Subclinical depression in Urban Indian adolescents: Prevalence, felt needs, and correlates

Meghna Singhal, M. Manjula1, K. John Vijay Sagar2
Research Fellow, Parenting and Family Support Centre, School of Psychology, University of Queensland, St. Lucia QLD 4072, Australia, Departments of 1Clinical Psychology and 2Child and Adolescent Psychiatry, NIMHANS, Bengaluru, Karnataka, India

ABSTRACT

Background: Subclinical depression in adolescents constitutes a risk factor for future clinical depression and hence warrants examination. However, there is a paucity of research that documents subclinical depression among adolescents in India.

Objectives: (a) To investigate the prevalence of subclinical depression in urban school-going adolescents; (b) to investigate the problems and felt needs of these adolescents; (c) to examine depression-related variables; and (d) to examine the relationships between socio-demographic and depression-related variables.

Materials and Methods: Eight hundred adolescents (ages 13–18 years) of English-medium schools of Bangalore city were assessed using standardized self-report measures.

Results: Academic difficulties were the most frequently reported problem, followed by interpersonal issues. Of the sample, 18% adolescents were identified as endorsing subclinical depression. Adolescents in the present study scored higher on measures of depression and negative cognitions than their Western counterparts. In addition, girls were found to be at higher risk for experiencing depressive symptoms and negative cognitions, lower social problem-solving skills, and more problematic interpersonal relationships as compared to boys.

Conclusion: Identification of subclinical depression constitutes an important goal, as it places an adolescent at risk of considerable vulnerability and impairment.

Key words: Adolescent, felt needs, India, subclinical depression

INTRODUCTION

Depressive disorders in adolescents exist on a continuum and it is important to differentiate clinical from subclinical depression for a number of reasons. First, assessment studies have emphasized how the individuals who demonstrate elevated levels of symptoms but do not meet interview-based diagnostic criteria (labeled “false-positives”) differ in important ways from diagnosed (or “true-positive”) participants.1 Second, it has been shown that subclinical levels of depressive symptoms are associated with considerable impairment as well as increased risk for clinical depression.2 Identification of subclinical depression in adolescents thus constitutes an important goal. However, while there is no dearth of research documenting the mental health problems of adolescents in India,3–5 there is a paucity of research that documents subclinical depression among adolescents.
Another significant reason for differentiating clinical from subclinical depression is intervention - the costs to the individual and society are much less if subclinical levels of depressive symptoms are identified and treated than if an acute depressive episode is ameliorated after it has produced other negative consequences.[9] Treating subclinical depression in adolescents is, therefore, vital, and many targeted programs have been developed and tested, particularly in the United States and Australia. These programs have typically targeted the following variables known to enhance the risk of depression in adolescents: subsyndromal depression (such as elevated depressive symptoms), negative cognitions (such as low global self-worth, perceived incompetence, and negative explanatory and inferential style), interpersonal vulnerabilities (such as poor communication and problem-solving skills), coping behaviors (such as disengagement coping, involuntary engagement coping, and emotion-focused coping), and parental psychopathology (such as being an offspring of a depressed parent). Adolescents with subclinical depression have been referred to in such programs as “at-risk for depression” or “high-risk” participants.

In India, however, not only is there an absence of such programs, but we are also hindered by the limited understanding of risk factors of depression unique to the Indian cultural context. We do not have data that throw light on the problems and felt needs of adolescents who have an inherent vulnerability for developing depression. Knowledge of these felt needs would help us develop intervention modules that address the problems of adolescents who may be on a trajectory to developing clinical depression.

In addition, lacking in the Indian context is normative data of depression-related variables, such as negative cognitions, social-problem solving, and coping skills, from self-report measures that have been developed in the West. Such data can provide for valid contrasts from the Western data and could also be useful to clinicians trying to gauge the relative level of an adolescent’s functioning and may aid in treatment planning and assessment of treatment effectiveness.

Thus, to address the lacunae in knowledge, the present study aims to examine subclinical depression in the Indian adolescents. This study was part of a larger study that aimed to develop and test a school-based intervention program for adolescents with subclinical depression. The present study had four-fold objectives: (a) To investigate the prevalence of subclinical depression in urban school-going adolescents; (b) to investigate the problems and felt needs of these adolescents. This was done to design an intervention program for subclinical depression for the larger study; (c) to examine variables associated with depression, namely, negative cognitions, social problem solving, and coping skills. This was done to obtain normative data on Western self-report scales for the Indian adolescent population; and (d) to examine the relationships between sociodemographic and depression-related variables.

### MATERIALS AND METHODS

#### Study design and sample

A cross-sectional, single group design was used. Eight hundred adolescents belonging to English-medium schools of Bangalore were included in the study. These adolescents belonged to Grades 8, 9, and 11. Grade 10 and 12 students were not included because of the time constraints they have due to their annual Board examinations. The inclusion criteria were adolescents in the age range 13–18 years, belonging to both residential and day boarding, coeducational or convent, English-medium schools. There were no exclusion criteria as this was an exploratory study.

