suicide but do not die often suffer long-term physical injuries such as organ impairment, lack of motor function, trauma, or neurological damage [9]. These health injuries may lead to the introduction of lifelong disability as well as cause more psychological distress. Stigma further

exacerbates these issues, and adolescents who are worried about the social evils of being culturally detested and rejected are afraid to seek help in seeking mental health treatment. In research, it was found that young people are even less likely to reintegrate into their community, peer, and familial populations after the act of suicide. Some of the larger societal impacts of adolescent suicide encompass traumatic exposure, mental health stigma, destabilization of familial patterns of functioning, and self-cutting with resultant severe preventative health demands [10].

3 Frameworks of health development and model of stress-diathesis

Two theoretically complementary frameworks can be used to explain why some young people exposed to stress do not develop persistent suicidality and depression, and why some do. In the first framework of the “Stress-Diathesis” model, people differ in their "diathesis" or vulnerability, and this diathesis can be mental, genetic, or biological in nature. According to the stress-diathesis model of suicidal behavior, completed suicide depends on the interaction between a trait-like susceptibility and psychosocial stressors such as bullying, academic stress, or conflict of family [11]. For example, recent genetic research has revealed that genetic influences show a link between familial depression risk and increased stress exposure, putting adolescents at risk of chronic stress and depression; this exemplifies an interaction between an environmental stressor and inherited risk factor [12].

In the second framework of “Life-Course Health Development (LCHD)” perspective. The LCHD views health as a follow-up of developmental processes influenced by the aggregation, timing, and engagement of protective and risk factors in different domains [13]. The initial indicators of depression can disrupt key developmental transitions in youth (i.e., identity, well-paid jobs, and school leaving), which leads to the accrual of disadvantage on both biological and social platforms. The key themes covered under the category Life-Course Health Development are ensuring that the vulnerable sectors of the youth population are given the top priority, so that the steerage in the lives of the young people can be taken within their Life-Course framework in order to have a good future. These models indicate that there are several treatments and interventions that can help the complex predilection of the various individuals at risk and the environmental factors that are useful to the treatment that should be applied together so that the involvement of interventions makes a difference later in their lives.

4 Interventions of depression and suicide

The evidence-based strategies support the implementation of cross-cutting measures across various dimensions of life. Firstly, targeted intervention programmes can identify groups at risk, including antibullying initiatives, LGBTQ+ clubs and indicated delivery programmes that will differentiate for specific therapy for young people showing signs of depression. Secondly, psychotherapy for adolescents, such as Interpersonal Psychotherapy (IPT-A) and Cognitive Behavioral therapy (CBT), has moderate to high evidence for the treatment of depression and demonstrated slow to moderate effects of reducing depressive symptoms and improving their functioning in adolescents [14]. Evidence has shown that it is possible to ameliorate some depressive symptoms via school-based cognitive behavioral intervention programs, as well as models combining academic and counseling interventions, which can eventually lead to positive health-related outcomes in terms of performance and school attendance [15]. The successful implementation of these interventions requires sustainability, monitoring and training. Thirdly, supplementary interventions focused upon the family,

