Depression in Children and Adolescents: A Review of Indian studies

Sandeep Grover, Venkatesh Raju V, Akhilesh Sharma, Ruchita Shah

ABSTRACT

Background: Depression is a common mental disorder seen across all age groups, including children and adolescents. Depression is often associated with significant disability in children and adolescents. Aim: This review aims to evaluate the Indian research on depression in children and adolescents. Results: Available data suggest that the point prevalence of depression/affective disorders ranges from 1.2% to 21% in the clinic-based studies; 3%–68% in school-based studies and 0.1%–6.94% in community studies. There has been only one incidence study from India which estimated the incidence to be 1.6%. With respect to the risk factors for depression, studies have reported various education-related difficulties, relationship issues with parents or at home, family-related issues, economic difficulties, and other factors. A limited number of studies have evaluated the symptom profile, and the commonly reported symptoms include depressed mood, diminished interest in play activities, concentration difficulties, behavior problems in the form of anger and aggression, pessimism, decreased appetite, decreased sleep, anhedonia, and somatic symptoms. None of the studies from India has evaluated the efficacy/effectiveness of various antidepressants in children and adolescents with depression. Conclusion: There is a wide variation in the point prevalence reported across different studies, which is mainly due to methodological differences across studies. Limited data are available with respect to symptom profile and factors associated with depression in children and adolescents.

Key words: Children and adolescents, depression, epidemiology, prevalence

Depression is a common illness worldwide, occurring in all age groups, including infants. According to the estimates of the World Health Organization, 322 million people, amounting to 4.4% of the world population, suffer from depression. Depression is one of the leading causes of disease burden worldwide and is ranked as the second leading cause of disability. It is also considered as a major contributor to the global burden of diseases. Over the years, it is recognized that the age of onset of depression is decreasing, and it is now increasingly being recognized...
in children and adolescents. Although a large amount of data are available for depression in children and adolescents from various parts of the world, there are limited data from India. This article attempts to collate the information regarding epidemiology, clinical features, risk factors/life events, symptom profile, and comorbid disorders seen in children and adolescents with depression in India. For this review, a thorough Internet search using search Engines of PubMed, Google Scholar, and Science Direct was carried out. The keywords, used in different permutations and combinations, included the following: depression, depress*, children, adolescents, adolescent*, treatment, treat*, antidepressants, antidepress*, intervention, management, India, symptoms, comorbidity, comorbid*, prevalence, and epidemiology.

We did not include studies which specifically evaluated depression in children and adolescents with specific physical illnesses. This review also does not cover data specific to mania or bipolar disorders in children and adolescents. Similarly, data pertaining to depression in children and adolescents published as case reports or case series were excluded.

Available data have been organized to understand the epidemiology, risk factors/life events associated with the development of depression, symptom profile, comorbidity, and intervention studies.

**EPIDEMIOLOGY OF DEPRESSION IN CHILDREN AND ADOLESCENTS**

Studies which have evaluated the point prevalence of depression among children and adolescents can be categorized as clinic-based, school-based, and community-based.

**Clinic-based studies**

Clinic-based studies have mostly followed retrospective design, in which data of children registered in various child guidance clinics or child and adolescent psychiatry services have been analyzed for evaluating the clinic prevalence of various psychiatric disorders. Some of these studies have given the clinic prevalence of depression, and others have given data for the point prevalence of affective disorders. The age group has varied in different studies, and the usual range has been 0–18 years. The sample size of these studies has varied from 100 to 6109, and most of these studies have relied on the International Classification of Diseases (ICD) system (9th or 10th revision) for making the diagnosis. The prevalence of depression/affective disorders in these studies has varied from 1.2% to 21% [Table 1]. One study from Chandigarh evaluated the data of all the children and adolescents visiting the clinic and looked at the time trends of clinic prevalence of depression/affective disorders. This study showed that during the decade of 1980–1989, the clinic prevalence of affective disorders was 2%, which increased to 6.6% during the decade of 1990–1999 and which further increased to 13.49% from 2000 to 2006. Although these clinic-based studies provide useful clinical data with respect to the prevalence of depression, they do not reflect the actual point prevalence of depression in the community-based population, as it is well-known that a significant proportion of patients with various psychiatric disorders do not seek consultation. Furthermore, most of these studies have come from large tertiary care hospitals.

**Table 1: Prevalence of depression in children and adolescent in clinic-based studies**

| Author          | Study design | Study site        | Sample size | Age range of participants in years | Sampling period | Instrument used                          | Point prevalence |
|-----------------|--------------|-------------------|-------------|-----------------------------------|-----------------|------------------------------------------|-----------------|
| Malhotra and Chakrabarti[9] | Retrospective | Chandigarh       | 386         | 0-13                              | 1984-1988       | No specific instrument used, ICD-9 diagnosis | 1.2%            |
| Chadda and Saurabh[7] | Retrospective | New Delhi   | 300         | 2-12                              | 1994-1996       | ICD-10                                  | 6%              |
| Malhotra et al.[3] | Retrospective | Chandigarh       | 6109        | 0-15                              | 1989-2005       | ICD-9/10                                | 4%              |
| Sagar et al.[9] | Retrospective | New Delhi   | 930         | <16                               | June 2008-May 2010 | No specific instrument used, semi-structured dataset, DSM-IV diagnosis | Mood disorder: 4.1%, Depression: 2.9%, Bipolar: 1.2% |
| Solanki and Rastogi[1] | Retrospective | Sagar/Indore, Madhya Pradesh | 175         | 0-16                              | Jan-Aug 2014    | ICD-10                                  | 4%              |
| Chakraborty and Bandyopadhyay[7] | Retrospective | Joka, West Bengal | 100        | 1-12                              | Not available   | DSM-5                                   | 4%              |
| Vivek and Nimmich[8] | Retrospective | Meenut       | 100         | 6-18                              | Jan 2016-2017   | ICD-10 and MINI-KID                      | 21%             |

ICD—International Classification of Diseases; DSM—Diagnostic and Statistical Manual of Mental Disorders; OPD—Outpatient Department

Indian Journal of Psychological Medicine | Volume 41 | Issue 3 | May-June 2019 | 217
located in the urban locality, whereas the majority of the Indian population reside in rural areas. Hence, though these studies provide useful information, they are not reflective of the trends in the larger community.