Subclinical depression was operationalized as “above average depressive symptoms” that is, within the cutoff range (14–24) on the Children’s Depression Inventory (CDI).[9] The self-report measures of depression-related variables were selected based on the following criteria: (a) A link to a cognitive theoretical perspective on depression, (b) a parallel to adult measures of depression, and (c) the relatively common use of the measure.

#### Measures

Sociodemographic Sheet and Questionnaire (SDSQ; developed by the researchers) included information about sociodemographic characteristics, such as age, gender, family type, and parents’ educational qualifications. The questionnaire included items to elicit the problems the adolescent is currently facing, or has faced in the last 1 year, along with their felt needs.

CDI[9] was used as a measure of depressive severity. The CDI is a 27-item self-report measure of depressive symptoms such as low mood, irritability, behavioral problems, anhedonia, and somatic symptoms. It has acceptable test-retest reliability (above 0.74 for children aged 10).[10] The Cronbach’s alpha of CDI for our sample was high (α = 0.81), indicating a high level of internal consistency for this scale for the current sample.

Center for Epidemiological Studies-Depression Scale for Children (CES-DC)[11] was used to assess the frequency of depressive symptoms. The CES-DC has acceptable test-retest reliability (r = 0.51) and high internal consistency (Cronbach’s α = 0.84).[12]

Children’s Automatic Thoughts Scale (CATS)[13] was used to assess frequency of negative automatic thoughts. It is a developmentally sensitive, self-report measure that demonstrates good discriminant validity for each of the...
subscales across anxiety, depression, and externalizing disorders.

Social Problem Solving Inventory-Revised-Short Form (SPSI-R)\(^{14}\) was used to assess functional and dysfunctional cognitive and emotional orientations toward solving life problems. For adolescents (aged 13–17 years), internal consistency estimates were adequate\(0.90\) for the total score and \(0.88\) among the subscales.\(^{15}\)

Adolescent Coping Orientation to Problems Experienced Inventory (A-COPE)\(^{16}\) was used to assess the frequency with which adolescents used the coping behavior when feeling tense or facing a problem, or difficulty. The A-COPE consists of 12 rationally-derived subscales or types of coping activities. Internal consistency estimates across the 12 subscales range from unacceptable \(\alpha = 50\) to respectable \(\alpha = 75\), with very good test-retest estimates \((r = 83)\). The A-COPE has been used in numerous studies with participants from different ethnicities and has been used in different countries.

Procedure

The data were collected from five schools between January 2012 and October 2013. After obtaining written consent from school authorities, and sending a basic information sheet about the study to their parents, 800 students in Grades 8, 9, and 11 were assessed using the SDSQ, CDI, CES-DC, CATS, SPSI-R, and A-COPE. They were explained that the purpose of the assessment is to identify difficulties and stressors that each adolescent faces from time to time. The term “depression” was not used anywhere in the title of the study or in the informed consent forms.

The tools were administered in groups, for one section of each grade at a time (approximately 30–40 students), and required the students to give their written assent. This took approximately one class period for each section. The researcher provided assistance to any students having difficulty with the assessments by reading and explaining selected portions to them. Those absent at screening were contacted later (during lunch break or a free period) and asked to fill in the questionnaires.

The research protocol was reviewed and approved by the Ethics Committee of the Institute where the study was planned. Some ethical guidelines adhered to were written informed consent was obtained from principals and parents and assent from students before recruitment; information shared with the researcher was not revealed to the teachers or other students; adolescents who on the basis of assessment and/or parental information were judged as requiring individual help (due to reasons such as suicide risk, and an on-going adverse event in the family,) were referred for appropriate professional consultation; and participation was voluntary and students were informed that they could withdraw from the research at any stage without penalty.

RESULTS

The data were analyzed using Statistical software SPSS 16.0 SPSS Inc., Descriptive statistics was used to analyze sociodemographic indices and data from self-report measures. The Chi-square or Fisher’s exact was used for categorical data and \(t\)-test for continuous data.

Sociodemographic characteristics of the sample

The data were collected from 800 students across five schools from Grades 8, 9, and 11. Table 1 shows the sociodemographic characteristics of this sample. The mean age of the sample was 14.4 years. Girls had a mean age of 14.2 years (standard deviation [SD] 0.93) and boys 14.66 years (SD 1.39).

The adolescents in this sample belonged to both day boarding and residential schools that were either coeducational or boys only, had either State board or Central Board of Secondary Education (CBSE) affiliated curriculum, and had parents with different education levels-majority being educated till Grade 10 or till graduation. Thus, the findings from the sample could be generalized to the profile of an English-speaking, urban, public school going adolescent.

| Table 1: Sociodemographic characteristics of the sample \((n=800)\) |
| Sociodemographics | Percentage |
|-------------------|------------|
| School            |            |
| 1                 | 25         |
| 2                 | 25         |
| 3                 | 13         |
| 4                 | 25         |
| 5                 | 12         |
| Gender            |            |
| Girls             | 57         |
| Boys              | 43         |
| Grade             |            |
| 8                 | 39         |
| 9                 | 41         |
| 11                | 20         |
| Family type       |            |
| Nuclear           | 84         |
| Joint             | 16         |
| Father’s education|            |
| Up to Grade 10    | 28         |
| Up to Grade 12/PUC| 18         |
| Up to graduation  | 39         |
| Up to postgraduation | 15  |
| Mother’s education|            |
| Up to Grade 10    | 35         |
| Up to Grade 12/PUC| 19         |
| Up to graduation  | 39         |
| Up to postgraduation | 7         |

*Percentages adjusted for missing data
Prevalence of subclinical depression and establishing cutoffs for Children’s Depression Inventory

The cutoff scores for CDI was obtained by the first converting the raw scores into t-scores, and then categorizing them according to the CDI manual[9] into different severities of depressive symptoms. After that, the corresponding raw score ranges were calculated for the data from the 800 adolescents in the present study.

