ORIGINAL ARTICLE

Stress and Coping among Adolescents in Selected Schools in the Capital City of India

Naina Mathew · Deepika Cecil Khakha · Ashia Qureshi · Rajesh Sagar · Cecil Christopher Khakha

Abstract

Objective To find out various life stressors of adolescents, coping strategies adopted by them and the impact of stress on adolescent mental health.

Methods A descriptive, cross sectional study was conducted in the schools in south zone of Delhi, capital city of the country. Data was collected on 360 adolescents between the age group of 13–17 y on socio-demographic profile, Adolescent Life Event Stress Scale, Brief Cope and Youth Self Report for ages 11–18 y.

Results Stress related to uncontrollable events such as family events, relocation events, accident events, ambiguous events and controllable events such as sexual events, deviance events and autonomy events was significantly higher as compared to distressful events ($p<0.0$) such as death of a pet, arguments with friends, appearing for exams, failure or low grades. Adolescent stress was significantly correlated with various demographic variables in the study. The most frequently used coping strategies by the adolescents were positive reframing, planning, active coping, and instrumental support. It has also been found that stress has a significant impact on adolescent mental health in the form of either internalizing problems such as anxiety, withdrawal and somatic problems or externalizing problems such as rule breaking and aggressive behaviors.

Conclusions A significant correlation was found between most of the stressful life event domains and the syndrome subscale of the youth self report form which indicate that out of the total sample of 360 adolescents 150 were identified as having psycho-social morbidity, including 59 borderline cases and 91 high-risk cases. The study pointed out the need for mental health screening among the adolescents and also indicated the need for mental health inputs in educational institutions.

Keywords Adolescent · Stress · Coping · Psycho-social morbidity

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Introduction

In the life cycle of humans, adolescence is a period of transition from childhood to adulthood. It is characterized by rapid physical, biological and hormonal changes resulting in to psychosocial, behavioral and sexual maturation between the ages of 10–19 y in an individual. India has the largest population of adolescents in the world being home to 253.2 million individuals aged 10–19 y and the country's adolescents constitute 20% of the world's 1.2 billion adolescents [1]. The most common sources of day-to-day stress for adolescents are school-related problems or pressures; problems with peers, family issues or problems with parents; their own thoughts, feelings, or behaviors, for instance feeling depressed or lonely, getting into trouble because of their behavior. These problems

are routine for most adolescents [Gala J, Choudhary S. Coping with stress among Indian adolescents belonging to high income group (Internet) (cited on 5 Dec 2011); Available at: http://ipi.org.in/texts/ipyc/ipyc-full/s-jgala.php].

Adolescents in India, account for one-fifth of the total population [2] and are a significant human resource that needs to be given ample opportunity for holistic development towards achieving their full potential. In the era of extreme competitiveness, academic anxiety has become a significant stressor for the Indian adolescents. Due to high parental expectation, societal demands, anxiety of social disapproval, peer approval, uncertainty in the job market and ever rising level of aspirations, this group is becoming highly vulnerable [2].

Few available epidemiological studies [3, 4] from India suggest that nearly 10–15% of those aged 16 and below suffer from a diagnosable psychiatric disorder. Nearly 5% have a significant disability attributable to mental disorders. Suicide rates in Indian adolescents appear to be several-fold higher than anywhere else in world, accounting for 25 % of deaths in boys and 50–75 % of deaths in girls aged 10–19 y [5]. It has also been found that there is high prevalence of suicidal ideation, suicide attempt, death wishes and deliberate self-harm among adolescent population in two schools in Delhi [6].

The study was done to explore the various stressors during adolescence and the coping strategies adopted by Indian adolescents and the impact of these stressors on their mental health.

Material and Methods

This was a cross-sectional study carried out on adolescents studying in private and government schools of south Delhi. A total sample of 360 adolescents between the age group of 13–17 y was randomly selected from two private and two government schools in the south zone of Delhi. Adolescents belonging to a particular class was selected randomly from a group of classes by a lottery system.