**School-based studies**

In the recent one decade or so, there has been a proliferation of school-based studies which evaluated the point prevalence of depression in school-going children and adolescents. These cross-sectional studies have mostly evaluated the participants by scales used to quantify depression, such as Beck Depression Inventory (BDI), Patient Health Questionnaire-9 (PHQ-9), Centre for Epidemiological Studies – Depression (CES-D), Depression Anxiety and Stress (DAS) scale, or self-designed questionnaires. The school-based studies have mostly come from urban areas, with occasional studies evaluating the students from rural schools, and one study evaluating students from tribal areas. However, very few studies either used two-stage sampling method, which involves the initial use of screening instrument, followed by evaluation of the patient on structured clinical interviews such as Mini-International Neuropsychiatric Interview for Children and Adolescents (MINI-KID), or Kiddie Schedule for Affective Disorders and Schizophrenia, or used semi-structured interview to evaluate the participants on Diagnostic and Statistical Manual of Mental Disorders (DSM)-IV or ICD-10 criteria [Table 2]. A few studies have directly evaluated the participants on structured clinical interviews such as MINI-KID. One of the studies also included school dropouts while evaluating the point prevalence of depression. Studies that were based on the use of screening instruments, such as rating scales, have usually reported a point prevalence rate of depression ranging from 3% to 68%, with a majority of the studies reporting the point prevalence of depression to be greater than 40%.[17-25,27,29,31,32,34,37] Studies that used structured instruments have reported relatively lower point prevalence rates, ranging from 2.33% to 25%.[26,28,30,31,35,36]

These findings clearly suggest that one-stage screening of participants using a rating scale usually overestimates the point prevalence of depression.[17-25,27,29,31,32,34,37] The study that compared urban, rural, and tribal school students showed that major depressive disorders were more prevalent in students from the urban locality (4.1%), whereas point prevalence was 3.5% in the rural high school students and it was lowest in the participants from tribal schools.[33] Another study which included school dropouts too reported significantly higher point prevalence rate for affective disorders among school dropout girls (59%), compared with school-going girls (20.3%) and boys (9.33%), irrespective of their school status.[34]

**Community-based studies**

There are many community-based studies that evaluated the point prevalence of depression or psychiatric disorders in different age groups.[38-56] However, there are a limited number of studies that specifically focused on children and adolescents.[38-43] Most studies focused on any age group and included children and adolescents too in the process and did not provide specific point prevalence data for depression in children and adolescents.[46-56] Nandi et al. provided data on point prevalence of psychiatric disorders in a rural population from West Bengal and reported lack of depression in children and adolescents.[38-40] In a study from Bengaluru, multiple instruments were used to screen for various psychiatric disorders; ICD-10 Diagnostic Criteria for Research were used to ascertain psychiatric morbidity, and two-stage screening was used. The study included 2064 children and adolescents, age 0–16 years. Psychiatric morbidity was reported to be 12.5%, with the point prevalence of depression being 0.1%, all of which was seen in children and adolescents from an urban locality.[42] The recently completed National Mental Health Survey (NMHS), which used two-stage screening, reported the point prevalence of mental morbidity to be 7% among adolescents age 13–17 years, with depressive disorders (first episode, recurrent depression) being the most common morbidity with a point prevalence rate of 2.6%.[57] Another community-based survey, which included youth age 15–24 years from Himachal Pradesh, reported the point prevalence of depression to be 6.94%. However, it is important to note that in this study, depression was ascertained using a few questions covering the following features: loss of appetite, sleep disturbance, feeling apathy, feeling worthless, and lack of interest in daily activities and work.[44] Another study which evaluated 257 children and adolescents age 5–14 years from slum population in Mumbai on DSM-IV criteria reported the point prevalence of major depression to be 0.4%.[53] [Table 3].

**INCIDENCE OF DEPRESSION**

In contrast to point prevalence studies, only one study from India has evaluated the incidence of childhood-onset psychiatric disorders among those age 4–11 years.[58] This study reported the incidence of depression to be 1.6%.[58]

**FACTORS RELATED TO DEPRESSION**

Compared to prevalence studies, few studies have evaluated the factors associated with the development of depression in children and adolescents. Most of the studies which have reported factors associated
Table 2: Point prevalence of depression in children and adolescent in school-based studies