particularly with adolescent younger patients or where family conflict is a prominent theme, may be particularly important adjuncts. Fourthly, based on the level of culture, comorbidities (substance use, self-harm), and development, clinicians should modality of treatment. Fifthly, the medications (mainly SSRIs) for depression (antidepressants) are not considered to have overwhelming effectiveness. Therefore, a vigilant insight needs to be kept on it for controlling suicidal ideas. In recurrent and severe cases, a combination approach of psychotherapy treatment and medication is recommended. Sixth, the COVID-19 pandemic has created a heightened opportunity for psychological interventions that may be offered to depressed youth because of factors such as distraction and in communities where the resources are limited (i.e., virtual psychotherapies, mobile mental-health apps, online-based CBT systems). While online approaches are scalable, they bring with them equity issues, privacy concerns and high costs, as well as cultural inappropriateness, which need to be navigated. Lastly, structural interventions designed to train peers, parents and teachers to recognize warning signs for suicidal thoughts and depression may increase help-seeking and recognition of depression. Further, depression early identification can be improved via "primary care-based screening" and awareness campaigns in the community. A history of suicidal behavior is a concurrent risk factor for future suicidal behavior. Serious attempt patients must be cared for in a medical-emergency setting with both comprehensive psychopathological and therapeutic assessment, as well as comprehensive safety planning to reduce imminent danger. In the case of restoration of relations with mentally disturbed students after an attempt, community and school reintegration can help to reduce social stigma and minority discrimination. Furthermore, clinical trials to identify the DMHIs and best practices for delivery within a range of primary care settings are needed for adolescents. Hence, effective implementation and planning of depression and suicidal treatments require complete consideration of these complex interrelations and interactive dynamics between the outer and inner settings in the life of a depressed adolescent.

5 Discussion

The challenge of adolescent suicidality and depression is not merely considered to be a set of clinical issues in isolation, but conversely, these issues themselves have in-depth implications of social, physical, educational, and behavioural ramifications. In this paper, the discussed central risk factors of depression in adolescents can be mostly explained by the increased exposure to physical disease and substance abuse, the condition of general fear and depression, which could be extended to the post-adolescent age. It has been recognized that in adolescence, there is a chance to follow up on evidence-based interventions, particularly interventions within schools, as components of community interventions and primary care, which is able to change life in later adolescence and adulthood. Due to the complexity of this issue, multilateral intervention is required, which involves the inclusion of individual-level action as well as structural adjustment of policies connected to fair access and the removal of other obstacles in the system that lead to depression.

It is notable that the necessity to design the interventions implies a culturally and ethically appropriate process that should influence the population on a long-term basis. Preventive strategies such as selected programming for high-risk populations, indicated treatment of youth who have psychological chronic depression, and a universal way of inclusive mental health screening programs are among the options that can be taken into consideration. Digital technologies are not able to replace human counselling but may be employed in a form that does not make existing inequalities worse. Finally, an opportunity to prioritize policy and research agenda development on the best adolescent mental health investments is to consider the cost/benefit analysis of increased spending on adolescent mental health for future productivity or decreased health care costs and educational outcomes.

6 Conclusion

Adolescent suicidality and depression give rise to massive challenges. There continue to be many barriers for adolescents, such as structural inequities, inaccessible resources, and stigma, that make it difficult for depression treatment and early identification. Virtual and digital school approaches are promising for enabling access to education, but there is little to know if these approaches are feasible in the long term and if they will be adaptable across different cultures. Research is also needed to understand protective mechanisms that enable some adolescents to recover and thrive despite early experiences of depression. The findings presented in this review highlight the urgency of coordinated action. Parents, educators, health care professionals, and policymakers all play a role in shaping environments that can either reinforce vulnerability or promote resilience. By investing in preventive strategies, enhancing access to treatment, and addressing the social determinants of mental health, societies can reduce the far-reaching impact of adolescent depression and suicidality. Protecting adolescent well-being is not simply a matter of alleviating immediate suffering; it is an investment in healthier, more productive, and more resilient future generations.