Approval to conduct the study was obtained from the Ethics Committee, All India Institute of Medical Sciences, New Delhi. The students in government and private schools differ in their socio-economic status because of the huge difference in fee structure. Permission to conduct the study was obtained from school principals. A letter explaining the purpose of the study was handed over to the parents of the adolescents. An informed written consent form was taken from the parents of adolescents. An assent form was also provided to the adolescents informing about the study. Before administering the questionnaire a brief interactive session was conducted explaining the purposes of the

study and thereby encouraging honest answers from the respondents. Researcher emphasized about the confidentiality of the data provided. A participant flow diagram is presented in Fig. 1.

Tools used in the study were as follows:

a. Demographic Data Sheet: A structured tool to assess the demographic variables.
b. Adolescent Life Event Stress Scale (ALESS) [7]: ALESS, a standardized tool was used to assess the stress due to various life events during adolescence. Subjects were asked to rate the stressful events which happened in their lives in the past 1 y using a 5 point Likert scale from most stressful to least stressful.
c. Brief COPE Inventory [8]: Brief COPE Inventory consists of 28 items that deal with the ways of coping with the stresses in life.
d. Youth Self Report for Ages 11–18 [9]: YSR, a standardised screening tool was used to assess the impact of stresses on adolescent mental health. Syndrome scale of YSR was used to assess the impact of stress on adolescent mental health.

All the tools were administered in both Hindi and English; there were no perceived language barriers and completion of questionnaire took around one hour.

Data were analyzed using statistical package STATA 11.1 version. Level of significance was taken as $p < 0.05$. Inferential statistics include ANOVA, independent t-test; Kwallis, Mann Whitney U test, Pearson's correlation coefficient and Spearman rho correlation coefficient were used for the analysis of data.
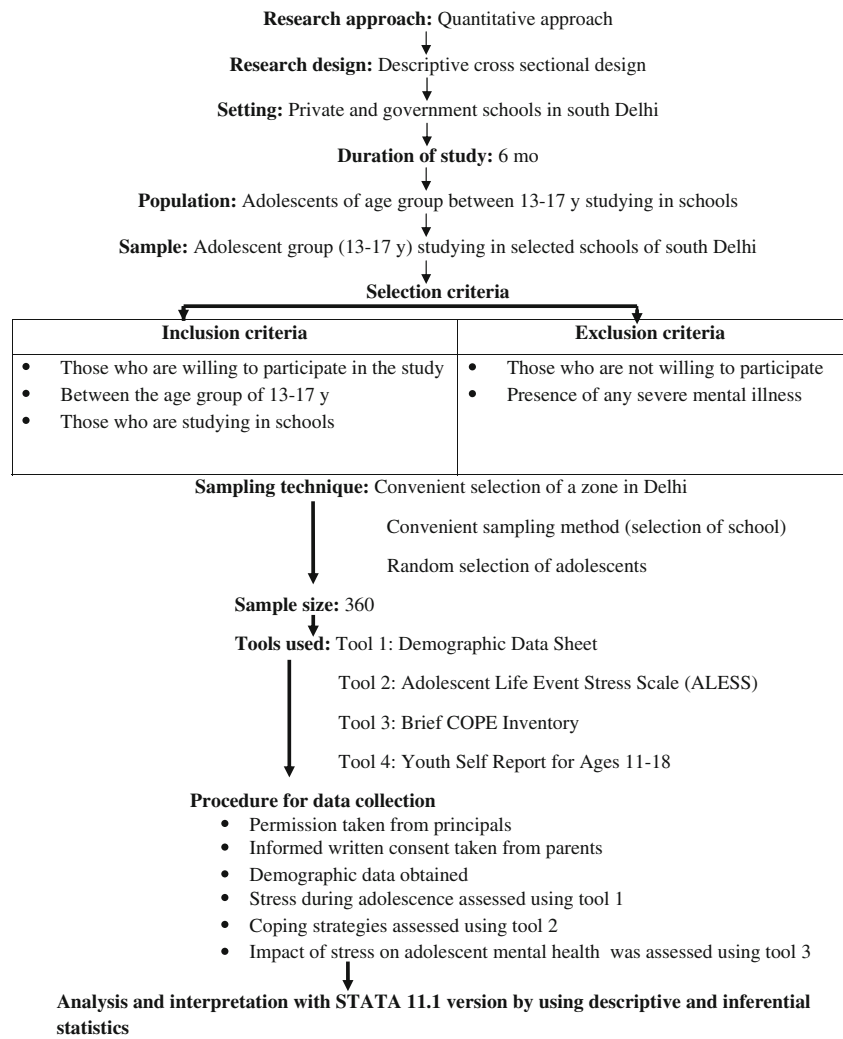
Results