| Author                        | Study design   | Study site          | Sample size | Age range of participant in years | Sampling technique                  | Instrument used                           | Point prevalence |
|-------------------------------|----------------|---------------------|-------------|-----------------------------------|--------------------------------------|-------------------------------------------|------------------|
| Mishra and Sharma[17]        | Cross-sectional | Delhi              | 1097 girls  | 12-18                             | School random selected                | Youth self-report                          | Anxious/depressed: 10.3% |
|                               |                |                     |             |                                   |                                       | Self-designed questionnaire              | School dropout: 31% |
| Nair et al.[18]              | Cross-sectional | Thiruvananthapuram  | 1014        | 13-19                             | School-going and school dropouts      | BDI (cut-off ≥17)                         | 60.8%            |
| Bansal et al.[19]            | Cross-sectional | Pune                | 125         | 9th std                           |                                       | GHQ12, BDI (cut-off ≥12)                  | 18.4%            |
| Mohanraj and Subbaiah[20]    | Cross-sectional | Chennai             | 964         | 10th, 11th, 12th classes          | Two-stage random                      | BDI (cut-off) ≥10                         | 59.9%            |
| Verma et al.[21]             | Cross-sectional | Raipur              | 321         | 12th                              | Students from five schools were included. Two of the schools were affiliated to CBSE, two others to the Chhattisgarh board, and one school to the ICSE. It was used as a proxy of SES | CES-D (cut-off: ≥15) | 68% |
| Chauhan et al.[22]           | Cross-sectional | Noida               | 800         | 16-18                             | Systematic random sampling            | PHQ-9 (cut-off: ≥5)                       | 38%              |
| Kaur et al.[23]              | Cross-sectional | Amritsar            | 200         | 18-24                             | Random                                | PHQ-9 (cut-off not mentioned)             | 16.5%            |
| Sharma[24]                   | Cross-sectional | Chandigarh          | 300         | 11th standard                     | Stratified random                     | BDI-II (cut-off not mentioned)            | 55%              |
| Patil[25]                     | Cross-sectional | Mangalore           | 500         | Adolescent students, 1st and 2nd-year polytechnic college student | Systematic random sampling            | BDI-I (cut-off not mentioned)             | 68%              |
| Jayanthi and Thiruvanukarasu[26] | Cross-sectional | Thiruvallur         | 2432        | 9th-12th grade (14-17)            | Multistage                            | Screened using MINI-KID depression module followed by assessment by a psychiatrist then, BDI applied to grade the severity (cut-off not mentioned) | 25%              |
| Malik et al.[27]             | cross-sectional | Urban Rohtak        | 374         | 13-17                             | All the students of class 9th and 10th who were present on the day of the visit included | BDI (cut-off ≥21)                         | 52.9%            |
| Beniwal et al.[28]           | Cross-sectional | Bikaner             | 1200        | 6-12                              | Multistage                            | CES-DS (cut-off ≥15)                      | Screen positive: 121 (10.08%)  Confirmed: 28 (2.33%) 71.3% |
| Rana et al.[29]              | Cross-sectional | Urban Bhopal        | 136         | 9th and 10th                      | Random                                | BDI (cut-off ≥11) and some self-generated questionnaire | 71.3%            |
| Balgit et al.[30]            | Cross-sectional | Patiala             | 912         | 11-16                             | Stratified cluster sampling           | SDQ followed by ICD-10 for those with SDQ+ | SDQ: 40.2% Urban: 4.5% Rural: 3.8% |
| Jha et al.[31]               | Cross-sectional | Urban Bihar         | 1485        | 14-18                             |                                       | BDI-II (cut-off ≥14)                      | 49.2%            |

Contd...
with depression have been clinic-based\(^{[10,59,60]}\) or school-based\(^{[19,21,22,28,29,31,34,61]}\) and have evaluated life events, demographic factors, or clinical factors associated with the development of depression. These factors can be categorized as those related to studies or education, relationship issues in the familial context, familial issues, economic difficulties, and other factors [Table 4]. A study which evaluated the factors associated with the development of depression in the descriptive analysis and then confirmed the same using binary logistic regression analysis identified being in class tenth and lack of self-satisfaction with academics as the most important predictors of depression in children and adolescents.\(^{[34]}\)

### Symptom profile of depression

Only a handful of studies have reported the symptom profile of depression in children and adolescents.\(^{[10,20,31,39,60]}\) Most of the data are from retrospective, clinic-based studies\(^{[10,39,60]}\) [Table 5]. As is evident from Table 5, it is difficult to compare the symptom profile, as the profile reported in the literature is not specific to any particular scale. The commonly reported symptoms have varied from study to study. Only one study had reported the symptom profile of depression in children and adolescents using the BDI.\(^{[20]}\) As is evident from Table 3, the commonly reported symptoms include depressed mood, diminished interest in play activities, concentration difficulties, behavior problems in the form of anger and aggression, pessimism, decreased appetite, decreased sleep, anhedonia, and somatic symptoms. Only one study, from Rohtak, compared the symptom profile of depression in childhood and adulthood. This study included 32 children and 20 adults diagnosed with major depressive disorder as per DSM-IV criteria.\(^{[62]}\) Compared with the adults, more children presented with the somatic symptoms, and the predominant mood symptom in the children was irritability, in contrast to sadness in the adults. In children, dysfunction was noted exclusively in the form of poor scholastic performance and reduced play activity; whereas among the adults, dysfunction manifested in the form of poor work performance. The groups did not differ in terms of family history of affective disorders, type of onset, or presence of precipitating factors.\(^{[62]}\) A study from National Institute of Mental Health and Neurosciences, Bengaluru, reported that children and adolescents with BPAD-II are often diagnosed...
and categorized as major depression as a past history of hypomania is missed. In this study of 61 subjects diagnosed as having major depression, 20% of subjects had a diagnosis of hypomania in the past.\[63\]

Although community-based studies have not reported symptom profile, many of these studies have reported the severity of depression based on the various cut-offs given for a particular scale [Table 6]. In general, most of these studies suggest that depression in children and adolescents is of mild severity, and only a small proportion of them have severe depression. In clinic-based studies, as is understandable, the depression seen is more severe, where moderate depression was reported in more than half (56%) of the participants and severe depression in one-fourth (26%).\[59\]

**COMORBIDITY IN CHILDREN AND ADOLESCENTS WITH DEPRESSION**

Few clinic-based studies have reported on comorbid psychiatric disorders in children and adolescents presenting with depression.\[10,59,62\] Among the various psychiatric disorders, the commonly reported comorbidities include anxiety/anxiety disorders (10.36%–57.65%),\[10,32,59,62\] dysthymia (20%)\[59\] attention deficit hyperactivity disorder (7.77%–20),\[10,62\] conduct disorder (5.18%–9%),\[10,59\] dissociative disorder/conversion disorder (5.18%–9%),\[10,59,62\] and obsessive compulsive disorder (7%).\[59\]

**INTERVENTION STUDIES**

Although antidepressants are used in the management of depression in children and adolescents, no studies from India have evaluated the efficacy/effectiveness of antidepressants in children and adolescents with depression. However, a few studies have reported the use of electroconvulsive therapy (ECT) for depression in children and adolescents.\[64,65\] These studies suggest that 12%–13% of children and adolescents receiving ECT are diagnosed with depressive disorders and that ECT is effective in most of these patients.\[64,65\]
When the findings about the school-going adolescents are considered, the data from India are compared with the findings of the community-based studies, especially in the Indian context. When the study sample was screened using CED-D, the point prevalence of depression was found to be 10.08%, which reduced to 2.33% when evaluated on clinic-based samples, community samples, and school-based participants, these studies have a lot of limitations. Most of the school-based studies have evaluated the prevalence of depression in children and adolescents. However, it is important to note that although many studies have evaluated the prevalence of depression in clinic-based samples, community samples, and school-based participants, these studies have a lot of limitations. The point prevalence range in studies from India is wider and more heterogeneous. Taken together, these findings suggest that there is a need to focus on depression in children and adolescents.