Table 2 shows the t-scores ranges, corresponding symptom severity, and raw score ranges obtained for our sample, and those reported for the Western sample.[9] It also shows the number (and percentage) of adolescents who fall within each category in our sample. The table highlights the category of interest- “above average depressive symptoms” which has been operationalized as representing “subclinical depression” for the present study. It shows that the Western cutoff range (for both girls and boys combined) is 14–24, whereas it is 18–25 for the present study sample. The sample that scored within the subclinical range on CDI was 18% in the present study.

Problems and felt needs reported by adolescents

The problems and difficulties faced by the adolescents as well as their felt needs were assessed using the SDSQ. Academic difficulty was the most frequently reported problem domain (reported by 57% of the sample), followed by problems with peers (35%), and parents (29%). Problems with teachers and with one’s appearance were least frequently reported (8% each).

In response to the question, “I have shared my problems with_______” on SDSQ a majority of the sample reported having shared their problems with a friend, cousin, or sibling (45%). Relatively few adolescents reported sharing their problems with their parents (16%). Thirty nine percent of the students reported not having shared their problems with anyone.

A large majority of adolescents (76%) indicated that if sessions were offered in the school to help them deal with their reported problems, they would be willing to participate in these sessions. However, 43% adolescents reported that they would be embarrassed to participate in these sessions.

In addition, 59% of the adolescents indicated preference for group over individual sessions. In addition, girls indicated preference for group sessions significantly more than boys (χ²[1] =3.72, P = 0.05). A large majority of the adolescents (85%) indicated that they preferred to have the sessions with same gender peers.

Scores on depression-related variables

Table 3 shows the means and SDs for each of the self-report measures of depression-related variables.

The response rates (that is, percentage of adolescents who returned completed forms) for all the measures were high, and ranged from 97% to 99%.

Relationship between sociodemographic and depression-related variables

Table 4 shows the relationships between sociodemographic variables, depression-related variables, and the problems reported by the adolescents on the SDSQ.

There was a significant association between gender and depressive symptoms, in that girls reported significantly more depressive symptom severity and frequency than boys. There was also a significant relationship between gender and negative cognitions, in that girls reported significantly higher negative cognitions than boys. A significant association was found between social problem-solving and gender, in that boys reported higher social problem-solving skills than girls. There was no significant association between gender and coping.

The table shows that there was a significant relationship between grade and academic problems, wherein Grade 9 students reported significantly more academic difficulties as compared to Grades 8 and 11 students. A significant association was also found between parents’ education levels and academic problems. Graduate fathers and mothers had adolescents who reported significantly more academic difficulties as compared to parents of other education levels. In addition, girls reported significantly more problems with their parents and their peers as compared to boys.

Moreover, a highly significant relationship was found between subclinical CDI scores (i.e., scores within the

| CDI (T-scores) | Depressive symptom classification | Raw score range for American sample[9] | Raw score range for present study sample | n (present study) | Percentage sample (present study) |
|----------------|----------------------------------|----------------------------------------|-----------------------------------------|------------------|----------------------------------|
| <30-34         | Much below average                | <2                                     | 0                                       | 9                | 1                                |
| 35-44          | Below average                     | 2-6                                    | 1-8                                     | 259              | 33                               |
| 45-55          | Average                           | 7-13                                   | 9-17                                    | 331              | 41                               |
| 56-65          | Above average                     | 14-19                                  | 18-25                                   | 140              | 18                               |
| 66-70          | Much above average                | 20-22                                  | 26-29                                   | 24               | 3                                |
| >70            | Very much above average           | >22                                    | >29                                     | 32               | 4                                |

CDI – Children’s Depression Inventory

---

Singhal, et al.: Subclinical depression in Indian adolescents

Indian Journal of Psychiatry 58(4), Oct-Dec 2016 397
14–24 cutoff range) and students’ reporting of academic problems on the SDSQ ($\chi^2[1] = 14.3, P < 0.001$).

No significant relationships were found between family type and academic problems ($\chi^2[1] = 1.62, P = 0.448$), family type and interpersonal problems with parents ($\chi^2[1] = 0.52, P = 0.772$), grade and academic problems ($\chi^2[2] = 0.59, P = 0.744$), grade and interpersonal problems with parents ($\chi^2[2] = 0.59, P = 0.744$), birth order and academic problems ($\chi^2[3] = 1.42, P = 0.702$), and birth order and interpersonal problems with parents ($\chi^2[3] = 4.95, P = 0.175$).