Demographic characteristics of the adolescent population is represented in both Fig. 2 and Table 1.

Mean stress scores on uncontrollable and controllable events were 18.78 (SD=14.63) and 16.38 (SD=11.70) respectively. Mean stress score for distressful event was 15.25± 9.93SD. Stress related to uncontrollable and controllable events were significantly higher as compared to distressful event ($p < 0.01$) as shown in Table 2. Number of severely stressed adolescents in each life event domain is presented in Fig. 3.

At the end of the stress scale, an open ended question was asked about any stressful event that caused significant stress during the past 1 year   other than those events mentioned in the adolescent life event stress scale. Adolescents showed higher concerns over their future and career they need to opt for successful life and some of them viewed changing relationship very stressful. Adolescents found

Fig. 1 Participant flow diagram

Research approach: Quantitative approach
↓
Research design: Descriptive cross sectional design
↓
Setting: Private and government schools in south Delhi
↓
Duration of study: 6 mo
↓
Population: Adolescents of age group between 13-17 y studying in schools
↓
Sample: Adolescent group (13-17 y) studying in selected schools of south Delhi
↓
Selection criteria

Inclusion criteria	Exclusion criteria
• Those who are willing to participate in the study • Between the age group of 13-17 y • Those who are studying in schools	• Those who are not willing to participate • Presence of any severe mental illness

Sampling technique: Convenient selection of a zone in Delhi

Convenient sampling method (selection of school)

Random selection of adolescents
↓
Sample size: 360

Tools used: Tool 1: Demographic Data Sheet

Tool 2: Adolescent Life Event Stress Scale (ALESS)

Tool 3: Brief COPE Inventory

Tool 4: Youth Self Report for Ages 11-18
↓
Procedure for data collection
- Permission taken from principals
- Informed written consent taken from parents
- Demographic data obtained
- Stress during adolescence assessed using tool 1
- Coping strategies assessed using tool 2
- Impact of stress on adolescent mental health was assessed using tool 3

Analysis and interpretation with STATA 11.1 version by using descriptive and inferential statistics

some of the events happened in the family, stressful and some reported significant stress related to their physical appearance. Adolescents found rules and regulations of society difficult to understand and stressful.

Table 3 shows association between stressful life events and the selected variables in the study. All the demographic variables were tested and stress due to sexual events were found significantly higher among adolescents studying in private schools, male adolescents, adolescents who belong to Christian religion, adolescents
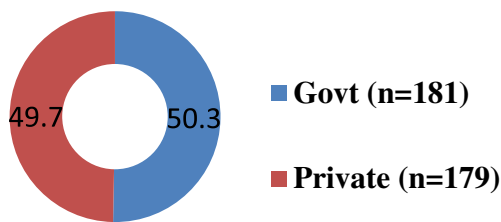
who had a higher family income, adolescents who had illiterate fathers and graduate mothers.

As shown in Table 4 most frequently used coping strategies by the adolescents were positive reframing, planning, active coping, and instrumental support and the least used coping strategies were substance use, humor, behavioral disengagement, denial and self blame.