However, it is important to note that although many studies have evaluated the prevalence of depression in clinic-based samples, community samples, and school-based participants, these studies have a lot of limitations. Most of the school-based studies relied on a screening questionnaire to quantify depression. It is well-known that screening instruments often lead to overestimation of the point prevalence of a disorder when the same is compared with an evaluation using a structured diagnostic interview.

### Table 4: Factors associated with depression in children and adolescents

| Education related          | Others                                                                 |
|---------------------------|-------------------------------------------------------------------------|
| Academic satisfaction of parent[69] | - Birth of a sibling[188] |
| Not performing well[69]    | - Family history of psychiatric illness[103] |
| Physical punishment at school[69] | - Change of residence[103] |
| Self or parental dissatisfaction with academic achievement[211] | - Rejection[69] |
| Students staying away from home[211] | - Punishment[69] |
| Teasing at school[191]     | - Deprivation of privileges[239] |
| Academic stressors[191]    | - Working mothers[219] |
| Change of schooling[239]   | - Death of a family member[219] |
| Inability to cope with academics[211] | - Alcohol use and smoking by father[69] |
| Government school[191]     | - Prolonged absence or death of a parent[69] |
| Studying in class A and X[149] | - Economic difficulties[19,131] |
| Spending less time in studies[149] | - Extracurricular activities and type of activities[172] |
| Lack of supportive environment in school[149] | - Extracurricular activity[172] |
| Lower level of participation in cultural activities[129] | - Going out for outing[172] |
| Lower academic performance[129] | - Not having a hobby[172] |
| Failure in examination[210] | - Peer pressure[219] |
| Relationship issues with parents or at home | - Social isolation[239] |
| Argument with our parents[239] | - Illness, injury/death[180] |
| Familial discord[239]      | - Serious illness[180] |
| Poor relationship with family[211] | - Rural locality[239] |
| Relationship difficulties[211] | - Having a boy/girlfriend[49] |
| Parental fights[191]       | - End of a relationship[191] |

### Table 5: Symptom profile of depression in children and adolescents

| Symptom                                      | Percentages          |
|----------------------------------------------|----------------------|
| Depressed/low mood/sadness[18,23,31,40]     | (51.9%-86%)          |
| Crying spells[20]                            | (36%-54%)            |
| Diminished interest in play and activities[11,50] | (46.3%-87%)         |
| Problems with concentration[13,31,35]        | (40.7%-82%)          |
| Excessive tiredness/fatigue/weakness[13,41,30] | (32%-67%)            |
| Behavior symptoms such as anger and aggression/agitation[15,25] | (47%-64%)         |
| Self-accusation/self-criticism[16,26,35]    | (7.4%-62%)           |
| Work difficulty[26]                          | (59%)                |
| Expectation of punishment[20,10]             | (43%-58%)            |
| Pessimism[20,10]                             | (37%-58.14%)         |
| Decreased appetite[16,21,10]                 | (48.1%-56%)          |
| Anorexia[20]                                 | (37%)                |
| Decreased sleep/change in sleeping pattern[18,23,35] | (37%-48.1%)         |
| Increased appetite, weight gain, and excessive sleep[20] | (2.23%)          |
| Past failure/sense of failure[20,10]         | (47%-55.81%)         |
| Anhedonia[20]                                | (51.9%)              |
| Anxiety symptoms[10]                        | (37%)                |
| Irritability[18,23,35]                       | (14%-66%)            |
| Hopelessness[10]                             | (18.5%)              |
| Somatic symptoms/multiple somatic complaints such as head ache, abdominal pain, and chest pain[16,33,10,13,41] | (18.5%-53%)         |
| Suicidal ideations/thoughts[18,23,35,11]     | (11.1%-27%)          |
| Psychotic features[30,31]                    | (7%-11%)             |
| in the form of persecutory delusions[20]      |                       |
| Catatonia[30]                                | (3.7%)               |
| Depressionalization[30]                      | (3.7%)               |
| Obsessive compulsive symptoms[10]            | (3.7%)               |
| Guilt[20,31,35]                               | (7.4%-69.48%)        |
| Attempted suicide[41]                        | (4%-16%)             |
| Recent deterioration in school performance[10] | (36%)               |
| Dissatisfaction[99]                          | (49%)                |
| Self-dislike[23,31]                          | (42%-47%)            |
| Indecisiveness[20,31]                        | (49%)                |
| Social withdrawal[20,31]                      | (48%)                |
| Loss of libido[20,31]                         | (14%-32%)            |
| Body image change[20]                        | (29%)                |
| Poor interaction[10]                         | (33.3%)              |
| Decreased interest in school[90]             | (32.3%)              |
| Low self-esteem[90]                          | (27%)                |
| Death wishes[90]                             | (17.6%)              |
| Worthlessness[90]                            | (29%)                |
| Loss of energy[90]                           | (39%)                |

# DISCUSSION

This review of the literature on depression in children and adolescents suggests that depression does occur in children and adolescents in the Indian context. When the findings of the community-based studies, especially the NMHS, are considered, the data from India are comparable to the data from other parts of the world. When the findings about the school-going adolescents are compared with the data from other countries, the point prevalence range in studies from India is wider and more heterogeneous.
Table 6: Severity grades for depression in children and adolescents