References

1. Florida BH Center, DSM-5 Criteria: Major Depressive Disorder (2020). https://floridabhcenter.org/wp-content/uploads/2021/03/MDD_Adult-Guidelines-2019-2020.pdf
2. S.C. Chiang, W.C. Chen, L.T. Chou, The prospective association between emotional reactivity and adolescent suicidal ideation. Arch. Suicide Res. 28, **1035–1043** (2023). https://doi.org/10.1080/13811118.2023.2262536
3. A.G. Bertollo, M.Z. Capitanio, L.A. Schuh, N. Pradella, Z.M. Ignácio, Habits and vulnerability or resilience to stress – Impact on depressive disorders. Behav. Brain Res. **490**, 115630 (2025). https://doi.org/10.1016/j.bbr.2025.115630
4. E. Goodman, B. Huang, T.J. Wade, R.S. Kahn, A multilevel analysis of the relation of socioeconomic status to adolescent depressive symptoms: does school context matter? J. Pediatr. **143(4)**, 451–456 (2003). https://doi.org/10.1067/s0022-3476(03)00456-6
5. Z.M. Clayborne, M. Varin, I. Colman, Systematic review and meta-analysis: Adolescent depression and long-term psychosocial outcomes. J. Am. Acad. Child. Adolesc. Psychiatry, **58**, 72–79 (2019). https://doi.org/10.1016/j.jaac.2018.07.896
6. S. Wang, L. Chen, H. Ran, Y. Che, D. Fang, H. Sun, J. Peng, X. Liang, Y. Xiao, Depression and anxiety among children and adolescents pre and post COVID-19: A comparative meta-analysis. Front. Psychiatry **13**, 917552 (2022). https://doi.org/10.3389/fpsyt.2022.917552
7. O. Aronson, D. Bergh, Adolescents who feel depressed are rejected but do not withdraw: A longitudinal study of ethnically diverse friendship networks in England, Sweden, and Germany. SSM Popul. Health, **15**, 100889 (2021). https://doi.org/10.1016/j.ssmph.2021.100889
8. J.-T. Hu, Y. Cao, L.-L. Liu, D. Wang, P. Zhu, X. Du, F. Ji, R.-J. Peng, Q. Tian, F. Zhu, Adolescent non-suicidal self-injury: The moderating influence of social support utilization on depression. World J. Psychiatry, **15(6)**. (2025). https://doi.org/10.5498/wjp.v15.i6.106017
9. A. B. Hink, X. Killings, A. Bhatt, L. E. Ridings, A. L. Andrews, Adolescent suicide-Understanding unique risks and opportunities for trauma centers to recognize,

intervene, and prevent a leading cause of death. Curr. Trauma Rep., **8(2)**, 1–13. (2022). https://doi.org/10.1007/s40719-022-00223-7

10. A. Ahad, M. Gonzalez, P. Junquera, Understanding and addressing mental health stigma across cultures for improving psychiatric care: A narrative review. Cureus, **15(5)**. (2023). https://doi.org/10.7759/cureus.39549
11. P. Baharikhoob, N. J. Kolla, Microglial dysregulation and suicidality: A stress-diathesis perspective. Front. Psychiatry, **11**. (2020). https://doi.org/10.3389/fpsyt.2020.00781
12. C. Feurer, J. E. McGeary, L. A. Brick, V. S. Knopik, M. M. Carper, R. H. C. Palmer, B. E. Gibb, Associations between depression-relevant genetic risk and youth stress exposure: Evidence of gene–environment correlations. J. Psychopathol. Clin. Sci., **131(5)**. (2022). https://doi.org/10.1037/abn0000757
13. K. Larson, S. A. Russ, R. S. Kahn, G. Flores, E. Goodman, T. L. Cheng, N. Halfon, Health disparities: A life course health development perspective and future research directions. Handb. Life Course Health Dev., 499–520. (2017). https://doi.org/10.1007/978-3-319-47143-3_20
14. V. R. Weersing, P. Goger, K. T. G. Schwartz, S. A. Baca, F. Angulo, M. Kado-Walton, Evidence-base update of psychosocial and combination treatments for child and adolescent depression. J. Clin. Child Adolesc. Psychol., **54(1)**, 1–51. (2024). https://doi.org/10.1080/15374416.2024.2384022
15. J. M. Warren, T. N. Blount, G. Belle, Implementing Effective School-Based Mental Health Services: A Guide for School Counselors. Prof. Sch. Couns., **28(1)**. (2024). https://doi.org/10.1177/2156759x241283769