Table 5 describes the significant association between coping strategies used by adolescents and certain selected variables in the study.

As shown in Fig. 4, 16.81% of males and 20.74% of females were on the clinical range of anxious/depressed scale. In the second order grouping, for internalizing problems, 41.7% of males and 40.24% of females were on the clinical range and for externalizing problems, 37.82% of males and 17.84% of females were on the clinical range. When total problems were calculated 31.93% of males and 22.99% of females were within the clinical range. Table 6 represents the significant correlation between various syndrome of YSR and the stressful events.

Fig. 2 Doughnut diagram showing the frequency percentage of subjects in the government and private schools (*N*=360)

Govt (n=181)

Private (n=179)

49.7 50.3

Table 1 Demographic characteristics of adolescents

Sociodemographic characteristics of subjects (*n*=360)	Mean±SD; Frequency (%)
Age of adolescents in years	16.15±0.72
Age of parents in years	
Father	45.05±5.00
Mother	40.63±5.01
No. of siblings	2.17±1.3
Gender	
Male	119(33.06)
Female	241(66.94)
Religion	
Hindu	274(76.1)
Christian	55(15.3)
Others	31(8.6)
Residence	
Rural	22(6.1)
Urban	338(93.9)
Family income	
<Rs 5000	67(18.61)
Rs 5000–15,000	140(38.89)
Rs 15,000–25,000	89(24.72)
Rs >25,000	64(17.78)
Family type	
Nuclear	240(66.7)
Joint	83(23.1)
Other	37(10.3)
Birth order	
1	162(45.63)
2	117 (32.96)
3	44(12.39)
>4	32(9.01)
Education of parents	
Father	
Illiterate	25(6.9)
Up to 10th class	90(25.0)
Up to 12th class	72(20.0)
Graduation and others	173(48.1)
Mother	
Illiterate	68(18.9)
Up to 10th class	102(28.3)
Up to 12th class	51(14.2)
Graduation and others	139(38.6)
Occupation of parents	
Father	
Govt. job	137(38.16)
Private job/Self employed	184(51.25)
Other	38(10.58)
Mother	
Govt. job	51(14.17)

Table 1 (continued)

Sociodemographic characteristics of subjects (*n*=360)	Mean±SD; Frequency (%)
Private job/Self employed	27(7.50)
Housewife	82(78.33)

Discussion

The present study revealed that adolescents experience stress due to various controllable and uncontrollable events that happen during the adolescence. Scores obtained from Adolescent life event stress score also showed higher scores on some distressful events such as death of pet, increased workload at school, theft of personal belongings, dropped more than one class, lower grades than expected, serious argument with a teacher, serious argument with a close friend, appearing for an exam /interview and failed important course/examination. Similar findings were reported by Latha et al. [10] and Rao et al. [11].

For the open ended item adolescents responded that they experience stress due to concern over their future, their physical appearance, relationship problems, family pressures and various societal constraints. Some of the responses given by the adolescents were: one adolescent said "I get highly stressful when it comes to decide or think about what career I have to choose to make way for my life ahead". These findings are in congruence with Anda et al. [12]. Many adolescents reported stress related to their physical appearance; one said "When I compare myself with my friends I feel that I have no improvement in my physical appearance". Some of the adolescents found rules and regulations of society difficult to understand and stressful; one adolescent reported that "I feel stressful when there are restrictions and lack of freedom".