| Study                | Point prevalence | Severity grade                  |
|----------------------|------------------|----------------------------------|
| Patil et al. [25]    | 68% (BDI cut-off not mentioned) | Mild: mood disturbance: 30%  
Borderline clinical depression: 12%  
Moderate: 18%  
Severe: 6%  
Extreme: 2% |
| Sharma [26]          | 55% (BDI-II cut-off not mentioned) | Mild: 19.3%  
Moderate: 21%  
Severe: 14.7% |
| Sandal et al. [27]   | 65.53% (DAS cut-off not mentioned) | 9th std: mild: 15.56%, moderate: 29.63%, severe: 10.37%, extreme: 3.7%  
10th std: mild: 25.47%, moderate: 30.19%, severe: 13.21%, extreme: 4.72%  
11th std: mild: 16.39%, moderate: 27.87%, severe: 9.84%, extreme: 0.82%  
12th std: mild: 21.36%, moderate: 40.78%, severe: 11.65%, extreme: 2.91% |
| Iha et al. [28]      | 49.2% (BDI-II) | Mild: 23.4% (14-19)  
Moderate: 18.1% (20-28)  
Severe: 7.7% (29-63) |
| Krishnakumar and Geeta [29] | Clinic-based retrospective data | Mild: 18%  
Moderate: 56%  
Severe: 26% |
| Rama et al. [30]     | 71.3 (BDI) | Mild: 44.1% (11-20)  
Moderate: 24.3% (21-30)  
Severe: 3% (230) |
| Malik et al. [31]    | 52.9% (BDI) | Mild: 39.8% (11-20)  
Moderate: 11.3% (21-30)  
Severe: 1.8% (≥30) |
| Nair et al. [32]     | School dropout: 31%  
School-going: 16.1%  
College-going: 10% (BDI) | Severe: 31-40 and extreme (≥41)  
School dropout girls: 9.5% and 1.7%  
School-going girls: 2.6% and 0.2%  
School-going boys: 1.4% and 0.2% |
| Mohanraj and Subbaiah [33] | 60.8% (BDI) | Mild: 37.1% (10-19)  
Moderate: 19.4% (20-29)  
Severe: 4.3% (≥30) |
| Chauhan et al. [34]  | 38% (PHQ-9) | Mild: 75.73 (5-9)  
Moderate: 23.52 (10-14)  
Moderately severe: 0.01 (15-19) |
| Verma et al. [35]    | 59.9% (CES-D) | Mild: 40.49% (15-21)  
Major: 19% (≥21) |
| Jayanthi and Thirunavukara [36] | 25% (BDI cut-off not mentioned) | Minimal: 9.3%  
Mild: 25.4%  
Moderate: 45.7%  
Severe: 19.6% |
| Singh et al. [37]    | 40% (PHQ) | Mild: 29.7% (PHQ 5-9)  
Moderate: 15.5% (PHQ 10-14)  
Moderately severe: 3.7% (PHQ 15-19)  
Severe: 1.1% (PHQ 20-27) |

BDI—Beck Depression Inventory; DAS—Depression Anxiety and Stress; PHQ-9—Patient Health Questionnaire-9; CES-D—Centre for Epidemiological Studies - Depression

DSM-IV TR criteria, suggesting that two-stage methods can actually lead to a reduction in point prevalence rate by about 80%. One school-based study evaluated depression using MINI-KID depression screening module and claimed that participants found to have depression were further evaluated by the psychiatrist to confirm the diagnosis of depression. However, this study failed to give separate point prevalence rates of depression for both the evaluations. Hence, it is not clear from the article whether the 25% point prevalence is for the first phase of evaluation or the second stage.

A good aspect of most of these studies is that these have used BDI to screen depression. A study from Vellore compared BDI and Children’s Depression Rating Scale-Revised (CDRS-R) against the diagnosis made by the psychiatrist using ICD-10 criteria. This study showed that compared with CDRS-R, BDI was a better screening instrument for depression in children and adolescents. In another study, the same group of authors evaluated the diagnostic accuracy of use of BDI and CDRS-R by one pediatrician against the diagnosis by psychiatrist in a primary care setting. The authors reported that a score of ≥22 for BDI and ≥30 on CDRS-R has diagnostic utility. If one looks at the cut-offs used in the various studies which used BDI, it is apparent that most of these studies adopted a cut-off of 14–15, which possibly can explain...
the high point prevalence of depression reported in school-based studies.

Another limitation of school-based studies in the Indian context includes lack of representativeness of the study sample, considering that a significant proportion of children and adolescent dropout of the school by the middle or high school.

The community-based studies which have used two-stage method to evaluate depression, that is, initial screening followed by confirmation by use of diagnostic interviews, have reported much lower rates of depression. However, a limitation of these studies is that these did not include any screen-negative population in the second-stage evaluation, and this could have led to the reporting of a lower point prevalence of depression.

Ideally, community- and school-based studies should preferably evaluate all the eligible children and adolescents on a structured diagnostic interview which is administered by a mental health professional or trained personnel to quantify the point prevalence of depression; however, this is often not feasible. To overcome this, it is suggested that initially the participants should be screened using a standard questionnaire, which can be administered by a minimally trained person or a layperson, and those found to have depression should be evaluated on a structured interview. However, it is important to remember that to get an appropriate estimation of the point prevalence of depression, a small proportion of the screen-negative participants too should receive an evaluation on the structured interview schedule point prevalence. Accordingly, it is suggested that future studies must follow this methodology to estimate the point prevalence of depression in children and adolescents. Also, there is a need to develop standardized universal screening and structured assessment methods for various levels of epidemiological investigations, and there is a need to use these uniformly for better comparison and information. It is reflected in results of NMHS, which yields rates of depression in adolescents comparable to global trends.

When one attempts to look at the available point prevalence data, the important fact which emerges is that except for clinic-based studies, most of the school- and community-based studies have mainly focused on adolescents rather than children (i.e., those age < 12 years).

Data on factors related to depression are limited to a handful of studies and are not sufficient for generalizations. Most of the data are from clinic-based retrospective studies and these have reported certain life events to be associated with the development of depression. However, it is important to remember that the studies did not use a structured instrument to assess the life events associated with the development of depression. Retrospective studies are often limited to the documented information, and the quality of information is often guided by the motivation of the persons maintaining the records. Furthermore, regarding case-notes-based retrospective studies, the information may not have been recorded in the case notes in systematic ways. Hence, there is a need to carry out future research in this area using standardized instruments. The association of the stability of the presence of the causal factor with continuity of depression at an individual level should be studied as the children and adolescents age. Similarly, the stability of effects of a causal factor with continuity of the form of depression at an individual level too should be studied as the children and adolescents age. All this will require a prospective design to yield a better understanding of the relationship with risk factors. A high-risk population of siblings/offspring of persons with depression or other major mental disorders too can be studied for this purpose.