**DISCUSSION**

The first objective of the present study was to investigate the prevalence of subclinical depression. In the present study, 18% of the sample was found to be scoring within the subclinical range on CDI, indicating above average depressive symptoms. These findings are commensurate with Western data utilizing high-risk samples. Seven percent of the sample in the present study was found to report “much above average” and “very much above average” depressive symptoms. An Indian study utilizing a college sample of males (mean age 19.3 years) found the prevalence of depressive symptomatology to be 18.5% using the Depression Anxiety and Stress Scale (DASS-21), ranging from 6.4% having mildly depressive symptoms to 2% having extremely severe depressive symptoms. Two more studies, utilizing DASS, have reported the prevalence rates of mild depression to be 17% in preuniversity students and 13% in college students, respectively.

The prevalence rates may vary depending on whether they are based on parent, teacher, or self-report. However, research has shown that adolescents are better informants than their parents or teachers, with respect to internalizing problems. Specifically, it has been found that parents are relatively insensitive reporters of their children’s depressive symptomatology.

School samples may underestimate the prevalence because adolescents in emotional distress are more likely to be truant or absent from school on the day data are collected. The present study ensured that adolescents absent on the day of assessment were contacted later and asked to fill in the questionnaires.

The prevalence of subclinical depression has not been systematically studied in India. The few studies that have specifically investigated depression in the Indian adolescent population consistently find that Indian adolescents have much higher rates of depression than their Western peers. One study conducted with high school students from a variety of backgrounds ($n = 818$, ages 14–17 years) in the Southern Indian state of Kerala found that nearly 12% of the students could be diagnosed with depression. Another study conducted with an equal number of male and female college students, aged 16–20 years, in the North Indian state of Punjab ($n = 200$) reported that participant scores

---

**Table 3: Mean scores on depression-related variables ($n=800$)**

| Tools          | Response rate (%) | Mean | SD  |
|----------------|------------------|------|-----|
| CDI            | 99               | 12.86| 7.95|
| CES-DC         | 98               | 20.48| 11.01|
| CATS           | 99               | 40.52| 26.27|
| SPSI-R         | 97               | 96.48| 12.12|
| A-COPE         | 97               | 170.07| 21.85|

CDI — Children’s Depression Inventory; CES-DC — Centre for Epidemiological Studies-Depression Scale for Children; CATS — Children’s Automatic Thoughts Scale; SPSI-R — Social Problem Solving Inventory-Revised; A-COPE — Adolescent Coping Orientation to Problems Experienced Inventory; SD — Standard deviation

**Table 4: Relationship between sociodemographic and depression-related variables**

| Sociodemographic variables | Depression-related variables | Mean (SD)/frequency (%) | Statistic (df) | P       |
|----------------------------|------------------------------|-------------------------|----------------|---------|
| Gender                     | CDI                          |Girls (14.84)            | 11.4 (7.1)     | $t(785)=4.73***$ | 0.001   |
|                            | CES-DC                       |Boys (21.7 (11.4))       | 18.8 (10.3)    | $t(764)=3.7***$ | 0.001   |
|                            | CATS                         |Girls (42.7 (27.2))      | 37.7 (24.8)    | $t(791)=2.65**$ | 0.008   |
|                            | SPSI-R                       |Boys (95.6 (12.1))       | 97.6 (12)      | $t(775)=−2.36*$ | 0.019   |
|                            | A-COPE                       |Girls (169.9 (21.8))     | 170.3 (21.8)   | $t(774)=−2.3$   | 0.019   |
|                            |                              |Boys (66 (10))           | 66 (10)        | $t(786)=−2.35$  | 0.007   |
| Father’s education level   | Above average depressive symptoms* |Girls (15.0 (19))    | 15.0 (19)      | $\chi^2(3)=4.18$ | 0.688   |
|                            |                              |Boys (9.0 (12))          | 9.0 (12)       | $\chi^2(3)=4.47$ | 0.215   |
| Mother’s education level   | Above average depressive symptoms* |Girls (15.0 (19))    | 15.0 (19)      | $\chi^2(3)=2.8$ | 0.001   |
| Grade (%)                  | Academic problems*           |Girls (15.0 (19))       | 15.0 (19)      | $\chi^2(3)=20.26***$ | 0.001   |
|                            |                              |Boys (9.0 (12))          | 9.0 (12)       | $\chi^2(3)=12.27$ | 0.007   |
| Father’s education level (%)| Academic problems*           |Girls (104 (16))        | 104 (16)       | $\chi^2(3)=20.84***$ | 0.001   |
|                            |                              |Boys (83 (12))           | 83 (12)        | $\chi^2(2)=15.01***$ | 0.001   |
| Mother’s education level (%)| Interpersonal problems with parents* |Girls (15.0 (19))    | 15.0 (19)      | $\chi^2(3)=20.84***$ | 0.001   |
|                            |                              |Boys (9.0 (12))          | 9.0 (12)       | $\chi^2(1)=9.46**$ | 0.002   |

*As elicited on CDI; *As elicited on the SDSQ; **P<0.01; ***P<0.001; tP<0.05. CDI — Children’s Depression Inventory; CES-DC — Centre for Epidemiological Studies-Depression Scale for Children; CATS — Children’s Automatic Thoughts Scale; SPSI-R — Social Problem Solving Inventory-Revised; A-COPE — Adolescent Coping Orientation to Problems Experienced Inventory; SDSQ — Sociodemographic Sheet and Questionnaire; SD — Standard deviation
on depression scales were significantly higher than their peers in the United States. These studies suggest that rates of depression in Indian adolescents are much higher than what has been found in the U.S. samples.