Table 2 Mean stress scores on adolescent life event stress scale

Stressful events	Mean±Standard deviation	Median	Range
Uncontrollable events**	18.78±14.63	16	0–63
Family events	6.58±5.828	5	0–25
Relocation events	4.24±4.047	4	0–40
Accident events	3.39±4.087	2	0–15
Ambiguous events	4.57±4.500	4	0–21
Controllable events**	16.38±11.70	15	0–61
Sexual events	3.35±4.002	2	0–20
Deviance events	4.82±5.307	4	0–30
Autonomy events	8.21±5.572	8	0–23
Distressful events**	15.25±9.931	13	0–50

Chi-square test, **p<0.01
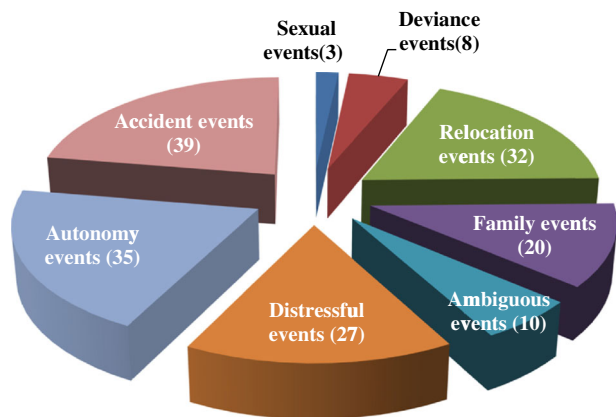
Fig. 3 Pie diagram showing the no. of stressful adolescents in each life event domain

Table 4 Mean scores on Brief cope scale

Coping strategies	Mean±Standard deviation	Range
Self distraction	4.97±1.591	2–8
Active coping	5.35±1.742	2–8
Denial	3.54±1.685	2–8
Substance use	2.28±1.001	2–8
Emotional support	4.96±1.662	2–8
Instrumental support	5.20±1.844	2–8
Behavioral disengagement	3.39±1.526	2–8
Venting	4.11±1.652	2–8
Positive reframing	5.42±1.839	2–8
Planning	5.40±1.632	2–8
Humor	2.96±1.422	2–8
Acceptance	4.91±1.822	2–8
Religion	4.91±1.790	2–8
Self blame	3.94±1.683	2–8

When compared with various selected variables it was found that adolescents who were studying in private schools had significantly higher stress score related to sexual events as compared to those studying in government schools, while stress score related to relocation events were found significantly higher in adolescents studying in government schools. In the study done by Augustine et al. [13] on higher secondary students in Hyderabad showed that the students belonging to government schools had statistically similar scores on stress perception as compared to private schools, but the former tend to have higher mean scores and the major contributor was government single gender schools. Also there was a higher response rate for the statements including change in living conditions (70%), change in the health of family member (40%), and change in financial status of parents (40%) by

the adolescents from government schools which is found similar with the present study.

Males reported significantly higher stress as compared to females in life event domains, sexual events, deviance events like trouble with parents, trouble with bullies, excessive alcohol use by family member, minor violation of law; rustication from school and accident events like major personal injury or illness, death of a close friend and death of a close family member. Kai-Wen also reported that male students feel more stress in family than females [14].

Adolescents' who belonged to Christian religion reported significantly higher stress related to sexual events as compared to the others. It may be because most of the Christian adolescents in the present study belonged to single gender schools, while co-education has been reported to offer a friendlier and more relaxed atmosphere with more

Table 3 Association of life event stress scores with selected variable in the study

Stressful events	Significant association	p value
Sexual events	Type of school (Private school)	0.001**
	Gender (Males)	0.01*
	Religion (Christian)	0.012*
	Family income (High)	0.001**
	Father's education (Illiterate)	0.001**
	Mother's education (Graduate)	0.001**
Relocation events	Type of school (Govt. school)	0.01**
	Family income (Low)	0.001**
	Mothers occupation (Housewives)	0.008*
Deviance events	Gender (Males)	0.01*
Autonomy events	Area of residence (Urban area)	0.01*
Family events	Father's education (Illiterate)	0.03*
Accident events	Father's education (Illiterate)	0.03*