It is often argued that the symptom profile of depression in children and adolescents differs from that of adults, and it is not proper to use the same diagnostic criteria for children and adolescents, as used for adults. It is surprising that only a handful of studies have evaluated the symptom profile of depression in children and adolescents. The symptom profile reported in most of these studies is again based on case notes, except for one study which reported symptoms as per the BDI. These studies have come up with varying point prevalence of different symptoms of depression, and accordingly, it is difficult to comment on the common symptoms of depression seen in children and adolescents in the Indian context.

Similarly, data are also limited with respect to comorbidity. Although, in recent times, there have been multicentric studies from India which evaluated the symptom profile of depression in adults and elderly patients, no multicentric study from India has evaluated the symptom profile of depression in children and adolescents in the Indian context. Accordingly, there is an urgent need to carry out a multicentric study to evaluate various aspects of depression in children and adolescents.

Studies from the developed countries suggest that there is a developmental perspective to the symptom profile of depression in children and adolescents. Children and adolescent group, as such, is not a homogeneous group. However, none of the studies from India has looked into this aspect. Understanding this can actually help in recognizing the age-appropriate symptoms of
depression. Only one small size, clinic-based study had compared the symptom profile of depression in children and adolescents with that of adults. This issue is of much importance, as in a country like India most of the psychiatrists are mainly trained in adult psychiatry and hence may not be able to pick up age-appropriate symptoms of depression. Studying these similarities and differences can provide valuable knowledge which can be useful in detecting depression in day-to-day clinical practice.

Along with cross-sectional studies, longitudinal designs are also needed to understand the continuity of symptoms. These should be seen at symptom level, to differentiate them from normal development (with the inclusion of normal and/or at risk population); syndrome level, to differentiate the total picture across the developmental level; and disorder level, to see the characteristic dysfunction and pattern of evolution.

Surprisingly, there is a lack of research in the area of biological and psychological correlates of depression in children and adolescents in India. Also, there are no data on the course and outcome of depression in children and adolescents in India.

To conclude, this review suggests that there is a wide variation in the point prevalence of depression reported in studies from India. There is a wide gap in understanding the risk factors and symptom profile of depression in children and adolescents. There is a lack of studies which evaluated the efficacy/effectiveness of depression in children and adolescents. Similarly, little is known about various correlates of depression. Accordingly, it can be said that the research on depression in children and adolescents in the Indian context lags behind that being done on adults.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

REFERENCES
1. Keren M, Tyano S. Depression in infancy. Child Adolesc Psychiatr Clin N Am 2006;15:883-97.
2. Depression and Other Common Mental Disorders: Global Health Estimates. Geneva: World Health Organization; 2017. Licence: CC BY-NC-SA 3.0 IGO.
3. Ferrari AJ, Charlson FJ, Norman RE, Patten SB, Freedman G, Murray CJ, et al. Burden of depressive disorders by country, sex, age, and year: Findings from the global burden of disease study 2010. PLoS Med 2013;10:e1001547.
4. Kessler RC, Bromet EJ. The epidemiology of depression across cultures. Annu Rev Public Health 2013;34:119-38.
5. Son SE, Kirchner JT. Depression in children and adolescents. Am Fam Physician 2000;62:2297-308.
6. Malhotra S, Chakrabarti S. A clinical profile of depression in children. Indian J Social Psychiatry 1992;8:54-8.
7. Chadda RK, Saurabh. Pattern of psychiatric morbidity in children attending a general psychiatric unit. Indian J Pediatr 1994;61:281-6.
8. Sidana A, Bhatia MS, Choudhary S. Prevalence and pattern of psychiatric morbidity in children. Indian J Med Sci 1998;52:556-8.
9. Malhotra S, Biswas P, Sharan P, Grover S. Characteristics of patients visiting the child & adolescent psychiatric clinic: A 26-year study from North India. J Indian Assoc Child Adolesc Ment Health 2007;3:53-60.
10. Sagar R, Pattanayak RD, Mehta M. Clinical profile of mood disorders in children. Indian Pediatr 2012;49:21-3.
11. Solanki N, Rastogi P. Clinical profile of child and adolescent patients attending a mental hospital OPD. Int J Res Med Sci 2017;5:4021-4.
12. Chakraborty A, Bandypadhyay U. A clinic based descriptive study of childhood mental disorders according to DSM-5. Int J Sci Res 2018;7:44-5.
13. Vivek K, Nimish G. Pattern of psychiatric disorders in child and adolescents attending psychiatry OPD in a tertiary care hospital in Western Uttar Pradesh. IOSR-JDMS 2018;17:47-50.
14. Malhotra S, Das PP. Understanding childhood depression. Indian J Med Res 2007;125:115-28.
15. Malhotra S, Patra BN. Prevalence of child and adolescent psychiatric disorders in India: A systematic review and meta-analysis. Child Adolesc Psychiatry Ment Health 2014;8:22-31.
16. Salodia UP, Roy N, Kumari S, Kishor J. Prevalence and factors associated with depression in school-going adolescents of India. Indian J Youth Adol Health 2016;3:48-52.
17. Mishra A, Sharma AK. A clinico-social study of psychiatric morbidity in 12 to 18 years school going girls in urban Delhi. Indian J Community Med 2001;26:71-5.
18. Nair MK, Paul MK, John R. Prevalence of depression among adolescents. Indian J Pediatr 2004;71:523-4.
19. Bansal V, Goyal S, Srivastava K. Study of prevalence of depression in adolescent students of a public school. Ind Psychiatry J 2009;18:43-6.
20. Mohanraj R, Subhaaiah K. Prevalence of depressive symptoms among urban adolescents of South India. J Indian Assoc Child Adolesc Mental Health 2010;6:33-43.
21. Verma N, Jain M, Roy P. Assessment of magnitude and grades of depression among adolescents in Raipur City, India. Int Res J Med Sci 2014;2:10-3.
22. Chauhan S, Lal P, Nayak H. Prevalence of depression among school children aged 15 years and above in a public school in Noida, Uttar Pradesh. J Acad Ind Res 2014;3:269-73.
23. Kaur S, Deepi SS, Lal M. Prevalence and correlates of depression among college going students of district Amritsar, India. Int Res J Med Sci 2014;2:5-9.
24. Sharma V. Prevalence of depression among adolescents: A comparative analysis. Education 2014;3:53-5.
25. Patil AS. Depression among adolescents: A cross sectional study. Int J Curr Res Acad Rev 2015;3:183-6.
26. Jayanthi P, Thirunavukaraasu M. Prevalence of depression among school going adolescents in South India. Int J Pharm Clin Res 2015;7:61-3.
27. Malik M, Khanna P, Rohilla R, Mehta B, Goyal A. Prevalence of depression among school going adolescents in an urban
area of Haryana, India. Int J Community Med Public Health 2017;2:624-6.