In another study, a high mean score on the Beck Depression Inventory (BDI) (12.55, SD 8.44) was obtained for Grade 12 students, which pointed to a typical experience of “mild mood disturbance.” According to the BDI, although on average, these students did not meet the threshold for clinical depression, they could also not be considered “normal.” The study findings are also consistent with the previous studies involving Indian adolescents who completed the BDI.

With regard to CDI cutoff range itself, the subclinical range was found to be 18–25 in the present study. Again, much lower ranges have been used in Western studies to classify subclinical depression. For example, an Australian study used the range 12–19 to define inclusion for subclinical depression and another study used a cutoff of 20 for screening for clinical levels of depression in the general population.

Together, these findings suggest that Indian adolescents score higher on self-report measures of depression than their Western counterparts. However, contrary to the findings obtained in the present study, a pattern that has emerged from epidemiological literature is that depression appears to be less prevalent in Asian than in the Western cultures. This pattern has been found in different age groups, including college samples. These differences have been attributed to cultural variation in the conception of mental illness (with Western cultures viewing emotional problems as separate from physical complaints more than Asian cultures), to differences in the amount of stigma attached to mental illness (with Asian cultures stigmatizing emotional problems more than Western cultures), and to different levels of available social and familial support (with Asian participants having more social support than their Western peers). The difference between this pattern (supported by studies conducted more than a decade back) and findings of the present study could perhaps be attributed to increasing urbanization and Westernization in India, both of which have been hypothesized to have a negative effect on mental health in general and levels of depression in particular.

The second objective of the study was to examine the problems and difficulties faced by urban school-going adolescents along with their felt needs in the context of mental health services. While many studies in the Indian context have examined stress in adolescents, few have assessed the problems faced by them in such an open-ended manner. Most of the studies, however, converge on the above findings in concluding that academic stress or academic-related problems constitute one of the major difficulties for Indian adolescents.

With regard to academic problems in the present study, adolescents reported difficulties with concentration and memory as most frequent, apart from experiencing exam anxiety and problems in certain subjects, particularly Math, Kannada, and Hindi, as well as loss of interest in studies. The Indian society has become extremely competitive with regard to academic performance, mainly due to the rising middle class, demand for educational achievement, and drive for occupational prestige. Increases in secondary enrollment rates in India reflect emerging middle-class parental desires and expectations. Since individuals are increasingly being ascribed status on the basis of their academic performance, it is perhaps not surprising that it has become a source of major difficulty for students in India.

Problems with peers were also frequently reported and these included difficulties in heterosexual relationships, dating behavior, un reciprocated love, being disliked by peers, and lack of trust in friendships due to rumor spreading, or break in friendships. A number of adolescents reported that they did not have anyone to confide in and a few reported being bullied by their peers/seniors. Peer victimization in adolescents has been consistently linked in research to internal distress, including feelings of depression, loneliness, and low self-esteem. Moreover, relational victimization, such as rumor spreading and friendship withdrawal, is reported by adolescent girls and boys to be more common than overt victimization. On the other hand, adolescents with close and satisfying peer relationships are more likely to be psychologically healthier, more interpersonally competent, and have higher self-esteem.

With regard to problems with parents, the adolescents mainly reported lack of trust, parents not understanding their viewpoint, parental expectations and pressure regarding academic performance, strict rules or criticism regarding going out and dressing, and parental intrusiveness. These findings are important considering empirical evidence on the link between perceived rejection by family and increases in depressive symptoms in adolescents.

A small percentage of the sample each reported problems with teachers and with their appearance. The former involved not liking certain teachers due to their partial behavior, strict stance, or due to the adolescent’s inability to understand what was being taught. The latter involved concerns around body shape, weight, or height due to which the adolescents perceived themselves as being unpopular with their peers.

A sizeable percentage of adolescents reported not having shared these problems with anyone, highlighting the need to reach across to these adolescents.
A majority of the adolescents indicated that if sessions were offered in the school to help them deal with their problems, they would be willing to participate in these sessions. This was reported even by adolescents who did not indicate any problems on the open-ended questionnaire! However, adolescents also reported that they would be embarrassed to participate in these sessions, due to the concern that others (such as peers, teachers) would find out about their problems. That adolescents are self-conscious and have a heightened concern about others' opinions about them has been demonstrated empirically.\(^\text{[6,42]}\) Moreover, it has been shown that the experience and/or perception of rejection from others is likely to contribute to bad feelings about the self, which is also known to be a vulnerability to depression.\(^\text{[43]}\)

Taken together these findings point us in the direction of shaping school mental health services that are cognizant of adolescents’ needs and concerns. Specifically, these findings helped us give shape to an intervention program for adolescents with subclinical depression, by highlighting the vulnerability areas of these adolescents. On the basis of these findings, “Coping Skills Program” was developed and piloted, the details of which are described elsewhere.\(^\text{[44]}\)