*p value: <0.05, **p value <0.01

Table 5 Association of coping strategies with selected variables

Coping strategies more frequently used	Selected variables (significant association)	P value
Substance use	Government school	0.042*
Humor, acceptance, self blame	Private school	0.03*,0.03*,0.04*
Substance use and behavioral disengagement	Gender (Males)	0.001** &0.013*
Substance use, behavioral disengagement, emotional support, planning and religion	Family income (Low)	0.01*,0.02*,0.05*, 0.03*&0.03*
Substance use	Education of father (Illiterate)	0.001**

Fig. 4 Bar graph showing percentage of adolescents in the clinical range for syndrome scale of Youth Self Report
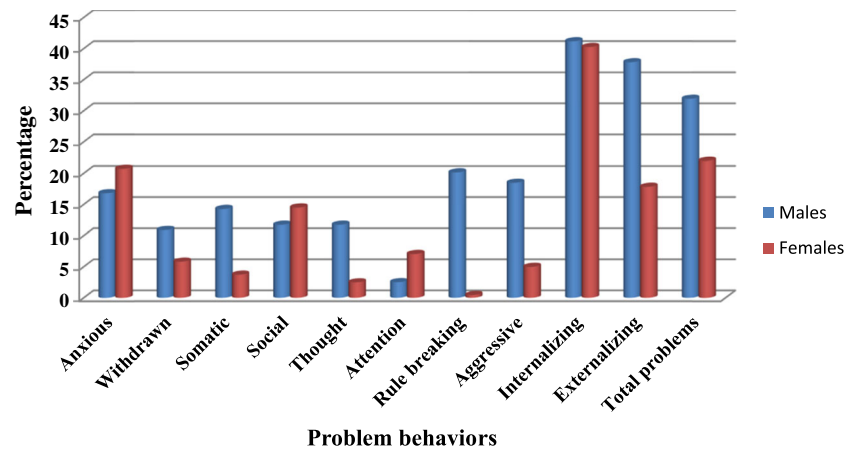
opportunities for pleasure-centered social contact [15]. The present study found some findings incongruent with Elgar et al. who reported that despite challenging socioeconomic conditions in rural areas, levels of stress and ways of coping are similar in rural and urban adolescents while in the index study adolescents who where residing in the urban area had significantly higher stress related to autonomy events like change of major subject/branch, change in eating habits, change in social activities, change in sleeping habits and outstanding personal achievement [16].

Adolescents who are from higher income group had significantly higher stress related to sexual events as compared to the low income group whereas stress related to relocation events was found significantly higher in the low income group. These findings were in line with research done by Evans et al. [17] and Krueger et al. [18]. There was a significantly higher stress score related to both controllable events and uncontrollable events among the adolescents whose fathers were illiterate. Davis-Kean et al. reported that parent's education status was an important socioeconomic factor for achievement of the

children and if the fathers' are illiterate it may cause a significant stress in the children [19]. Adolescents whose mothers' were housewives reported significantly higher stress related to relocation events as compared to those who were working. In a study done by Arun et al. there was a significant association found between working status of the mother and perception of life as a burden by the adolescents [20].

When the coping strategies were assessed, the most frequently used coping strategies by the adolescents were positive reframing, planning, active coping, and instrumental support and the least used coping strategies were substance use, humor, behavioral disengagement, denial and self blame. Gelhaar et al. revealed that active coping was most prominent in early adolescence; internal coping was highest among late adolescents, while withdrawal peaked in mid adolescence [21].

Substance use as a coping strategy was significantly more frequently used by adolescents from government school. Augustine et al. also observed that the students of government schools had a significantly higher score on behavioral