28. Beniwal N, Verma GK, Chatar RK, Verma KK. To study the prevalence of depression and effect of home environment on depression among school going children. Int J Contemp Pediatr 2016;3:989-92.

29. Rama LS, Patel S, Maata S, Negi S, Sahu N, Pal DK, Murari LK. Prevalence of depression amongst higher secondary school adolescents in Bhopal Madhya Pradesh. Natl J Community Med 2016;7:856-8.

30. Balgir RS, Sidhu BS, Garg M, Wate A, Sohal D. Distribution of psychiatric morbidity among school going adolescents in a district of North India. Int J Med Res Health Sci 2016;5:1-9.

31. Jha KK, Singh SK, Niral SK, Kumar C, Kumar P. Aggrawal N. Prevalence of depression among school-going adolescents in an urban area of Bihar, India. Indian J Psychol Med 2017;39:287-92.

32. Sandal RK, Goel NK, Sharma MK, Bakshi RK, Singh N, Kumar D. Prevalence of depression, anxiety and stress among school going adolescent in Chandigarh. J Family Med Prim Care 2017;6:405-10.

33. Satyanarayana PT, Prakash B, Kulkarni P, Kishor M, Remuka M. A comparative study of prevalence of mental abnormalities among high school children in tribal, rural and urban Mysuru district, Karnataka, India. Int J Community Med Public Health 2017;4:809-13.

34. Singh MM, Gupta M, Grover S. Prevalence & factors associated with depression among school going adolescents in Chandigarh, north India. Indian J Med Res 2017;146:205-15.

35. Basker M, Moses PD, Russell S, Russell FS. The psychometric properties of Beck Depression Inventory for adolescent depression in a primary-care paediatric setting in India. Child Adolesc Psychiatr Ment Health 2007;1:8-15.

36. Russell PS, Basker M, Russell S, Moses PD, Nair MK, Minju KA. Comparison of a self-rated and a clinician-rated measure for identifying depression among adolescents in a primary-care setting. Indian J Pediatr 2012;79:45-61.

37. Shukla NK, Shukla M, Ahmad S, Shukla R, Khan Z. A cross-sectional study on depression among school going adolescent girls in Barabanki district, Uttar Pradesh, India. Int J Contemp Pediatr 2016;4:178-81.

38. Nandi DN, Aminay S, Ganguly H, Banerjee G, Boral GC, Ghosh A, et al. Psychiatric disorder in a rural community in West Bengal: An epidemiological study. Indian J Psychiatry 1975;17:87-9.

39. Nandi DN, Banerjee G, Mukherjee SP, Sarkar S, Boral GC, Mukherjee A, et al. A study of psychiatric morbidity of a rural community at an interval of ten years. Indian J Psychiatry 1986;28:179-94.

40. Nandi DN, Banerjee G, Mukherjee SP, Nandi PS, Nandi S. Psychiatric morbidity of a rural Indian community: Changes over a 20-year interval. Br J Psychiatry 2000 176:351-6.

41. Anita, Gaur DR, Vohra AK, Subash S, Khurana H. Prevalence of psychiatric morbidity among 6 to 14 year old children. Indian J Community Med 2007;22:7-9.

42. Srinath S, Girimaji SC, Gurusaid G, Shehadri S, Subbakrishna DK, Bhola R, et al. Epidemiological study of child and adolescent psychiatric disorders in urban and rural areas of Bangalore, India. Indian J Med Res 2005;122:67-79.

43. Patil RN, Nagaconkar SN, Shah NB, Bhat TS. A cross-sectional study of common psychiatric morbidity in children aged 5 to 14 years in an urban shum. J Family Med Prim Care 2013;2:164.

44. Gururaj G, Pradeep BS, Beri G, Chauhan A, Rizvi Z and NMHS collaborators. Adolescent and Youth Health Survey – Himachal Pradesh 2014-15. Centre for Public Health, National Institute of Mental Health and Neurosciences, Bangalore; 2014.

45. Misra SK, Srivastava M, Tiwary NK, Kumar A. Prevalence of depression and anxiety among children in rural and suburban areas of Eastern Uttar Pradesh: A cross-sectional study. J Family Med Prim Care 2018;7:21-6.

46. Sethi BB, Gupta SC, Kumar R. 300 urban families (A psychiatric survey). Indian J Psychiatry 1967;9:280-302.

47. Sethi BB, Gupta SC, Kumar R, Kumar P. A psychiatric survey of 500 rural families. Indian J Psychiatry 1972;14:183-96.

48. Elanagar MN, Maitra P, Rao NN. Mental health in an Indian rural community. Br J Psychiatry 1971;118:499-503.

49. Shah AV, Goswami UA, Manar RC, Hajariwala DC, Sinha BK. Prevalence of psychiatric disorders in Ahmedabad (an epidemiological study), Indian J Psychiatry 1980;22:384-9.

50. Mehta P, Joseph A, Verghese A. An epidemiological study of psychiatric disorder in a rural area in Tamil Nadu. Indian J Psychiatry 1985;27:153.