The third objective of the study was to examine the depression-related variables using self-report measures and to assess how Indian adolescents fare on these measures in comparison to their Western counterparts. CDI and CES-DC were employed as measures of depressive symptom severity and frequency, respectively. The mean scores of adolescents on CDI and CES-DC in the present study were found to be higher than their Western counterparts. On CDI, the mean of 12.86 (SD 7.95) is higher than the mean of 9.28 (SD 7.3) reported for a sample of 13–17-year-old American adolescents (Kovacs, 1992) and 9.09 (SD 7.04) for a sample of 8–16-year-old American children and adolescents (Smucker et al., 1986). On CES-DC, the mean score of the current sample was found to be 20.48 (SD 26.27) whereas a score of ≥20 has been suggested for identifying current subthreshold depressive symptoms in Western studies.\(^\text{[10,45,46]}\) That the scores of depression in the Indian adolescents are much higher than what has been found in the US samples has been demonstrated in the previous studies.\(^\text{[24,25]}\)

Negative cognitions were assessed in the present study using CATS. The mean score on CATS for the present sample was 40.52 (SD 26.27) which was, again, much higher than those reported by Western studies. For example, in one study, the mean score for CATS was 18.67 (SD 14.4) for American adolescents with a mean age of 13.9 (SD 1.56) years.\(^\text{[47]}\) In another study, the mean score on CATS for a universal sample of Australian Grade 9 adolescents was 13.96 (SD 14.97).\(^\text{[11]}\) Thus, when data from the present study is considered, it is seen that Indian adolescents score higher on self-report measure of negative cognitions.

Social problem-solving was assessed in the present study using SPSI-R. On SPSI-R, the mean score of the current sample was 96.48 (SD 12.12), and the normative range for this measure is 86–114.\(^\text{[16]}\) Thus, the normative mean for the present study falls well within the Western range.

Coping skills were assessed in the present study using A-COPE. On A-COPE, the current sample obtained a mean of 170.07 (SD 21.8); the normative mean for Caucasian adolescents has been found to be 168.20 (SD 26.3), and for African-American adolescents to be 170.1 (SD 24.8).\(^\text{[16]}\) Again, the Indian mean for the A-COPE is similar to the Western counterparts.

The fourth objective of the study was to examine the relationship between sociodemographic and depression-related variables. A significant association was found between gender and depressive symptoms, in that girls reported significantly more depressive symptom severity and frequency than boys. This result runs consistent to most Western and Indian findings which report that being female is significantly associated with depression in adolescents.\(^\text{[24,25,48,49]}\) Explanations for this gender difference in literature have included hormonal changes, increased stress, differences in interpersonal orientation, tendencies toward rumination and other maladaptive responses to stress, and different socialization experiences.\(^\text{[50]}\)

A significant relationship was also found between gender and negative cognitions, in that girls reported significantly higher negative cognitions than boys. A significant association was found between social problem-solving and gender, in that boys reported higher social problem-solving skills than girls. Research literature over these gender differences has been mixed. For example, in a Canadian study, no significant interaction between gender and depression was found in perceived social problem-solving ability or problem-solving self-efficacy in a sample of 432 adolescents\(^\text{[51]}\) whereas in a Spanish study, on 856 adolescents (aged 14–17 years), female adolescents scored higher on negative problem orientation (NPO, a subscale of SPSI-R) as compared to boys.\(^\text{[52]}\) In the latter study, females’ self-focused negative cognitions also partially mediated gender differences in depressive symptoms.

Gender was also significantly associated in the present study with self-reported interpersonal problems, with females reporting greater problems with peers with and parents. That salience of social relationships for females is a major factor in their mental health is well known. In one study utilizing Grade 9, 10, and 11 adolescents, girls’ higher levels of interpersonal caring orientation and involvement in the problems of significant others accounted for approximately 25% of the gender difference in distress.\(^\text{[53]}\)
Parents’ educational levels were not associated with subclinical depression but significantly correlated with academic problems. Specifically, graduate fathers and mothers had adolescents who reported significantly more academic difficulties as compared to parents of other education levels. It could be that these parents tend to put more pressure on their children and perhaps have higher expectations of them to perform well academically. The role of parents in academic stress experienced by their children has been explored in some studies. Specifically, the educational attainment of the parents has been found to be strongly related to their expectations and their children’s expectations for the child’s educational attainment.

Higher than average depressive symptoms was found to be significantly associated with academic problems reported on SDSQ. This association has been confirmed in other Indian studies utilizing adolescent samples. For example, in one study, depression was significantly higher among students who had lower academic marks in their last school exam and among students of board classes (Grades 10 and 12). Consistent with this result, in another study, students who reported getting higher grades in class and performing better than their classmates had lower scores on the BDI. In another study, 57% students were found to be depressed as a result of academic stress. Academic stress has already been found to be associated with depression in several Western and Asian studies.