Table 6 Correlation of stressful events with syndrome scale of Youth Self Report

Stressful events	Anxious r-value	Withdrawn r-value	Somatic r-value	Social r-value	Thought r-value	Attention r-value	Rule breaking r-value	Aggressive r-value
Sexual events	0.179**	0.148**	0.079	0.204**	0.220**	0.206**	0.381**	0.264**
Deviance events	0.253**	0.282**	0.131*	0.263**	0.251**	0.193**	0.304**	0.305**
Relocation events	0.227**	0.179**	0.100	0.201**	0.138**	0.144**	0.169**	0.212**
Family events	0.239**	0.270**	0.171**	0.281**	0.245**	0.221**	0.309**	0.281**
Ambiguous events	0.229**	0.238**	0.135*	0.156**	0.245**	0.171**	0.183**	0.233**
Distressful events	0.318**	0.298**	0.192**	0.276**	0.245**	0.244**	0.310**	0.287**
Autonomy events	0.175**	0.255**	0.200**	0.163**	0.184**	0.170**	0.145**	0.257**
Accident events	0.180**	0.160**	0.176**	0.180**	0.217**	0.117*	0.288**	0.160**
Uncontrollable events	0.330**	0.314**	0.208**	0.302**	0.282**	0.240**	0.334**	0.310**
Controllable events	0.274**	0.308**	0.175**	0.267**	0.289**	0.251**	0.331**	0.348**

Spearman rho correlation coefficient **$p<0.01$, *$p<0.05$

avoidance coping approach [13]. The index study findings are congruent with Rao et al. who also reported that males use active behavioral methods including high-risk coping behaviors for their stress [11]. The present study reported that with increased number of siblings, substance use also increases. Studies have already shown that siblings appear to contribute to the adolescents' subsequent substance use development [22]. Coping strategies such as substance use, behavioral disengagement, emotional support, planning and religion were found more frequently used by the adolescents who were having low family income. It may be because of the low socioeconomic status and the lower education of parents which contributed to the use of high risk coping behaviors such as substance use [23]. Adolescents whose fathers' were illiterate had used substance use as a coping strategy as compared to those whose fathers were educated. Wills et al. [23] also found that lower education of the parent is related to higher level of adolescent substance use, lower levels of protective factors, and higher levels of risk factors.

The index study showed that stress has a significant impact on adolescent mental health in the form of either internalizing or externalizing problems, as there was a significant correlation found between most of the stressful life event domains and the syndrome scale of the youth self report form as reported by Chou et al. [24] and Sun et al [25]. Adolescents have to deal with the challenges of growing as they go through puberty, meet the changing expectations of others, and cope with feelings they might not have experienced before, which has significant impact on their mental health. The present study concludes that out of a total sample of 360, about 150 adolescents were identified as having psycho-social morbidity, including 59 borderline cases and 91 high-risk cases which is in agreement with Mishra et al. [26].

The present study has certain limitations. The schools from only south zone of Delhi were included in the study. The study used convenient sampling technique and it was cross-sectional in nature and did not provide any intervention or remedial measures for the adolescents who were in the clinical range.

The strengths of the index study are as follows: The study collected qualitative data related to stressful experience, it had large sample size, all the tools used in the study were standardized, data was collected from both government and private schools of Delhi and it was ethically approved study.

Conclusions

Thus, to conclude similar studies should be done in different demographic and geographical areas to generate quality evidence for cost-effective, preventive, promotive and curative strategies. The study recommends that there is a need to train manpower in child and adolescent mental health at various levels. More studies are needed to find out the impact of stress on adolescent mental health and long term interventional studies are needed to be performed to decrease the stress among adolescents.