51. Sachdeva JS, Singh S, Sidhu BS, Goyal RK, Singh J. An epidemiological study of psychiatric disorders in rural Faridkot (Punjab). Indian J Psychiatry 1986;28:317-23.

52. Singh H, Sharma CK, Mathur HC, Gupta LN, Shatri PC. Prevalence and pattern of mental health problems. Indian Pediatr 1989;26:36-40.

53. Varghese A, Beig A. Psychiatric disturbances in children: An epidemiological study. Indian J Med Res 1974;62:1538-42.

54. Premarajan KC, Danabalan M, Chandrashekar R, Srinivasa OK. Prevalence of psychiatry morbidity in an urban community of Pondicherry. Indian J Psychiatry 1993;35:99-102.

55. Banerjee T, Mukherjee SP, Nandi DN, Banerjee G, Mukherjee A, Sen B, et al. Psychiatric morbidity in an urbanized tribal (santhal) community: A field survey. Indian J Psychiatry 1986;28:243-8.

56. Banerjee T. Psychiatric morbidity among rural primary school children in West Bengal. Indian J Psychiatry 1997;39:130-5.

57. Gururaj G, Varghese M, Benegal V, Rao GN, Pathak K, Singh LK, and NMHS collaborators. National Mental Health Survey of India, 2015-16: Prevalence, patterns and outcomes. Bengaluru, National Institute of Mental Health and Neuro Sciences, NIMHANS Publication No. 129, 2016.

58. Malhotra S, Kohli A, Kapoor M, Pradhan B. Incidence of childhood psychiatric disorders in India. Indian J Psychiatry 2009;51:101-7.

59. Krishnakumar P, Geeta MG. Clinical profile of depressive disorder in children. Indian J Paediatr 2005;43:521-6.

60. Tharoor H, Kar N, Shameera, Jagadisha. Profile of childhood depression in a south Indian clinic population. Indian J Psychiatry 2002:45-9.

61. Patel S, Shah R, Patel H, Tilwani M, Vankar GK. Depressive symptomatology among adolescent school girls. Indian J Psychiatry 1998:40:35.

62. Bhargava SC, Sethi S. Depressive disorder in children. J Indian Assoc Child Adolesc Mental Health 2005;1-4.

63. Bhargava Raman RE Sheshadri SP, Janachand Reddy YC, Girimaji SC, Srinath S, Raghunandan VN. Is bipolar II disorder misdiagnosed as major depressive disorder in children? J Affect Disord 2007:98:263-6.

64. Grover S, Malhotra S, Varma S, Chakraborti S, Avasthi A, Mathoo SK. Electroconvulsive therapy in adolescents: A retrospective study from north India. J ECT 2013;29:122-6.

65. Jacob P, Gogi PK, Srinath S, Thirthalli J, Girimaji S, Sheshadri S, et al. Review of electroconvulsive therapy practice from a tertiary child and adolescent psychiatry centre. Asian J Psychiatry 2014;12:95-9.
66. Polanczyk GV, Salum GA, Sugaya LS, Caye A, Rohde LA. Annual research review: A meta-analysis of the worldwide prevalence of mental disorders in children and adolescents. J Child Psychol Psychiatry 2015;56:345-65.
67. Nalugya-Sserunjogi J, Rukundo GZ, Owuga E, Kiwuwa SM, Musini S, Nakimuli-Mpunzu E. Prevalence and factors associated with depression symptoms among school-going adolescents in Central Uganda. Child Adolesc Psychiatry Ment Health 2016;10:39.
68. Basker MM, Russell PS, Russell S, Moses PD. Validation of the children’s depression rating scale-revised for adolescents in primary-care pediatric use in India. Indian J Med Sci 2010;64:72-80.
69. Weiss B, Garber J. Developmental differences in the phenomenology of depression. Dev Psychopathol 2003;15:403-30.
70. Lamers F, Burstein M, He JP, Avenevoli S, Angst J, Merikangas KR. Structure of major depressive disorder in adolescents and adults in the US general population. Br J Psychiatry 2012;201:143-50.
71. Maughan B, Collishaw S, Stringaris A. Depression in childhood and adolescence. J Can Acad Child Adolesc Psychiatry 2013;22:35-40.
72. Grover S, Avasthi A, Kalita K, Dalal PK, Rao GP, Chadda RK, et al. IPS multicentric study: Functional somatic symptoms in depression. Indian J Psychiatry 2013;55:31-40.
73. Grover S, Avasthi A, Sahoo S, Lakdawala B, Nebhinani N, Dan A, et al. Indian Association for Geriatric Mental Health’s multicentric study on depression in elderly: Symptom profile and influence of gender, age of onset, age at presentation, and number of episodes on symptom profile. J Geriatr Ment Health 2018;5:35-48.
74. Kashani JH, Rosenberg TK, Reid JC. Developmental perspectives in child and adolescent depressive symptomatology. Am J Psychiatry 1989;146:871-5.

Author Help: Online submission of the manuscripts

Articles can be submitted online from http://www.journalconweb.com. For online submission, the articles should be prepared in two files (first page file and article file). Images should be submitted separately.

1) **First Page File:**
Prepare the title page, covering letter, acknowledgement etc. using a word processor program. All information related to your identity should be included here. Use text/rtf/doc/pdf files. Do not zip the files.

2) **Article File:**
The main text of the article, beginning with the Abstract to References (including tables) should be in this file. Do not include any information (such as acknowledgement, your names in page headers etc.) in this file. Use text/rtf/doc/pdf files. Do not zip the files. Limit the file size to 1 MB. Do not incorporate images in the file. If file size is large, graphs can be submitted separately as images, without their being incorporated in the article file. This will reduce the size of the file.

3) **Images:**
Submit good quality color images. Each image should be less than 4096 kb (4 MB) in size. The size of the image can be reduced by decreasing the actual height and width of the images (keep up to about 6 inches and up to about 1800 x 1200 pixels). JPEG is the most suitable file format. The image quality should be good enough to judge the scientific value of the image. For the purpose of printing, always retain a good quality, high resolution image. This high resolution image should be sent to the editorial office at the time of sending a revised article.

4) **Legends:**
Legends for the figures/images should be included at the end of the article file.