CONCLUSION

In sum, it appears that adolescent girls are more at risk for experiencing depressive symptoms and negative cognitions, lower social problem-solving skills, and more problematic interpersonal relationships as compared to adolescent boys. There are a number of strengths of this study. Developmentally, appropriate outcome measures were used. Efforts were made to collect data from day boarding and residential schools, coeducational, and boys-only schools, and schools with State board and CBSE affiliated curriculum to ensure generalizability of findings. Attention was also given to assess those absent on screening day so as to obtain a more accurate prevalence rate. Limitations of the study include the inclusion of only self-report measures and possible self-selection bias due to permission given by some but not other schools. Moreover, the reliability of the “subclinical” classification based on a single administration of CDI may have only been modest in magnitude for the measure of depressive symptoms. Other limitations are no direct measure of socioeconomic status and exclusion of Grades 10 and 12 students (who may have been experiencing more depressive symptoms).

Nevertheless, the study represents a preliminary attempt at documenting subclinical depression in urban school-going adolescents. Future research is needed that utilizes an even wider range of sample chosen to represent varied sociodemographic variables and other important characteristics of the population.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Gotlib IH, Lewinsohn PM, Seeley JR. Symptoms versus a diagnosis of depression: Differences in psychosocial functioning. J Consult Clin Psychol 1995;63:90-100.
2. Ferguson DM, Horwood LJ, Ridder EM, Beautrais AL. Subthreshold depression in adolescence and mental health outcomes in adulthood. Arch Gen Psychiatry 2005;62:66-72.
3. Ahmad A, Khalique N, Khan Z, Amir A. Prevalence of psychosocial problems among school-going male adolescents. Indian J Community Med 2007;32:219-21.
4. Bhasin SK, Sharma R, Saini NK. Depression, anxiety and stress among adolescent students belonging to affluent families: A school-based study. Indian J Pediatr 2010;77:161-5.
5. Pathak R, Sharma RC, Parvan UC, Gupta BP, Ojha RK, Goel N. Behavioural and emotional problems in school-going adolescents. Australas Med J 2011:14:15-21.
6. Prasanna LT. Emotion Regulation, Attachment Styles and Psychological Functioning among College Students. Unpublished MPhil Dissertation. National Institute of Mental Health and Neuro Sciences (NIMHANS), Bangalore; 2013.
7. Singh S. Suicidal Risk, Childhood Adversity, and Psychological Functioning in College Students. Unpublished MPhil Dissertation. National Institute of Mental Health and Neuro Sciences (NIMHANS), Bangalore; 2010.
8. Garber J, Clarke GN, Weersing VR, Beardslee WR, Brent DA, Gladstone TR, et al. Prevention of depression in at-risk adolescents: A randomized controlled trial. JAMA 2009;301:2215-24.
9. Kovacs M. Children's Depression Inventory: Manual. Toronto, ON: Multi-Health Systems; 1992.
10. Smucker MR, Craighead WE, Craighead LW, Green BJ. Normative and reliability data for the Children’s Depression Inventory. J Abnorm Child Psychol 1986;14:25-39.
11. Weissman MM, Orvaschel H, Padian N. Children's symptom and social functioning self-report scales. Comparison of mothers' and children's reports. J Nerv Ment Dis 1980;168:736-40.
12. Faulstich ME, Carey MP, Ruggiero L, Enyart P, Gresham F. Assessment of depression in childhood and adolescence: An evaluation of the Center for Epidemiological Studies Depression Scale for Children (CES-DC). Am J Psychiatry 1986;143:1024-7.
13. Schniering CA, Rapee RM. Development and validation of a measure of children’s automatic thoughts: The children’s automatic thoughts scale. Behav Res Ther 2002;40:1091-109.
14. D’Zurilla TJ, Nezu AM, Maydeu-Olivares A. Social Problem-Solving Inventory-Revised (SPSI-R). North Tonawanda (NY): Multi-Health Systems, Inc.; 2002.
15. Sadowski C, Moore LA, Kelley ML. Psychometric properties of the Social Problem Solving Inventory (SPSI) with normal and emotionally disturbed adolescents. J Abnorm Child Psychol 1994;22:487-500.
16. Patterson JM, McCubbin H. Adolescent coping orientation to problems experienced (ACCOPE). In: Corcoran K, Fischer J, editors. Measures for Clinical Practice: A Sourcebook. New York: Free Press; 1991. p. 454-8.
17. Clarke GN, Hombrook M, Lynch F, Polen M, Gale J, Beardslee W, et al. A randomized trial of a group cognitive intervention for preventing depression in adolescent offspring of depressed parents. Arch Gen Psychiatry 2001;58:1127-34.
18. Sheffield JK, Spence SH, Rapee RM, Kowalenko N, Wignall A, Davis A, et al. Evaluation of universal, indicated, and combined cognitive-behavioral approaches to the prevention of depression among adolescents. J Consult Clin Psychol 2006;74:96-79.
19. Sahoo S, Khess CR. Prevalence of depression, anxiety, and stress among young male adults in India: A dimensional and categorical diagnoses-based study. J Nerv Ment Dis 2010;198:901-4.
20. Das NK. Mental Health Issues, Psychological Functioning, and Attitude
Singhal, et al.: Subclinical depression in Indian adolescents

Toward Help Seeking in Pre-University College Students. Unpublished MPhil Dissertation; 2000; National Institute of Mental Health and Neuro Sciences (NIMHANS), Bangalore; 2000.