References

1. Census of India. Provisional population totals. Office of Registrar General and Census Commissioner, New Delhi, India: Government of India; 2011.
2. Jain M, Jain J. Academic anxiety among adolescents: role of coaching and parental encouragement. Natl Acad Psychol India. 2007;52:146–8.
3. Srinath S, Girimaji SC, Gururaj G, Seshadri S, Subbakrishna DK, Bhola P, 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.
4. Hackett R, Hackett L, Bakta P, Gowers S. The prevalence and association of psychiatric disorder in children in Kerala, South India. J Child Psychol Psychiatry. 1999;40:801–7.
5. Aaron R, Joseph A, Abraham S, Muliyil J, George K, Prasad J, et al. Suicides in young people in rural southern India. Lancet. 2004;363: 1117–8.
6. Sidhartha T, Jena S. Suicidal behaviors in adolescents. Indian J Pediatr. 2006;79:783–8.
7. Aggarwal S, Prabhu HRA, Anand A, Kotwal A. Stressful life events among adolescents: the development of a new measure. Indian J Psychiatry. 2007;49:96–102.
8. Carver CS. You want to measure coping but your protocol's too long: consider the Brief COPE. Int J Behav Med. 1997;4:92–100.
9. Achenbach TM. Manual for the youth self report and 1991 profile. Burlington: University of Vermont Department of Psychiatry; 1991.
10. Latha KS, Reddy H. Patterns of stress, coping styles and social supports among adolescents. J Indian Assoc Child Adolesc Ment Health. 2006;3:5–10.

11. Rao K, Moudud S, Subbakrishna DK. Appraisal of stress and coping behavior in college students. J Indian Acad Appl Psychol. 2000;26:5–13.

12. De Anda D, Baroni S, Boskin L, Buchwald L, Morgan J, Ow J, et al. Stress, stressors and coping among high school students. Child Youth Serv Rev. 2000;22:441–63.

13. Augustine LF, Vazir S, Rao SF, Rao MV, Laxmaiah A, Nair KM. Perceived stress, life events & coping among higher secondary students of Hyderabad, India: a pilot study. Indian J Med Res. 2011;134:61–8.

14. Kai-Wen C. A study of stress sources among college students in Taiwan. J Acad Bus Ethics. 2009. Available at: http://www.aabri.com/manuscripts/10471.pdf.

15. Single-sex versus secondary schooling: a systematic review. Washington, DC: U.S. Department of Education, Office of Planning, Evaluation and Policy Development, Policy and Program Studies Service; 2005. p. 85.

16. Elgar FJ, Arlett C, Groves R. Stress, coping, and behavioural problems among rural and urban adolescents. J Adolesc. 2003;26:577–88.

17. Evans GW, Kim P, Ting AH, Tesher HBG, Shannis D. Cumulative risk, maternal responsiveness and allostatic load among young adolescents. Dev Psychol. 2007;43:341–51.

18. Krueger PM, Chang VW. Being poor and coping with stress: health behaviors and the risk of death. Am J Public Health. 2008;98:889–96.

19. Davis-Kean PE. The influence of parent education and family income on child achievement: the indirect role of parental expectations and the home environment. J Fam Psychol. 2005;19:294–304.

20. Arun P, Chavan BS. Stress and suicidal ideas in adolescent students in Chandigarh. Indian J Med Sci. 2009;63:281–7.

21. Gelhaar T, Seiffge-Krenke I, Borge A, Cicognanai E, Cunha M, Loncaric D, et al. Adolescent coping with everyday stressors: a seven-nation study of youth from central, eastern, southern, and northern Europe. Eur J Dev Psychol. 2007;4:129–56.

22. Duncan TE, Duncan SC, Hops H. The role of parents and older siblings in predicting adolescent substance use: modeling development via structural equation latent growth methodology. J Fam Psychol. 1996;10:158–72.

23. Wills TA, McNamara G, Vaccaro D. Parental education related to adolescent stress-coping and substance use: development of a mediational model. Health Psychol. 1995;14:464–78.

24. Chou PC, Chao YM, Yang HJ, Yeh GL, Lee TS. Relationships between stress, coping and depressive symptoms among overseas university preparatory Chinese students: a cross-sectional study. BMC Public Health. 2011;11:352.

25. Sun Y, Tao F, Hao J, Wan Y. Mediating effects of stress and coping on depression among adolescents in China. J Child Adolesc Psychiatr Nurs. 2010;23:173–80.

26. Mishra A, Sharma AK. A clinico-social study of psychiatric morbidity in 12 to 18 y school going girls in urban Delhi. Indian J Community Med. 2001;26:71–5.