21. DiBartolo PM, Grills AE. Who is best at predicting children’s anxiety in response to a social evaluative task? A comparison of child, parent, and teacher reports. J Anxiety Disord 2006;20:630-45.

22. Angold A, Weissman MM, John K, Merikangas KR, Prusoff BA, Wickramaratne P, et al. Parent and child reports of depressive symptoms in children at low and high risk of depression. J Child Psychol Psychiatry 1987;28:1-15.

23. Doll B. Prevalence of psychiatric disorders in children and youth: An agenda for advocacy by school psychology. Sch Psychol Q 1996;11:20-46.

24. Nair MK, Paul MK, John R. Prevalence of depression among adolescents. Indian J Pediatr 2004;71:523-4.

25. Upmanyu VV, Upmanyu S, Lester D. Depressive symptoms among U.S. and Indian college students: The effects of gender and gender role. J Soc Psychol 2000;140:669-71.

26. Rao AS. Academic Stress and Adolescent Distress: The Experiences of 12th Standard Students in Chennai, India. PhD Dissertation, University of Arizona; 2006.

27. Shochet IM, Dadds MR, Holland D, Whitefield K, Harnett PH, Osgarby SM. The efficacy of a universal school-based program to prevent adolescent depression. J Clin Child Psychol 2001;30:303-15.

28. Bland RC. Epidemiology of affective disorders: A review. Can J Psychiatry 1997;42:367-77.

29. Simon GE, VonKorff M, Piccinelli M, Fullerton C, Ormel J. An international study of the relation between somatic symptoms and depression. N Engl J Med 1999;341:1329-35.

30. Freeman HL. Psychiatric aspects of environmental stress. Int J Ment Health 1988;17:13-23.

31. Deb S. A Study on the Negative Effects of Atmospheric Stress. Paper Presented at the International Seminar on Learning and Motivation, 2001; Kedah Darul Aman, Malaysia; 2001.

32. Gore S, Aseltine RH, Colten ME. Gender, socio-relationship involvement, and adjustment during preadolescence and adolescence. Child Dev 1990:61:1101-11.

33. Nolan SA, Flynn C, Garber J. Prospective relations between rejection and depression in young adolescents. J Pers Soc Psychol 2003;85:745-55.

34. Elkind D. Understanding the young adolescent. Adolescence 1978;49:127-49.

35. Prinstein MJ, Scherler M, Buss A. Public versus private self-consciousness: Assessment and theory. J Consult Clin Psychol 1975;43:522-7.

36. Harter S. The Construction of the Self: A Developmental Perspective. New York: Guilford Press; 1999.

37. Singhal M, Manjula M, Vijay Sagar KJ. Development of a school-based program for adolescents at-risk for depression in India. Results from a pilot study. Asian J Psychiatr 2014;10:56-61.

38. Marchand E, Ng J, Rohde P, Stice E. Effects of an indicated cognitive-behavioral depression prevention program are similar for Asian American, Latino, and European American adolescents. Behav Res Ther 2010;48:821-5.

39. Stice E, Rohde P, Seeley JR, Gau JM. Brief cognitive-behavioral depression prevention program for high-risk adolescents outperforms two alternative interventions: A randomized efficacy trial. J Consult Clin Psychol 2008;76:595-606.

40. Farrugia S, Hudson J. Anxiety in adolescents with Asperger syndrome: Negative thoughts, behavioral problems, and life interference. Focus Autism Dev Disabil 2005;21:25-35.

41. Hankin BL, Abramson LY, Moffitt TE, Silva PA, McGee R, Angell KE. Development of depression from preadolescence to young adulthood: Emerging gender differences in a 10-year longitudinal study. J Abnorm Psychol 1998;107:128-40.

42. Lewinsohn PM, Essau CA. Depression in adolescents. In: Hammen CL, Gotlib IH, editors. Handbook of Depression. New York: Guilford Press; 2002. p. 514-99.

43. Nolen-Hoeksema S. Gender differences in depression. In: Hammen CL, Gotlib IH, editors. Handbook of Depression. New York: Guilford Press; 2002. p. 492-509.

44. Moors EE. Gender Difference in the Social Problem-Solving Ability of Depressed and Non-Depressed Adolescents. Unpublished Master’s Thesis, University of British Columbia, Vancouver, Canada; 1999.

45. Calvete E, Cardeñoso O. Gender differences in cognitive vulnerability to depression and behavior problems in adolescents. J Abnorm Child Psychol 2005;33:179-92.

46. Gore S, Aseltine RH, Colten ME. Gender, socio-relationship involvement, and depression. J Res Adolesc 1993;3:101-25.

47. Verma S, Gupta J. Some aspects of high academic stress and symptoms. J Pers Clin Stud 1990;6:7-12.

48. Wilson PM, Wilson JR. Environmental influences on adolescent educational aspirations. Youth Soc 1992;24:52-70.

49. Chen XY, Rubin KH, Li BS. Depressed mood in Chinese children: Relations with school performance and family environment. J Consult Clin Psychol 1995;63:938-47.

50. Hilsman R, Garber J. A test of cognitive diathesis-stress model of depression in children: Academic stressors, attributional style, perceived competence, and control. J Pers Soc Psychol 1995;69:370-80.